2.5 PHYSIOLOGICAL AND SOCIO-CULTURAL FACTORS AFFECTING FERTILITY

NOTES

Fertility is a very complicated affair. It can easily be influenced by many social, economic, environmental, physiological, cultural and health factors. Let us look at various physiological and socio-cultural factors affecting fertility.

Physiological factors

Physiological factors refer to the physical limitations of an individual. In the field of fertility, physiological factors comprise the reproductive capacity of a woman. This can be affected by sterility, hypertension, stress, autoimmune disorder, psychological disorder, etc.

- **Reproductive capacity:** Fertility depends primarily on physiological reproductive capacity, i.e., fecundity. Sterility has negative consequences on the actual level of productivity, that is to say, on fertility.
- **Hypertension:** Hypertension is an important risk factor as it contributes to the development of cardiovascular and cerebrovascular diseases and a major cause of end-stage renal disease and of high blood pressure. The rate of hypertension is very high among women. It has been noted through research that hypertension pills may lower the rate of fertility or may cause infertility among both males and females.
- **Stress:** Stress affects women in a negative manner by causing hormonal changes and interrupting ovulation cycles. Stress may also lead to termination of pregnancies or extended menstrual cycles. It has been found that stress reduces sex drive among both men and women.
- **Autoimmune disorders:** Autoimmune disorders include diseases such as lupus, diabetes, thyroid disease, and rheumatoid arthritis, all of which can hinder fertility. Women suffering from such health problems have a greater chance of miscarriage and infertility.
- **Psychological disorders:** Psychological disorders also affect fertility. Individuals who are psychologically not sound can be infertile or face complications in conceiving. Often, due to heavy doses of medication to overcome the disorder, a woman may lose her reproductive span or becomes infertile.

Socio-cultural factors

- **Cultural practices and beliefs:** Even cultural practices and beliefs may influence fertility. In many developing countries, tradition is responsible for the practice of child and teenage marriage. This raises the fertility rate, reproductive age span and participation in the reproductive process in females.

  Other cultural practices such as banning of widow marriage, polyandry and polygyny also influence fertility. Prohibition on widow remarriage and

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polygyny reduces the rate of fertility. In polyandry, on the other hand, the reproductive span of a woman is fully used, consequently increasing the number of children in that particular family.

There are various other social factors such as religion/class, education, standard of living and employment that also influence fertility.

- **Religion/class:** Fertility is greatly influenced by religion and class. This has already been discussed under differential fertility.
- **Education:** The rate of fertility is determined by education. Most educated couples, particularly wives with higher education, prefer smaller families than women with a lower level of education. People with higher education may have more interests unconnected with family life, and might get engaged in another role outside the family. Educated couples also have more knowledge of birth control techniques and might be more efficient family planners.
- **Employment:** While the employment of males hardly influence the rate of fertility, the employment of females and children does. When there are opportunities for children to assist the family in ensuring economic maintenance, most of the parents desire a large family.

Many sociologists and economists have elaborated theories on the relation between female employment and fertility. According to them, the employment of women increases the income of a household. This tends to increase fertility. However, this also increases the opportunity cost of children and, as a result, may also tend to reduce fertility.

According to sociologists, employed women will be less inclined to devote their whole attention to housework and to children. As a result of this, their fertility will be lower. Sociologists also illustrate a contrary trend in the case of women whose work and family roles are well-matched. In this case, fertility is not negatively affected.

Check Your Progress

16. Fertility depends in the first place on the physiological reproductive capacity, that is:
    (a) Fecundity (b) Reproductive span
    (c) Differential fertility (d) Fertility rate
17. Hypertension, stress and mental disorder are:
    (a) Social factors (b) Biological factors
    (c) Economic factors (d) Physiological factors
18. Prohibition on widow remarriage and polygyny decreases:
    (a) Fecundity (b) Fertility
    (c) Mortality (d) Reproduction
19. Lupus, thyroid disease, diabetes, and rheumatoid are a part of:
    (a) Autoimmune disorders (b) Genetic disorders
    (c) Eating disorders (d) Hormonal disorders

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2.6 METHODS OF CONTRACEPTION

Before proceeding towards the several methods of contraception, it is necessary to know the meaning and definition of contraception. A process of interruption of conception at any stage preceding, accompanying or immediately following copulation is termed as contraception. It is a process of impregnation in which various devices, such as agents, drugs, sexual practices, or surgical procedures are used.

Methods used under contraception may be mechanical, physiological, hormonal, chemical or a combination of any of them. Contraception can be achieved by using any of the following.

- Rhythm method
- Barrier method
- Intra-uterine devices (IUD)
- Post-coital contraceptives

1. Rhythm method

The rhythm method relies on the recurrence of the safe period in the menstrual cycle of a woman during her reproductive span. This is also known as the *calendar method*. It is based on the principle that fertility can be controlled if coitus is restricted to safe periods, and abstinence is observed during the fertile periods.

The rhythm method attempts to predict ovulation using a woman's menstrual history, of which a written record should be kept. The day on which bleeding starts should be marked as day 1 and this should be done for at least 6 months. Lastly, count the days in each cycle. The principal advantage of rhythm method is that it is totally inexpensive and produces no side effects. But the method is not suitable for women with irregular cycles or small cycles of less than 21 days. Also, it increases the risk of placenta praevia and ectopic pregnancy.

The various methods that come under rhythm method are as follows:

- Basal temperature method
- Cervical mucus method
- Symptothermal Method

(i) **Basal temperature method:** This method is based on the elevation of temperature by 0.3–0.5 degree Celsius that occur in luteal phase of the ovarian cycle. The rise in temperature is caused by a rise in the progesterone level in blood, which is followed by ovulation. If the cycle is anovulatory, the temperature will not rise. Therefore, women are always advised to record body temperature before getting out of bed or before taking food. The safe period extends from two days after the rise of temperature to the onset of menstruation.

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(ii) **Cervical mucus method:** The method is based on the fact that cervical mucus appears in the oestrogen phase of the cycle and stops in the luteal phase when progesterone is secreted. The last day of wetness is treated as 'peak day' which is not necessarily the day of maximum outpouring of mucus. The woman is advised to exclude three days following the peak day and treat the rest of the post-ovulatory phase as safe period of coitus.

(iii) **Symptothermal method:** The symptothermal method combines the symptoms of ovulation with temperature elevation. This comprises the sensation of wetness due to secretion of cervical mucus, abdominal pain on the side of the ovary, discomfort in breast, mood fluctuation, etc.

2. Barrier method

The method which mechanically blocks the sperm from entering the uterus is termed barrier method. The devices included in this method are condoms, diaphragms, caps, sponge, spermicides (creams and jellies, tablets and suppositories, foams and aerosols), and female condoms, etc. Here, a diaphragm is a soft rubber cup-like device used with sperm-killing cream, inserted into the woman's vagina before intercourse. Caps are cup-shaped device that fit over the cervix and are held in place by suction force. The most significant advantage of barrier methods is that they are convenient to use and can prevent the spread of AIDS and other sexually transmitted diseases.

3. Intra-uterine devices (IUD)

IUDs are inserted into the uterine cavity to prevent conception. The device may be inserted or medicated. Inserted devices are made of plastic, while medicated devices are fortified with copper, silver, or a progestogen preparation. The various types of IUDs are loop devices, ring devices, T-devices and hormone devices. Loop devices are made of plastic material and come in various sizes and shapes, simulating open serpentine, open spiral, open double coil, open S-shape or closed figure of eight configurations.

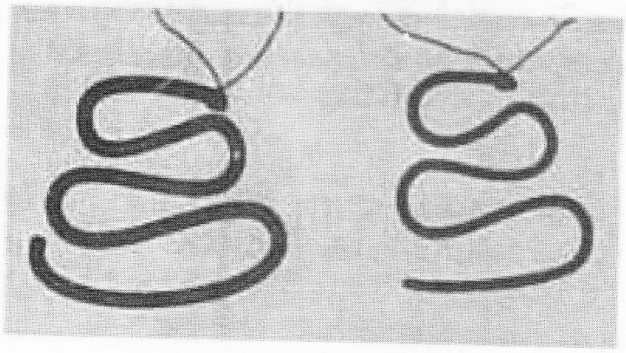

Fig. 2.7 Loop Devices

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Ring devices are usually made of silkworm gut and silk wires.

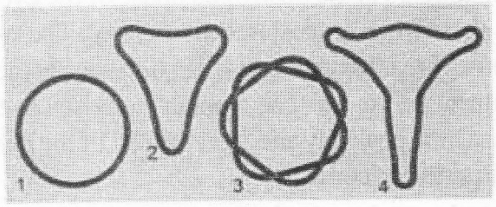

Fig. 2.8 Ring Devices

T–devices are made of polyethylene or any other polymer and reinforced with copper metal. The devices are impregnated with barium sulphate for radio-opacity and are fitted with two transcervical threads at the tail end.

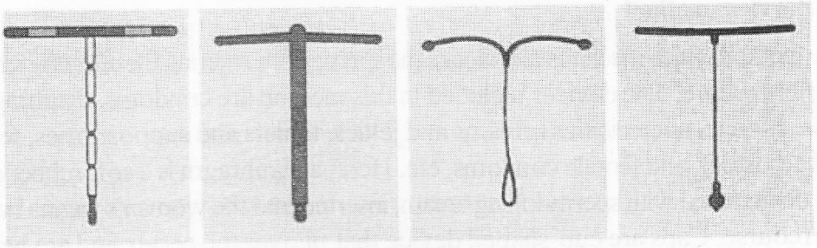

Fig. 2.9 T-Devices

Besides these, there is another device, known as the hormone device, which are developed in two forms, progestasert and levonorgestrel. The progestasert is a T-shaped device made of ethylene vinyl acetate co-polymer impregnated with barium sulphate and possessing a reservoir in its stem that contains 38 mg of progesterone. The device has a functional life of one year. It has to be replaced annually.

Levonorgestrel is also a T-shaped device made up of polythene and a capsule on its stem containing 60 mg of levonorgestrel. The major advantage of this device is that it releases the hormone at a constant rate for the period of five years, after which it needs replacement.

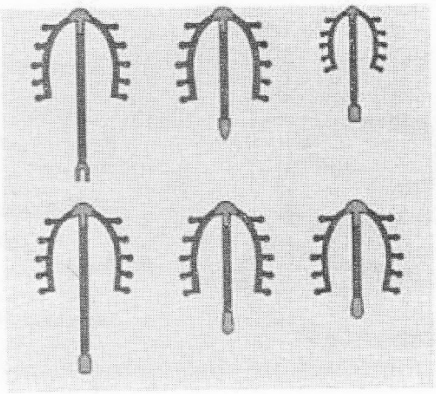

Fig. 2.10 Hormone Devices

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These IUDs are safe and harmless and do not produce any side effect. These are highly effective contraceptives. Being one time contraceptives, there is no supply or disposal problem in this method. Being reversible, the use of this method does not affect the fertility of a woman.

4. Hormonal or postcoital contraceptives

Hormonal or postcoital contraceptives comprise synthetic gonadal steroids. These are ethinyl oestradiol and mestranol and are available in the form of pills and injections such as biphasic pills, triphasic pills, minipills, weekly oral pills, male pills, DMPA, etc. Hormonal or postcoital contraceptives are easy to use, safe and effective. But missing a pill may increase the rate of fertility in women.

Injectable contraceptives constitute a highly effective method of temporary contraception, even better than oral contraceptives. The injectable contraceptives are reliable, long-lasting, and reversible and are more acceptable to selected individuals who have great faith in injections.

Check Your Progress

20. Contraception can be achieved by using:
    (a) Rhythm method
    (b) Photosynthesis method
    (c) Fecundity
    (d) Barrier method
21. Condoms, diaphragms, caps, sponge are devices of:
    (a) Rhythm method
    (b) Barrier method
    (c) IUDs
    (d) Hormonal contraceptives
22. The method which combines the symptoms of ovulation with temperature elevation is termed:
    (a) Symptothermal method
    (b) Levonorgestrel method
    (c) Cervical mucus method
    (d) Basal temperature method
23. List the devices that constitute IUDs.

NOTES

2.7 SUMMARY

- Fertility is the natural means through which life originates. The physical capacity of bearing a child is termed as 'fecundity'. The physiological occurrence of menarche and menopause and the period between the two is termed the reproductive span.
- Various factors affect fertility and fecundity. They include age and duration of marriage, environment, health, etc.
- Fertility can be measured by primary and secondary approaches.
- Differential fertility refers to the fluctuation in the growth of population or reproduction rate.
- Contraception is a process of interruption of conception at any stage preceding, accompanying or immediately following copulation.

2.8 KEY TERMS

- **Fertility:** Natural means through which life originates
- **Fecundity:** Physical capacity of bearing a child
- **Reproductive span:** Physiological occurrence of menarche and menopause
- **Contraception:** Process of interruption of conception at any stage preceding, accompanying or immediately following copulation

2.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. (c) 2. (d) 3. (b) 4. (a) 5. (d) 6. (a) 7. (c)
8. GRR = ASFR ×Bf/Bm + Bf

   GRR = TFR × Proportion of female births.
9. Marriage rate, abortion rate, pregnancy rate and family size constitute related rate of birth.
10. (a) 11. (a,d) 12. (d) 13. (a)
14. Fundamentalist groups like Mormons, Nazarenes, Pentecostals, and Jehovah's witness have a higher fertility rate than the Catholic in USA.
15. (d) 16. (a) 17. (d) 18. (b) 19. (a) 20. (d) 21. (b)
22. (a)
23. Loop devices, ring devices, T-devices and hormone devices are types of IUDs.

2.10 QUESTIONS AND EXERCISES

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Short-Answer Questions

1. What is reproductive span?
2. What is fecundity?
3. Write a short note on crude birth-rate.
4. What is the barrier method?
5. What is an IUD?

Long-Answer Questions

1. Explain the relation between fertility, fecundity and reproductive span.
2. What are the various processes of fertility measurement?
3. Explain the concept of differential fertility.
4. Describe the various physiological and socio-cultural influences on fertility.
5. What are the various methods of contraception?

2.11 FURTHER READING/REFERENCES

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UNIT 3 MORTALITY

NOTES

Structure

3.0 INTRODUCTION

The study of mortality in the context of social demography covers the deaths of young, old, male, female and so on. Therefore, to know everything about mortality in detail requires a lot of time and energy. This unit comprises some important topics on mortality.

This unit discusses the meaning and definition of mortality, and describe the various methods of mortality measurement. Mortality rate essentially denotes the number of deaths in a particular population in a year or in a specified period. Various factors can influence the mortality rate. We shall also look at differential mortality, according to which mortality rates vary across nations or different groups of population.

You will also learn about maternal mortality and infant mortality and know about the various trends and causes behind them.

Finally, this unit deals with foeticide and female infanticide, their causes and implications.

3.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Define the term 'mortality'
- Describe the various causes of mortality
- Explain the measurement of mortality
- Understand differential mortality

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- Define maternal mortality
- Explain causes of maternal mortality
- Define infant mortality
- Describe the trends and causes of infant mortality in India
- Define female foeticide
- Define female infanticide
- Elaborate on factors responsible for female foeticide and female infanticide and their implications

3.2 MEASUREMENT OF MORTALITY

Mortality means death. The term mortality derives from the Latin word *mors* meaning death. Mortality denotes the number of deaths in a particular population usually in a year or in a specified time period.

To study spatial and temporal variations in mortality, it is essential to use several indices and measures for the periods and areas under consideration. Mortality measures are essential to address various aspects of social change. Study of overall mortality can reveal trends over time and within countries. In mortality measurement, the difference between socio-economic groups and age groups can be used as key indicators of transition.

The most important measures of mortality are as follows:

- Crude death rate
- Age and sex-specific death rate
- Infant mortality rate
- Race and sex specific death rate
- Expectation of life at birth
- Maternal mortality rate

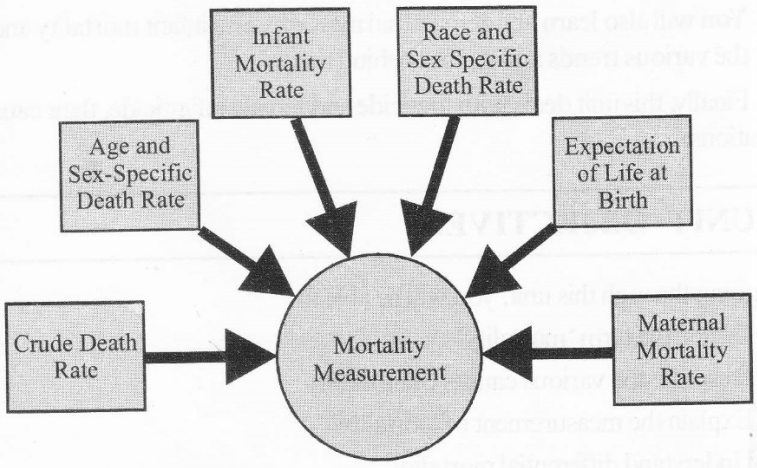

Fig. 3.1 The Measures of Mortality

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(i) Crude death rate

Crude death rate is the best known and simplest measure of mortality. This indicates the number of deaths in a particular year per 1,000 of the population. The mathematical presentation of this measure is:

$$D/P \times 1,000$$

The mid-year population is used, ideally, as the best available approximation to the average number of people exposed to risk, or to death, during the year. The term 'crude' is used carefully, since no allowance is made for often considerable difference between communities in those aspects of population composition, particularly age and sex, which strongly influence mortality probabilities.

It has been noted that the rate of mortality increases with age from late childhood, and that at nearly all ages mortality is higher for males than females. Consequently, the structure of age and sex play a significant role in determining crude death rate, regardless of factors like health programmes and standard of living. Therefore, care has to be taken while interpreting international differences in crude death rate. It is found that crude death rates are lower in less developed countries, whereas there are some economically and medically advanced nations which have a higher crude death rate. This is clearly due to much younger age structures in less developed countries, resulting from their high fertility in their immediate past.

Table 3.1 *International Differences in Crude Death Rate that do not Paint a True Picture*

Less Developed Countries with Lower Crude Death Rate (about 5–7 per 1000)	**Economically And Medically Advanced Countries With Higher Crude Death Rate (About 9–12 per 1000)**
Costa Rica	North America
Guyana	North-Western Europe
Jamaica	
Malaysia	
Sri Lanka	

(ii) Age and sex-specific death rate

This is yet another measure of mortality. It has been noted that a more critical appreciation of mortality level can be derived from a table of mortality rates disaggregated by age and sex. An age and sex-specific death rate is the number of deaths of persons of a specific age and sex per 1,000 people during a year.

The principle behind the calculation of death rates by age and sex is the same as for a crude death rate: the ratio of number of death occurring to persons of a certain age during a given year, to the mean population of that age in the same year. The mathematical presentation of this measure is:

$$Das/ Pas \times 1,000$$

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An example of age and sex-specific death rates are given in Table 3.2 for a developed and a less developed country.

Table 3.2 Age and Sex-specific Death Rates in England, Wales, and Mauritius (per 1,000)

	England and Wales		Mauritius	
	Male	Female	Male	Female
Under 1	10.4	7.9	30.8	23.1
1–4	0.5	0.4	1.2	1.3
5–14	0.2	0.1	0.5	0.4
15–24	0.7	0.3	1.1	1.0
25–34	0.9	0.5	2.1	1.4
35–44	1.7	1.1	4.5	2.3
45–54	5.0	3.2	11.7	5.0
55–64	15.7	9.0	27.8	13.7
65–74	41.7	22.8	57.3	39.6
75–84	98.8	60.7	123.0	83.5
85+	212.7	168.6	249.5	192.5

Source: *Population Trends*, Vol. 53, Table 19; *Demographic Yearbook* 1987, Central Statistical Office, Mauritius, Table 5.6.

Although the levels of mortality differ between England and Wales and Mauritius, the overall pattern of mortality by age and sex is similar. The rate of mortality falls from the relatively high levels in the first year of life to a minimum in the 5–14 age group and then rise in the successive age groups, although the mortality level in the first year is not exceeded until old age. In all the age groups in England and Wales, a low rate of mortality is found among females in comparison to males, which is almost the same in Mauritius.

(iii) Expectation of life at birth

The average number of years that would be lived by a group of persons born in a particular year, assuming that the age-specific death rates of that year would be maintained throughout the life history of the cohort, is termed as expectation of life at birth. This is another important measure of mortality in a particular year, and that year only, and is normally derived from a national-life-table.

The expectation of life at birth adopts the standard practice of setting up an imaginary birth cohort of 100,000 persons and then plotting its diminution over time on the basis of age-specific mortality rates applying in the year of calculation. Therefore, it provides a snapshot of mortality at one particular time.

(iv) Infant mortality rate

Infant mortality rate is another widely used measure of mortality. It indicates health conditions and general living standards and recognizes the concentration of deaths

in the first year of life. The rate is conventionally defined as the number of deaths of children under one year of age in a particular year per 1,000 live births in that year.

Its mathematical presentation is

$Do/B \times 1,000$

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(v) Race and sex specific death rate

The rate of mortality can also be measured on the basis of race and sex by using the same basic formula for calculating the crude death rate.

(vi) Maternal mortality rate

Death associated with pregnancy is termed as maternal mortality. The numerator is the number of deaths assigned to pregnancy-related causes during a given period, while the denominator is the number of live births reported during the same period. The maternal mortality rate is usually very small and is usually expressed as number of deaths per 100,000 live births.

Check Your Progress

1. The death associated with pregnancy is termed as:
   (a) Infant mortality
   (b) Infant mortality rate
   (c) Maternal mortality
   (d) Maternal mortality rate
2. Infant mortality rate indicates
   (a) Economic condition
   (b) Social condition
   (c) Mental condition
   (d) Health condition
3. What is the mathematical presentation of crude death rate?
4. Expectation of life at birth is derived from:
   (a) State-life-table
   (b) Country-life-table
   (c) National-life-table

3.3 CAUSES OF MORTALITY

There are various causes of mortality. Mortality can either occur due to epidemics and disease, or due to environmental disaster and accidents. According to the World Health Organization, the underlying cause of death is defined as 'the disease

or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury', in accordance with the rules of the International Classification of Diseases.

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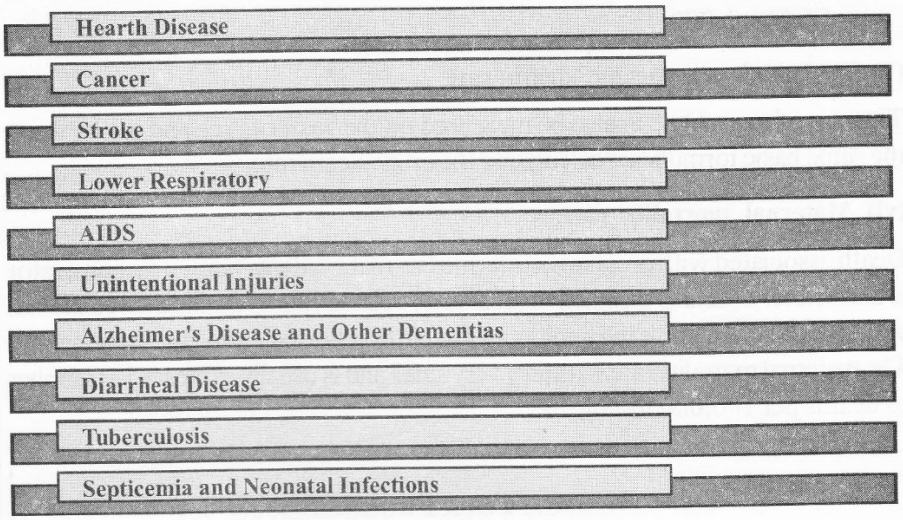

Fig. 3.2 Causes of Mortality Worldwide

1. Heart disease

Cardiopathy or heart diseases are those diseases that generate a variety of other types of diseases affecting the human heart. According to latest statistics, the leading cause of death in countries like Canada, England and Wales and Unite States is heart disease. It has been noted that a number of people die every year due to coronary (or ischaemic) heart disease (heart attack), cardiomyopathies, hypertensive, rheumatic heart disease and heart failure. According to the World Health Organization, an estimated 16.7 million of total global deaths result from the various forms of heart disease. Of the 16.7 million deaths from heart disease every year, 7.2 million are due to ischaemic heart disease, 5.5 million to cerebrovascular disease, and an additional 3.9 million due to hypertensive and other heart conditions. It is estimated that at least 20 million people survive heart attacks and strokes every year.

2. Cancer

Cancer takes place when a group of cells exceed the growth limit and extend beyond normal growth. About 13 per cent of human deaths are caused by cancer. In other words, the disease accounted for 7.4 million (or around 13 per cent) deaths worldwide in 2004. Cancer can affect people of any age but the risk is higher in older age groups.

The main types of cancer leading to overall cancer mortality according to WHO's 2004 statistics are as follows:

- 6,10, 000 deaths from liver cancer
- 1.3 million deaths from lung cancer
- 5,19, 000 deaths from breast cancer
- 8,03, 000 deaths from stomach cancer
- 6,39, 000 deaths from colorectal cancer

Table 3.3 Most Frequent Types of Cancer Worldwide

Gender	Cancer Type
Men	Stomach cancer, liver cancer, colorectal cancer, prostate and oesophagus cancer
Women	Colorectal cancer, lung cancer, stomach cancer, breast cancer, and cervical cancer

3. Stroke

Cerebrovascular strokes mainly occur due to disturbances in the blood movement causing irregular supply of blood to the brain. This interruption is caused by blood clots or due to blood vessel bursts. Some of the most universal indications of stroke are weakness, numbness (especially of legs, arms and face) and confusion, speaking disorder, loss of body balance, eyesight problem, difficulty in walking, dizziness, fainting or unconsciousness. Stroke is a major cause of mortality. In 1999, 5.5 million people worldwide died because of stroke, thus making stroke the second leading cause of mortality.

4. Lower respiratory tract infections

Lower respiratory tract infections, often used as a synonym for pneumonia, can cause lung abscess and acute bronchitis. Symptoms of lower respiratory tract infections include weakness, shortness of breath, high fever, fatigue and coughing. Lower respiratory tract infections place a considerable strain on health budgets and are generally more serious than upper respiratory infections.

Lower respiratory tract infections are a major cause of mortality. It has been estimated that 3.9 million deaths worldwide are caused due to lower respiratory tract infections.

5. AIDS

Acquired Immunodeficiency Syndrome (AIDS) is a disease of the human immune system caused by the human immunodeficiency virus (HIV). AIDS was first recognized in the year 1981 by the US Centers for Disease Control and Prevention. Genetic research indicates that the origin of AIDS lies in west-central Africa during the late 19th or early 20th century.

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In 2007, it was estimated that AIDS killed an estimated 2.1 million people, including 330,000 children worldwide. Over three-quarters of these deaths occurred in sub-Saharan Africa.

Table 3.4 *Global Summary of HIV/AIDS by the World Health Organization*

Global Summary of the HIV/AIDS epidemic, December 2008			
Number of people living with HIV in 2008	**Total**	**33.4 million**	[31.1–35.8 million]
	Adults	31.3 million	[29.2–33.7 million
	Women	15.7 million	[14.2–17.2 million
	Children under 15 years	2.1 million	1.2–2.9 million]
People newly infected with HIV in 2008	**Total**	**2.7 million**	[2.4–3.0 million]
	Adults	2.3 million	[2.0–2.5 million
	Children under 15 years	430 000	[240 000 610 000 million
AIDS deaths in 2008	**Total**	**2.0 million**	[1.7–4.4 million]
	Adults	1.7 million	[1.4–2.1 million
	Children under 15 years	280.000	[150 000–410 000 million]

6. Unintentional injuries

Unintentional injuries or accidents is yet another cause of mortality worldwide. As the population grows, the rate of accident also increases. Children, pedestrians, cyclists and the elderly are among the most vulnerable of road users and are the worst sufferer of accidents. According to the World Health Organization, more than 3000 people die on the world's roads every day.

7. Alzheimer's disease and other dementias

The most common form of dementia is Alzheimer's. The cause and development of Alzheimer's disease are not well known but research indicates that the disease is associated with plaques and tangles in the brain. It has been estimated that there were 26.6 million sufferers worldwide in 2006 and it has been predicted that Alzheimer's will affect 1 in 85 people globally by 2050.

8. Diarrhoeal disease

Diarrhoea is a gastrointestinal infection that can be caused by a number or variety of parasitic and viral organisms. While defining diarrhoea, World Health Organization states that it is a disease which causes an individual to undergo three or more liquid stools a day. This can be more frequent than normal. In terms of causes, diarrhoea occurs mainly by taking contaminated drinking water or contaminated and stale food. This can also occur due to unhygienic conditions of living.

Among infants, diarrhoea is the most common disease and is the most common reason for infant mortality. It has been noted that in the year 2009, diarrhea killed around 1.1 million people of age group five or over and caused 1.1 million deaths among children under five worldwide, especially in developing nations where there is lack of knowledge.

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9. Tuberculosis

Another infectious disease that leads to increase in mortality is tuberculosis or TB. The disease is chiefly caused by Mycobacterium and can spread from person to person via droplets from lungs and throats of people. Some of the common symptoms of tuberculosis are pain in the chest, coughing, weakness, fever, weight loss, and sweating at night. The disease mainly affects the lungs, and gradually leads to death if not treated on time. In 2008, around 1.3 million people died of tuberculosis worldwide.

Table 3.5 *Estimated TB Incidence, Prevalence and Mortality for 2008 Calculated by the World Health Organization*

	Incidence[1]			**Prevalence** [2]		**Mortality**	
WHO region	no. in thousands	% of global total	rate per 100 000 pop[3]	no. in thousands	rate per 100 000 pop	no. in thousands	rate per 100 000 pop
Africa	2 828	30%	351	3 809	473	385	48
The Americas	282	3%	31	221	24	29	3
Eastern Mediterranean	675	7%	115	929	159	115	20
Europe	425	5%	48	322	36	55	6
South-East Asia	3 213	34%	183	3 805	216	477	27
Western Pacific	1 946	21%	109	2 007	112	261	15
Global total	9 369	100%	139	11 093	164	1 322	20

[1]Incidence is the number of new cases arising during a defined period.
[2]Prevalence is the number of cases (new and previously occuring) that exists at a given point in time.
[3]Pop indicates population.

10. Septicemia and neonatal infections

A whole-body inflammatory state and the presence of a known or suspected infection is a feature of neonatal infections and septicemia. Neonatal infections occur in the initial month of childbirth. The overall perinatal mortality rate associated with neonatal infections and septicemia is 40 per cent.

CHECK YOUR PROGRESS

5. The total global deaths from various forms of heart diseases is:
   (a) 16.7 million
   (b) 16.8 million
   (c) 17.8 million
   (d) 19.9 million
6. In year 2004, 7.4 million deaths occurred due to:
   (a) AIDS
   (b) Hypertension
   (c) Heart disease
   (d) Cancer

contd...

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7. According to the World Health Organization, the number of deaths on roads every day ?
8. What is diarrhoea?
9. In 1999, 5.5 million people worldwide died because of:
   (a) Stroke
   (b) Neonatal Infections
   (c) Lower respiratory tract infections
   (d) Rheumatic heart disease

3.4 DIFFERENTIAL MORTALITY

Just like differential fertility in which not all groups reproduce at the same rate, it is not necessary that all groups of people die at the same rate. This differential in the rate of mortality is termed as *differential mortality*. Difference in mortality indicates difference in health and well-being of humans.

Differential mortality can occur by age, sex, ethnicity, occupational category and place of residence. The various factors that are accountable for differential mortality are now discussed.

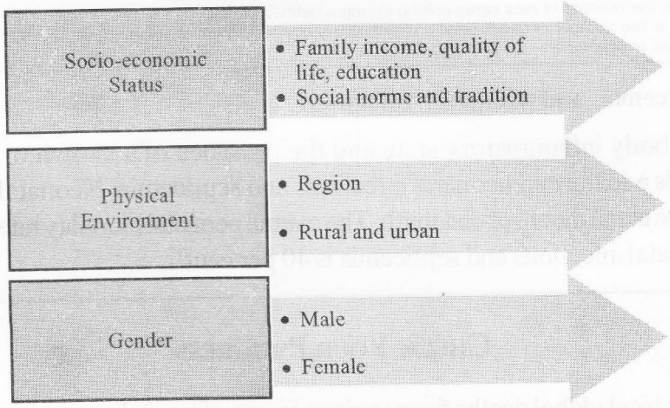

Fig. 3.3 Factors of Differential Mortality

(i) Socio-economic status

Socio-economic status includes family income, standard of life, education, belief and social norms and traditions covering age and sex. It has been noted that in all economically developed countries, the death rate among working age group has fallen. The main factor behind this is advances in the medical field and decline in mortality from ischaemic heart disease and other cardiovascular diseases. This difference in trends has been the most important single cause for the widening of the socio-economic mortality gap. The decline of various diseases in the upper-

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socio-economic group has been greater than in other groups because they have been quicker to adopt recommended health instructions and have had better access to new medical treatments such as coronary artery bypass, grafting and angioplasty.

The marital age and status of a woman also creates differential mortality. It has been noted that children born to women married at a young age were more likely to die. Children born in poor families are also more likely to die early compared to children born in rich families.

People from the upper socio-economic strata are more educated than those from lower socio-economic groups and have greater knowledge of medical science and innovations. Therefore, people of this class easily adopt new innovations in medical science, thus decreasing their rate of mortality.

In many societies, beliefs, social norms and traditions also create a difference in mortality. In Indian society, there is a big difference in the level of education between males and females. The country is based on various social norms and traditions and several religious practices, which has resulted in a wide gap between the position of males and females. In rural areas, the maternal mortality rate is among the highest in the world. From a global perspective, India accounts for 19 per cent of all live births and 27 per cent of all maternal deaths. The desire for a male child also increases the rate of female foeticide.

(ii) Physical environment

Physical environment includes geographical regions. It is a widely accepted fact that the rate of mortality differs greatly between regions and even between countries within the same region. Differential mortality is also visible between developed and developing countries, and between rural areas and urban areas. It has been noted that life expectancy of males and females, infants and elderly varies with place of residence. Most developed countries and urban regions have low mortality rates in comparison to underdeveloped and developing countries and rural regions. The differential seems to occur due to the adoption of education, advanced medical approaches and income disparity. The rate of mortality is also high in high altitude regions and low in low altitude regions.

(iii) Gender

The last but most important factor of differential mortality in a society is gender. In fact, it will not be wrong to say that the male-female difference is the most prominent factor in determining differential mortality.

Among men, cancer in the prostrate gland is a very common cause of death, something which is rare in women. For women, breast cancer or cancer in ovaries and cervix is widespread.

Behavioural differences also play a role in the differential. In Russia, for instance, there is greater mortality among men due to alcohol abuse, whereas for women it is much lower.

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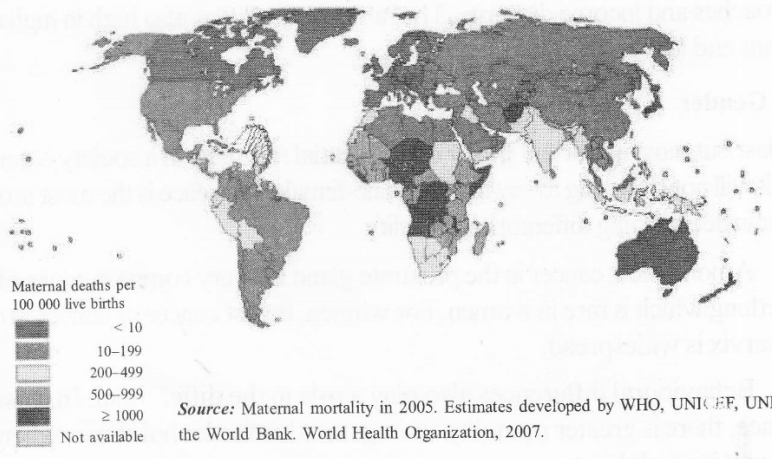
Check Your Progress

10. What is differential mortality?
11. Children born to women married at a young age are more likely to:
    (a) Live long
    (b) Die early
    (c) Die in childhood
    (d) Be immortal
12. India accounts for 19 per cent of all:
    (a) Maternal mortality
    (b) Stillbirth
    (c) Female foeticide
    (d) Live birth
13. Cancer is the second biggest killer for:
    (a) Females (b) Children
    (c) Elderly men (d) Males

3.5 CAUSES OF MATERNAL MORTALITY

Death associated with pregnancy is termed as maternal mortality. According to WHO, 'the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management is termed as maternal death.' The number of maternal deaths in 2005 was estimated to be 5,36,000 worldwide. It is estimated that 1,500 women die from pregnancy or childbirth-related complications everyday.



Source: Maternal mortality in 2005. Estimates developed by WHO, UNICEF, UNFPA and the World Bank. World Health Organization, 2007.

Fig. 3.4 Maternal Mortality by Country, 2005

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Causes of maternal mortality

Most maternal mortality takes place in developing nations and greatly affects women who come from poor, uneducated backgrounds or live in rural areas. This could be due to lack of information and infrastructure.

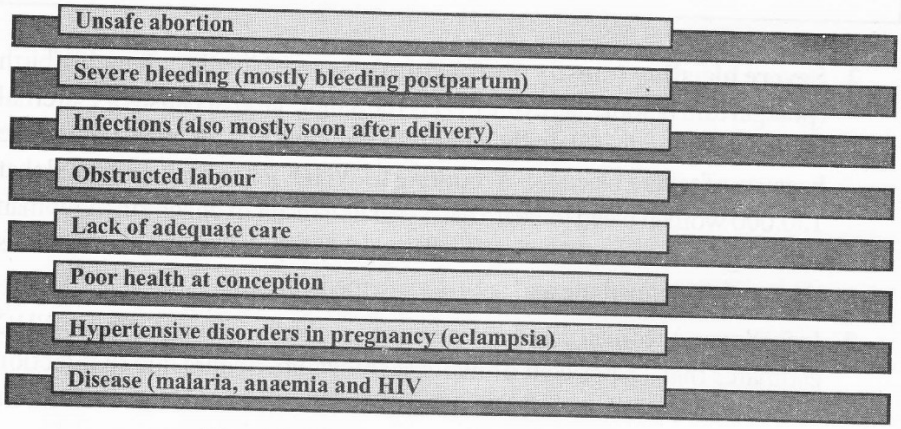
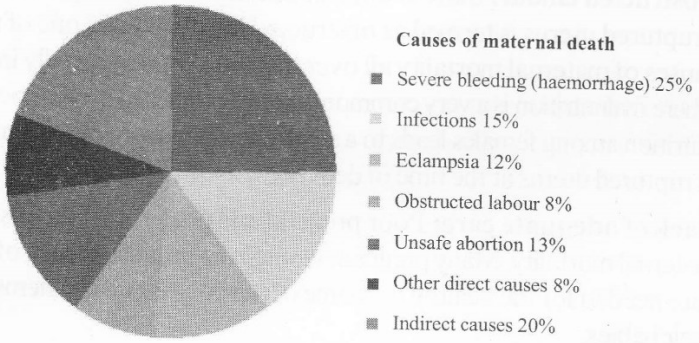


Fig. 3.5 Common Causes of Maternal Mortality



Source: The World Health Report 2005. Make Every Mother and Child Count.

Fig. 3.6 Ratio of Maternal Mortality by Causes

1. **Unsafe abortion:** Unsafe or illegal abortions put women's health at risk. Unsafe abortion usually occurs due to unregulated hygienic conditions and involvement of untrained or unhygienic methods. Worldwide, unsafe abortions account for 67,900 maternal deaths annually (13 per cent of total maternal mortality). The factors responsible for unsafe abortion include lack of female empowerment, inadequate contraceptive services, restrictive abortion legislation, poor social support and poor health-service infrastructure. The problems of unsafe abortion can be prevented with improved access to health services, including safe and effective methods of birth control and urgent gynecological care.

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Things to know

- In developing countries, the risk of dying from postpartum bleeding is 1 in 1,000 deliveries.
- In developed countries, the risk of dying is 1 in 100,000 deliveries.

2. **Severe bleeding (mostly postpartum):** Severe bleeding after childbirth (postpartum hemorrhage or PPH) is the single-largest cause of maternal deaths worldwide. Globally, about 25 per cent of pregnant women die because of severe bleeding. According to WHO, it has been estimated that 150,000 women bleed to death each year as a result of childbirth. A woman suffering from severe bleeding can die quickly (often within 2 hours) unless she receives immediate and appropriate medical care.
3. **Infections:** A woman dies from infections in childbirth every minute. WHO estimates that 15 per cent of maternal mortality occurs due to infection before delivery or soon after delivery. The infection could be tuberculosis or HIV-1.
4. **Obstructed labour:** Slow or difficult delivery due to puerperal infection or a ruptured uterus is termed as obstructed labour. This is one of the major causes of maternal mortality all over the world and especially in societies where malnutrition is a very common among females since childhood. Under-nutrition among females leads to a small pelvis among women which results in ruptured uterus at the time of delivery.
5. **Lack of adequate care:** Poor prenatal and post-natal care also leads to maternal mortality. Many pregnant women die because of lack of adequate care needed for the healthy outcome of the pregnancy for themselves and their babies.
6. **Conception in poor health:** Many women also die due to poor health at the time of conception. Often, women ignore their health at the crucial moment of conception without knowing that this may lead to serious health problems to mother, sometimes even causing to maternal death. According to, it has been estimated that 8 per cent of maternal death are caused by poor health of women at conception and due to lack of adequate care.
7. **Hypertensive disorders (eclampsia):** Hypertension is the most common problem encountered during pregnancy. It is defined as a systolic blood pressure of at least 140 mmHg or a diastolic pressure of at least 90 mmHg during pregnancy and postpartum. Approximately 30 per cent of hypertensive disorders in pregnancy are due to chronic hypertension. The symptoms of hypertension in pregnancy include pre-eclampsia and gestational hypertension. It has been estimated that 15 per cent of maternal deaths are caused particularly due to preeclampsia.

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8. **Disease (malaria, anaemia and HIV):** Various diseases such as malaria, anaemia and HIV are other, indirect, causes of maternal mortality. According to the United Nations International Children's Emergency Fund (UNICEF), 11 per cent of maternal deaths in Nigeria are a result of malaria.

   Anemia is another disease that is a major cause of maternal mortality in most developing nations. It is also a contributory factor to maternal deaths caused by hemorrhage, septicemia and eclampsia. It has been estimated that in 1990, 19 per cent of maternal deaths in India were related to anemia.

   Since 1998, HIV is an indirect cause of maternal mortality. It is becoming a major cause of maternal mortality in highly affected countries of southern Africa. The mortality rate among HIV-infected women is higher than that of HIV-negative women.

   Governments and many non-government organizations are taking steps to eradicate the causes of maternal mortality by organizing programmes and providing facilities to ensure that every woman is aware of the term 'family planning' and can have access to safe abortion techniques.

   Presence of experienced health professionals, especially at the time of birth, and skilled treatment can fill the gap between life and death, and reduce maternal mortality. Even if with the help of aseptic techniques, various diseases and infections can be eradicated or treated on time before they turn fatal. Drugs like magnesium sulfate can reduce a woman's risk of convulsions (eclampsia). Moreover, there are other medical steps which can reduce the maternal mortality rate. But most importantly, what women need to save themselves from maternal death is proper antenatal care during pregnancy.

Check Your Progress

14. Maternal mortality is a death associated with:
    (a) New born babies (b) Tuberculosis
    (c) Pregnancy (d) AIDS
15. In 2005, the rate of maternal deaths worldwide was recorded as:
    (a) 5,36,000 (b) 5,26,000
    (c) 4,36,000 (d) 5,36,200
16. HIV is becoming a major cause of maternal mortality in:
    (a) Southern America (b) Southern Europe
    (c) Southern India (d) Southern Africa
17. Annually, unsafe abortions account maternal deaths of:
    (a) 68,900 (b) 67,900
    (c) 67,980 (d) 66,960
18. Maternal mortality from obstructed labour is largely the result of:
    (a) Ruptured uterus (b) Puerperal infection
    (c) AIDS (d) Malaria

3.6 INFANT MORTALITY: CAUSES AND TRENDS IN INDIA

NOTES

The number of infant deaths is known as infant mortality. It is a measured by the number of infant deaths per 1000 live births in a particular year. Children under the age of one year are taken into account.

Table 3.6 *Infant Mortality by Region of Selected Countries in 2000*

Areas	Rate
World	57
Developed Countries	8
Less Developed Countries	63
Africa	88
Sierra Leone	157
Western Sahara	150
Liberia	139
Asia	56
Afghanistan	150
East Timor	143
Hong Kong	3.2
Europe	9
Iceland	2.6
Sweden	3.5
Albania	22
Romania	20.5
Latin America	35
North America (U.S, Canada)	7

Source: Population Reference Bureau 2001 *World Population Data Sheet*. Washington, D.C: Population Reference Bureau, 2001.

Infant mortality in India

India is diverse in terms of religion, language, culture and tradition, and level of progress, etc. In India, it has been found that the various parameters of demography, such as birth rate, mortality rate and fertility rate has remained high in comparison to many other developing nations and developed nations. It has been estimated that the country has among the highest infant mortality rates in the world. According to the United Nations Human Development Report, India was at 134th place in 2009.

The high infant mortality rate reflects the health situation among children and the standard of living. Clearly, there is urgent need for programmes and strategies to develop child and maternal health.