

NSS 312

PRIMARY HEALTH CARE NURSING II



NATIONAL OPEN UNIVERSITY OF NIGERIA

NSS 312: PRIMARY HEALTH CARE NURSING II**COURSE GUIDE****NATIONAL OPEN UNIVERSITY OF NIGERIA**

Family Health Care, Family Health Records, and Family Health Care in Old Age. Others include, Review of Reproductive System, Safe Motherhood and Childhood, Adolescence, Care of Girl Child and Women, Immunization Programmes and School Health Programme.

Course Guide

What you will learn

The family is a social unit. In this social unit, there exists an innate relationship between and among the individual members of the family. The health of each individual is affected by and affects the health of the individual with whom he/she is in relationship in a particular family or a group in which he/she lives.

Since you have to work closely with the families, you need to understand the concepts and principles of family health care, how family assessment can be made through family nursing process and what are the high risk families. You must also realize the importance of maintaining family health records and provide health care in old age.

Mother and child are one entity. In any community they form a large group. Our concern is to provide primary health care to all mothers before and during pregnancy, labour and after child birth and follow up care to child. Safe motherhood and safe childhood are important aspects in Primary Health Care. In order to provide efficient care to mother and child, you need to learn what is Maternal and Child Health (MCH), what are the physical and physiological needs at various stages of life? What are their health problems and how can it be prevented or treated.

These material has been put together to assist your understanding of Family Health Care and Maternal Child Health. It is hoped that with your background knowledge, the information here will enable you to develop the skill of providing effective health care to the family and community you serve.

Study Units

This course is made up of 12 units

- | | | |
|------|----|--|
| Unit | 1: | Concept and Principles of Family Health Care |
| | 2: | Assessment of Family Health Care |
| | 3: | Health Risk Families |
| | 4: | Nursing Interventions for Family Health Care |
| | | <ul style="list-style-type: none">• Family Health Records• Family Health Care in Old Age• Review of Reproductive System• Safe Motherhood• Safe Childhood and Adolescence• Care of Girl Child and Woman• Immunization Programmes• School Health Programmes |

Appendices.

NSS 312: PRIMARY HEALTH CARE NURSING II

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MODULE 1

UNIT 1

Concept and Principles of Family Health Care

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1.0 Introduction

The importance of family and family considerations become vividly important for a nurse while practicing in community health setting. Family usually involves a residence in which family members, friends, relatives interact with each other, that is, how human beings are influenced by each other, the phenomenon that is strong within the family setting. The common meaning, all over the world about family, is that family is a nuclear family unit which is structurally composed of a man and a woman who are married and have children. Different people have defined family in different ways and the definition reflects some thinking about the concept of family.

In this unit you will learn the concept, definition and functions of family and how family is considered as a unit of community health service. You will also gain an understanding of objectives of family health care and its advantages and principles. At the end you will also learn about health tasks family members perform, and plan family nursing care while working with the family in community health nursing field.

1.1 Objectives

In this unit you will learn about concepts and principles of Family and Family Health Care in community set up. After going through this unit, you should be able to:

- Define family as a unit of health service in community health List and. describe the functions of the family
- Describe the family as a natural and fundamental unit of community health nursing Services
- Explain how [family.is](#) considered as patient in community health nursing practice
- List the factors that affect the family and its functioning
- Describe the health tasks each family is performing
- List and describe the objectives and principles of family health care
- Explain how as a community health nurse you should work with the families in providing family health care.

1.2 Concept, Definition and Functions of the Family

1.2.1 Concept and Definition of Family

The interest in, and concern for, the health of the family as a unit in society has come about with the growth of understanding that the health of each individual is affected by and affects the health of the individuals with whom he is in relationship. Each person's most intimate relationships from birth are with the members of the family in which he or she is born and later as a member of the new family he or she helps to found for the rearing of another generation. Thus relationships in families are important for health. A 'family', as the word is commonly used, is a group of individuals who live together as a social unit usually, but not always, related by blood or social or legal

contracts (parents, children, relatives; servants, visitors, etc.). They live as a household usually under the headship of one senior member and share the same food and environment. Throughout history, although differing in form from place to place and time to time, there has always been this type of a social unit, and it has played a key role as a basic biological institution.. It changes and adjusts but remains central for reproduction, the rearing of children; the socialization of . individuals and the organization of roles.

This description is not a definition. A definition may vary with the purpose to which it is related. Thus the United Nations' definition of a family is 'those members of a household who are related to a specific degree through blood, adoption and marriage. However, for health purposes it is the 'household' which is usually more important (e.g., epidemiologically).

This social unit, family or household, has a life of its own, as a group has roles in which the individual members play their parts.

1.2.2 Functions of the, Family

The family is an active social unit always changing and always related to other families within the society of which it is a part. Its functions are complex and far-reaching, but specific areas can be described.

Table 1.1: Areas of Family Functioning-(WHO)

Biological	Psychological	Socio-cultural	Economic	Educational'
Reproduction and child-bearing	Emotional security of members	The transfer of values relating to behaviour, tradition, language and 'mores'	Acquisition of resources to fulfil other functions	Inculcation of skills, attitudes and knowledge relating to other functions
Rearing of children	Sense of identity for members		Distribution of resources expenditure, savings	Preparation for adult life
Nutrition of family members		Socialization of children		Fulfilment of adult role
Protection of health of family members at all ages	Maturation of person-ality	The formulation of norms of behaviour for all stages in development and adult life	Economic buffering of members of family	
Recreation for family and its members	Psychological protection			
	Ability to make relation-ships outside the family			

One possible grouping of these is into biological, psychological, socio-cultural, economic and educational (Table 1.1), and under each heading further analysis is possible. This table must, however, be recognized as a simplification for the purposes of description for each area, and each item within that area are related to and affected by all the others; all, affect family well-being, and many affect and are affected by the health of individuals.

All these items can be treated as variables affecting family health, and it can also be seen that the effects of different variables will vary through the chronological duration of a family.

Exercise 1

- 1) What do you mean by a Family ?

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- ii) List the functions of a family.

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1.3 Family as a Unit of Community Health Service

We spoke about the concepts, definitions and functions of family. Now we shall talk about family as a Unit of Service.

1.3.1 Family as a Unit of Service

In community health nursing practice family is considered as a unit of service because of the following reasons:

- i) Family is a natural and fundamental unit of society. Every individual in the community is the member of the family. Families throughout the world virtually comprise a community. Intimacy of contacts, social and legal obligations are because of family membership; structure and role of family members. The degree to which family can move as a unit to deal with their own problems can maximize the potential of each of its members. This will also influence the capability of the family for dealing with their own health matters. That is why quality of the functioning of the family is of central concern for the community health nurse.

- ii) The family as a group generates, prevents, tolerates or corrects health problems within its membership. Health problems may be caused because of family behaviour or relationship. For example diseases may be transmitted because of lack of knowledge or the style of family living. Improvement in the health behaviour may contribute in treatment and prevention of further spread of disease. Similarly diseases or defect may be transmitted in the family because of emotional imbalance and correction in this imbalance may facilitate treatment and prevent illness.
- iii) The health problems of family are interlocking. The health of any family member may affect health of others. For example, the toddler child who is sick in the family may have its effect on mother's health or the person who is caring for the child because of extra effort involved or disease transmission.
- iv) The family provides crucial environmental force, each member of family constantly interacts with other members and the environment.. The individual responds in its own ways and affects family environment by his own presence. Each person in the family serves to reinforce, to preserve or to modify the existing physical environment which finally strengthens or weakens the cohesiveness of family as a unit and functioning of the family in its environment.
- v) The family is the most frequent locus of health decision and action in personal care. The health decisions are most often taken by members of the family. It depends who is directing in the family, influences the decisions for health actions. For example, the father may influence mother's decision to receive proper immunization of child or grandmother may influence child rearing practices or encourage home remedies. The family is also a frequent provider of health care. Care of person with minor ailments, long-term illness, pre and post hospital care for acute illness are generally provided at home by the family members. Hence, the ability of the family to provide nursing care for its members is an important factor in health care.
- vi) The family is an effective and easily available channel for most of the community health nursing effect. The family becomes the means of extending a nurse's influence to those members whom she cannot personally see. Through family approach she is able to reach all the members of the family.

So the community health nurse may consider [family as](#) a unit of service just as a clinical nurse in the hospital setting may consider an individual patient as a unit of service.

1.3.2 Family as a Unit of Community Health Nursing Practices

Community health nursing services will depend upon the type of the family and its membership or the needs [reflected by](#) the family. These will depend upon how family presents as a unit of community health nursing service. Let us discuss further.

The family is a product of time and place:- Family is a universal phenomenon. The type of family and how family is organized will vary with time and place, increasing technology and urbanization encourages both parents as wage earners. The economic function of family may be subordinated to its social function whereas in agricultural village of developing country the family may be organized as an extended group with clearly defined roles. Family size is also affected by social conditions. It increases in good times such as rise of economic level, and falls in poor times such as war or death of the wage-earner.

The family develops its own life style:- Each family develops its own set of values, its own pattern of behavior and its own style of life. Families develop their own power systems for decision making which may be balanced. In balanced power system of family, the father, mother and children have their own areas of decision and control. Sometimes it may be biased and one of the members gain dominance over the others. These may reflect their role in the family.

The family operates as a group:- The family develops its own ways of operating and dealing with common problems. Some families discuss the problems, whereas other do not. Some families may give up when trouble strikes and wait helplessly for something to happen or someone to care and help them.

The family accommodates the needs of individual:- Each individual is a unique human being. Sometimes individual and group needs and family needs find a natural balance. In some families, members accommodate each other's needs. In some families, members do not easily accommodate, then conflict, results.

The family relates to the community:- The family utilizes the community institution &f and contributes whatever it can for community's betterment. Some families may feel more responsible than others to the community.

The family has its growth cycle:- Families have their own growth cycle. When a couple gets married, generally children are born, and new parental tasks arise. They provide guidance and enable their children to live independently. After children have grown and moved away, the couple readjusts to difficult period. They face retirement and try to cope with special problems of ageing.

To sum up the family is the unit to which community health nursing is most-often addressed. Family is the group in which action of any family member may set off a whole series of reactions within a group. These reactions may be supportive factors toward members who are sick or in need of health care.

Exercise 2

- i) Explain how health problems of the family are interlocking?

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- ii) How is family considered as a unit in community health practice?

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1.3.3 Factors Influencing Family Health

The state of health or well-being of a family at any given time or a family's capacity to reach a state of family health is determined by the interaction of many factors both outside and inside the family which have beneficial or adverse effects. The total effect at any given time can be considered as the algebraic sum of these positive and negative forces.

These factors which together make up the families' total environment may be set out as follows:

a) Environmental factors

- i) Climate, water supply, air, terrain.
- ii) The biological environment, animals and all living things.
- iii) Man-made physical environment-character of buildings, noise, space, sewage disposal, etc.

- b) Family factors influencing physical or mental health**
- i) Family structure and type, number, age, relationship, family type.
 - ii) Biological characteristics and each member's genetic, prenatal, nutritional, physical and mental health.
 - iii) Cultural patterns, family dynamics and roles, coping and behaviour patterns.
 - iv) social class or status, value systems; religious belief; occupation of wage earners, skills, social habits.
 - v) Economic status.
- c) Ethnic and geographic factors, migration, racial minorities, etc.**
- This total environmental system forms the framework within which the needs of families and therefore the support systems are determined for; both the nuclear and the extended family.

Knowledge of these factors can help you to identify the health-illness factors that affect family health. Insensitivity to these factors may create a situation in which misunderstanding may lead to a breakdown in communication between the nurse and the family. For example, if a woman is anaemic during pregnancy knowledge about dietary.

1.3.4 Health Tasks of the Family

The health tasks that the family performs are of primary concern for you as a community health nurse. The tasks of the family include the following:

- **Recognizing interruptions of health development:** The family monitors illness or failure to thrive and this recognition will facilitate healthful development.
- **Making decisions for seeking health care:** Usually the family is the first to recognize any deviation from normal health and when necessary family members must take decision about utilizing health care system.
- **Dealing with health crisis:** Crisis are inevitable in any family. Severe illness, death, child bearing and hospitalization are crisis situations and affect the health of the family.
- **Providing nursing care to sick or dependent members of the family:** Care of sick in the hospital or at home is done by the family members with the help of the health team.
- **Maintaining healthy home environment:** Home should be clean, safe from hazards like fire, accidents, falls, etc. The place for play and recreational activities should provide emotional and social environment conducive to development.

The family health tasks are of great importance and you as a community health nurse must be deeply concerned with increasing the capability of each family to be responsible for their own health. This is what we call self-care approach.

Exercise 3

List the factors which influence the health of the family.

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1.4 Family Health Care

For providing comprehensive nursing care to family, you as a nurse should understand the objectives of care, principles of care and its advantages. These are discussed in the following subsections.

1.4.1 Objectives of Family Health Care

For providing comprehensive nursing care to family, the objectives which should be kept in mind are the following:

- i) to discover and appraise health problems through combining community health, nursing efforts with those of other professional workers serving the family and the community.
- ii) to ensure family's understanding and acceptance of the problems. The family should recognize what are their health problems and should be made to accept these problems.
- iii) to provide nursing services that the family needs and that it cannot provide for itself.
- iv) to develop the competence of each individual member of the family to think through and cope with his or her own problems.
- v) to contribute to personal and social development of the family members.

- vi) to promote full and intelligent use of available facilities and services for medical care, health promotion, illness prevention and for related social and educational facilities.
- vii) to bring to the family an understanding of non-nursing health services within or outside the agency in which the community health nurse is working and to provide the families with the necessary information and education to use resources wisely and fully.

1.4.2 Principles of Family Health Care

Community health nurse should keep the following principles in mind while planning and implementing family health care:

- Establish professional relationship with the family in which the role of the nurse and the role of each member of the family in health development is clear, unambiguous and accepted by everyone.
- Help the family to help themselves and provide guidance to the family to identify their health needs in making plans to meet their needs.
- Collect information about the size, occupation, education, religion, custom and tradition etc. of the family
- Identify the health problems of the family and set priorities.
- Provide need based support to the family to improve their health status instead of routine services.
- Each member of the family must be given health care irrespective of sex, age, earning capacity and being head of the family or otherwise. This is a very important factor affecting health of the mother and children. who are often not earning members of the family and have lower health status as compared to men (father and boys).
- Care to the family provided by different health agencies (government, non-government, and different voluntary agencies) need to be coordinated and overlapping of services need to be avoided. This is in order to save time, energy, manpower and financial resources.
- Provide services which are preventive in nature so that the family members are maintaining good health and this would help to minimize the need for curative services.

- In every contact with the family, communicate the health messages that are important for them to know and practice.

1.4.3 Advantages of Family-based Care

The community health nurse who provides comprehensive health care to the community should provide family based services. It is advantageous to plan family based care because of the following reasons:

- Knowledge of the family background makes it easy to understand health care needs of each member of the family.
- All family members can assist in preparing a plan to provide health care to a member who requires special health care services.
- Family based care provides the opportunity to give health care to an individual member as per pre-determined schedule.
- It is economical as it saves time, man, money, material and resources of health services.
- Overlapping of services and deficient services can be avoided.
- It helps the family to be self-reliant in meeting the needs of its members, and in improving health, welfare and nutrition of the family.

Exercise 4

List the advantages of providing family based care.

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1.5 Nursing Process in Family Service

For the community health nurse (CHN), working with the families can be rewarding. The family as a unit is the focus of care for community health nurse, regardless of the identified client. To do any work with the families, the tool of preference is the nursing process which can be implemented at primary, secondary and tertiary level of care. Working with families is a long-term process. The steps in Nursing Process for the family are explained below:

- i) **Identification of Needs:-** The extent of involvement with the family members will depend upon their expressed needs, both individually and collectively. The needs are identified by the nurse. The community health nurse interacts between the individuals to become familiar with their structure and function of family unit and factors that influence it, for example, culture, religion, environment, communication channel, health, individual roles, extended family, network and problem-solving skills. The assessment of needs is not possible until these factors have been considered.
- ii) **Assessment of the Family:-** Assessment of the family takes time. Data are gradually collected by you as a community health nurse and the family working together. The functional family assessment will help the community health nurse to know how a member of the family works and interacts with other family members. This assessment will help in the family nursing diagnosis and also help in the establishment of goals for nursing interventions.
- iii) **Nursing Interventions:-** Nursing interventions should focus on maintenance of health morbidity care both psychological and physical care, crisis intervention, referral, consultation, teaching and follow-up. Anticipatory guidance may be provided as one moves from one developmental task to the other. When these developmental tasks create family crisis, early intervention is required. Nursing assessment has to be included in the review of developmental tasks. Health education will allow the family members to anticipate behaviours or activities that accompany development -progression. The community health nurse should keep in mind that the needs of both the family and the individuals are important. One member may be hypertensive, another an antenatal mother, a child may have difficulty in adjusting with school and yet another may be an adolescent. Each of these members have needs related to health care and are likely to collectively affect on functioning of the family. By knowing the family and having systematically collected, recorded and interpreted assessment data, the community health nurse will be able to provide the comprehensive care required.

The community health nurse dealing with health, needs of the family, needs to refer some members who require special case or need to use other agencies. Knowing the resources of the community will help her to serve her clients well. Referral and follow-up care will provide basis" for satisfaction with the service and care given.

Working with family focuses on the maintenance of the integrity of the family unit. The major priority is, providing services that will allow the family to grow and remain healthy. Through nursing process the community health nurse is able to meet primary, secondary and tertiary needs of the family, individual and the community.

- iv) Evaluation and feedback: In the process of working with the families, the community health nurse is interested in evaluating the impact of nursing intervention planned or carried out for health promotion of the family members. It is rewarding to see that members of the family have improved health status or have become self-reliant for their own problems. This will also be a step towards improving the care given to the family or to further plan work with the families for some of the unmet needs of the family.

Exercise 5

What are the steps of Nursing Process you should take while working with the family in the community health nursing field?

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1.6 Summary

We have seen that the family unit is the focus of care of the community health nurse regardless of the identified individual client. The extent of involvement with the family members will depend upon their expressed needs, both individually and collectively, and the needs identified by the community health nurse. Working with families is a long-term process that allows the community health nurse to interact with individuals and become familiar with the structure and function of the family unit and factors that influence it. These are environmental factors, family factors and ethnic and geographic factors. No* accurate assessment is possible until these factors have been considered, since family is the unit of care in community health nursing. Identifying strengths, weaknesses and characteristics, setting goals and implementing nursing interventions will assist the community health nurse in meeting primary, secondary and tertiary needs of the individual, the family and the community.

1.7 Keys to Exercises

Exercise 1

- i) Family is composed by persons who are united by marriage, blood or adoption and who constitute a single household and interact with each other in their societal roles and maintain a common culture.
- ii)
 - Biological
 - Psychological
 - Socio-cultural
 - Economic
 - Educational

Exercise 2

- i) By the statement, health problems of family are interlocking we understand that health of one member of the family affects the health of other members of the family. For example, a child sick in family affects the health and well-being of person or mother who is caring for him.
- ii) A family is a unit of a community. Therefore a family is considered as a unit of community health service:
 - has its own life-style
 - operates as a group
 - accommodates to the needs of individual members
 - relates to the community
 - has its own growth cycle.That is why all community health actions are directed through family to the community.

Exercise 3

Some of the factors which influence the family health are:

- socio-economic status
- cultural factors
- environmental
- ethnic factors.

Exercise 4

- Knowledge of family background makes it easy to understand health needs of the family.
- All family members can contribute towards care of the person who needs it most.
- It is economical and saves resources of health services
- overlapping of services can be avoided.

Exercise 5

- Identification of Needs
- Assessment of the Family
- Nursing Intervention
- Evaluation and Feedback

UNIT 2**Assessment of Family Health Care**

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2.1 Introduction

Measurement of health against its minimum norms/standards points out the presence. or absence of specific health need of the individuals and the family. Norms or standards are available on different aspects of health, for example weight, height, head, arm and chest circumference, physical appearance, eye sight, haemogram or other bio-chemical measures at different age and status of individuals. These norms are set at local, national and international level by field experts as a result of research work done.

Assessment as the initial step of the nursing process, forms the foundation of determining health needs. Content of assessment, its sources and techniques

vary as per the client or the purpose of assessment. As in the-previous unit we have discussed family nursing process to be a tool for working with the family and the first step of family nursing process is also family assessment. In this unit you will learn how to do family health assessment and record family assessment data. You will also learn how to do health assessment for individuals.

2.1 Objectives

In this unit you will learn about family health assessment. You will also learn about how family assessment data is used for family health care and nursing intervention. After going through this unit, you should be able to:

- Define assessment
- Explain purposes of health assessment
- List and describe the indications and types of family assessment
- Describe what should be included in family assessment
- Describe family health assessment skills
- State the importance of assessment data for any family nursing intervention
- Describe the various types of individual health assessment
- Describe recording of health assessment data.

2.2 Health Assessment

We shall discuss about definition of assessment and purposes of health assessment in the following subsections.

2.2.1 Definition

Assessment is a continuous process which becomes more accurate as knowledge of the consumer deepens. Nursing assessment is the continuous, systematic, critical, orderly and precise method of collecting, validating, analyzing and interpreting information about physical, psychological and social needs of an individual, nature of self care deficits and other factors influencing the condition. Community health nurse will concentrate on only these needs which can be influenced by nursing intervention. For example when family assessment is done, we find out about physical, psychological, social needs and health deficits of its members and based on these information nursing interventions are planned. An infant whose needs are identified during health assessment lead to nursing actions during next visit of the family.

The information collected during assessment would benefit the individual by allowing a comparison of parameters with norms or standards and make a

more accurate diagnosis. For example, if we take weight and height of a toddler we can compare it with standard weight and height to know about growth and development of the child.

2.2.2 Purpose

The purpose of health assessment is to collect information about the health status, identification of latent disease or problem screening of speck type of disease or problems and follow-up care. Different terminologies have been developed to describe the act of health assessment, such as physical examination, health appraisal, check-up and screening examination. These assessments generally includes history, physical examination, and routine laboratory tests. Follow-up visit or record is used to assess the progress of family member's health status. Health assessment points out the health needs at the specific point of time.

You as a community health nurse need to assess the family in order to identify the health needs, establish a working relationship, set up priorities, plan, implement and evaluate care. Assessment of the family includes many of the same skills and data that you as a community health nurse use to assess individual clients, though the content of assessment data is different. For example, assessment of family includes identifying health needs of individual members of the family, like sick persons, ante-natal women or an infant who require special care. Depending on assessment data nursing interventions are planned and implemented.

2.3 Family Assessment

You have to spend a lot of time in making family assessment. You have to see which family should be assessed first or should be given priority. This will be discussed now.

2.3.1 Indications

Some indications of family assessment are given below:

- A family experiencing emotional disruption caused by family crisis such as acute illness, injury and death etc.
- A family experiencing emotional disruption caused by a developmental milestone such as birth, marriage, youngest child leaving home, etc.
- A family considers a situation as a problem such as the presence of a member with chronic illness or a previous child acutely ill.
- A family member is sick because of family dysfunction.

In situations where crisis of the family is due to psychiatric disorders or the family members do not want family assessment to be done, the community health nurse should never undertake the assessment.

2.3.2 Guidelines

When you as a community health nurse decide to make family assessment. You need to decide when, where, how and by whom assessment will be done. You need to decide who all from the family members should be present during the assessment. These are all critical decisions that are to be taken by you. Although it is not necessary for all the members to be present at one time, but it is recommended that all members of the household should be interviewed at least once. In this way, the community health nurse can obtain each family members perception of the situation. When more than one family member is present more information can be gathered. This also gives an opportunity to bring all family members together to discuss over an issue.

A family assessment can take place anywhere in the family. This can be in the living room, or the patient's bed room or in the community health agency. There are advantages and disadvantages of conducting initial assessment in either of the settings. It is, therefore, up to the community health nurse to carefully decide or select a setting for starting family assessment and make changes wherever required, depending upon the situation at hand.

Assessment at home gives you an opportunity to meet the family members of all the age groups. This also gives a chance to meet members of family such as grand parents. The community health nurse can experience the family's social environment and observe first hand the physical environment. This also gives you an opportunity to observe the interaction among the members of the family. That is how all the aspects of family assessment such as structure, developmental tasks and functional areas can be done.

When initial assessment data are collected, it is important to device a system for recording the data gathered during assessment.

2.3.3 Categories

Categories of family assessment are diagrammatically given in Fig. 2.1. Factors that need to be assessed are given under three major categories.

- a) Structural,
- b) Developmental, and
- c) Functional.

These categories are such divided further to enable you to decide on a specific factor for initiating assessment of a family. This will give you a starting point to explore further. Let us now study the categories in detail.

A Structural Assessment

The nurse determines who is in the family and what connections they have within the family and with individuals outside the family. This family structures can be examined under: **i) internal** and **ii) external**.

These internal and external family structures are described below:

Internal Structure: Internal structure of the family includes four sub-categories, that is:

- i) family composition,
- ii) rank order,
- iii) subsystem, and
- iv) boundary.

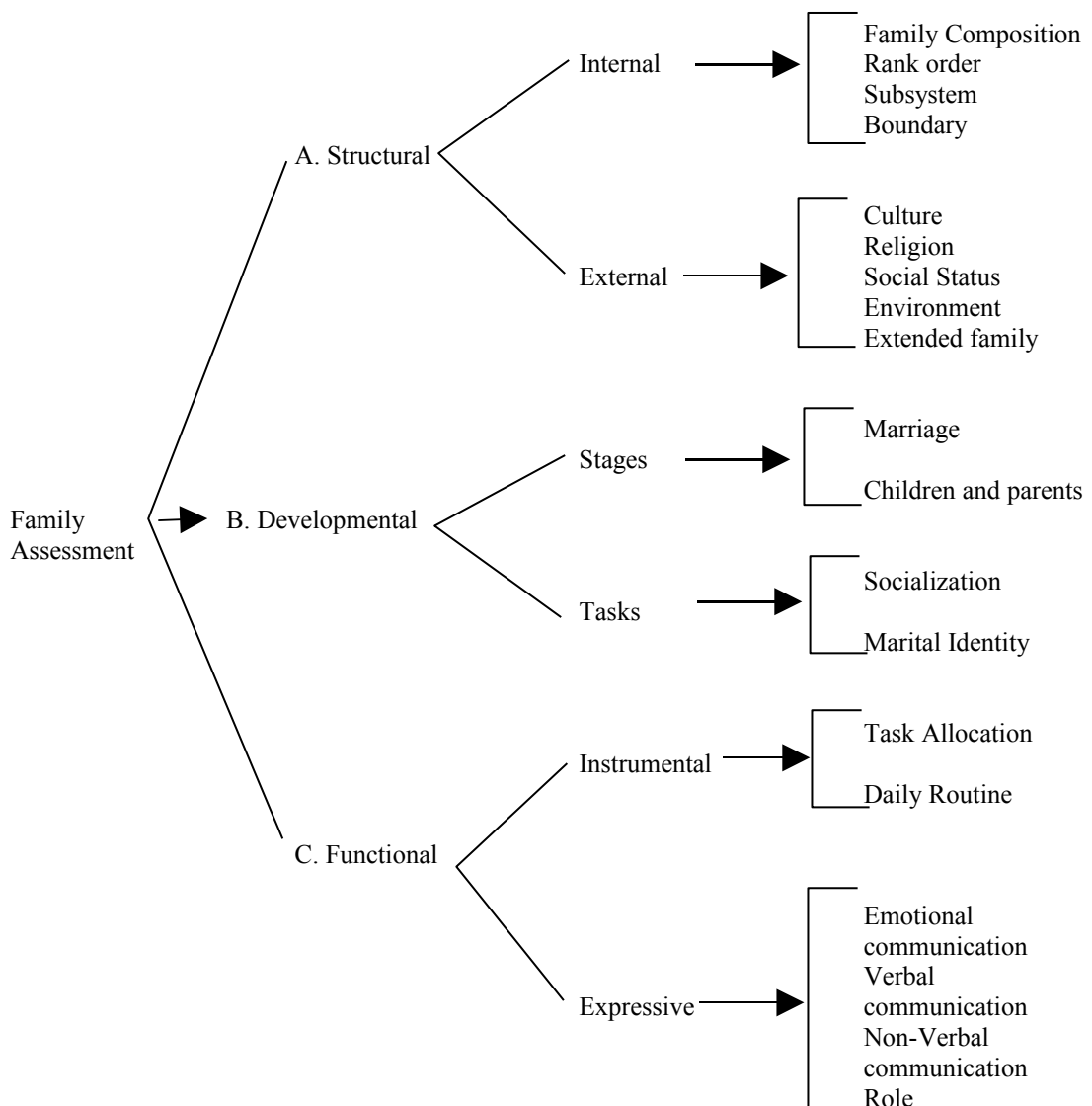


Fig. 2.1: Family Assessment Categories

Family composition refers to all the members of the household. In a family the attributes of affection, loyalty and durability of membership determine family composition.

Rank order refers to the position of children in the family with respect to age and sex.

Subsystem is a term which explains how the family functions. For example, the husband-wife relationship, the mother and child relationship and functioning in the family.

Boundary refers to defining who participates and how in the family. Boundaries can be diffused, rigid or appropriately permeable. As boundaries become diffused, the differentiation in the family system decreases. For example, the family members are more emotionally close and have a sense of belongingness to disengagedness. That is why clear, permeable boundaries permit flexibility. For example, when family members interact with each other share their duties and responsibilities depending upon their role in the family. Mother may go out to work and earn for the family or husband may contribute towards household responsibilities and child rearing. That is how flexibility is found in the families.

External structure: The family must be viewed within the context of a broader system such as neighbourhood, community and country. In the external structure, five categories are included as given below:

- i) culture
- ii) religion
- iii) social class status and mobility
- iv) environment, and
- v) extended family.

Culture reflects the way of life of a group of people. It is important for the community health nurse to understand the cultural pattern, ethnic identity, etc. of the family. This type of information can be valuable while working with the family.

Religion reflects family values, size, health care and socialization practices.

Social class status and mobility explain family value system. Educational attainment, income and occupation reflect social class. The social class of an individual and family will explain family development like mobility from rural to urban.

Environment refers to all aspects of the larger community. Environmental factors such as space, privacy; accessibility of schools, recreation and public transportation influence family functioning.

Extended family refers to family of origin and family of procreation as well as the present generation and step-relatives. Loyalty of extended family may be invisible but may be an influential force in the family structure.

B Development Assessment

The community health nurse requires to understand how a particular family reached to a particular stage of development. You may be familiar with the term child development. Similarly all other members of family also develop as per the tasks or functions they are to perform like marriage, having children, occupation, etc., and the stage of life cycle they are in. Difficulties and contradictions are inherent in progressing through any of the family life cycle or stages. As family is a complex system, this deals with many developments at once. Developments are to be in the biological, psychological, sociocultural, economic and educational areas of family functioning. Healthy family life is seldom smooth, and is ever changing. Stages and development in the family life cycle are useful to assessment, as these affect the functioning of the family. For example, marriage, children, education of children, independence of children with respect of living and earning are the development of family which are commonly seen. In today's society, several factors influence family developmental cycle like separation, divorce, the size of family and single parent family have all its impact. Whether marital breakdown be sudden or over a period of time, lot of efforts are required to restabilize the family and proceed on normal developmental course.

C Functional Assessment

Functional family assessment is concerned with details of how individual members behave with one another while performing their family functions: These can be subcategorised as

- i) Instrumental
- ii) Expressive
- iii) Roles

- i) **Instrumental family functioning:** deals with members performing the task allocated to them at a point of time and place within the family by some other members of the family. These could be specific task allocation with reference to a particular time and place. The normal daily routine functions for living, are bathing, clothing, cooking, eating and sleeping etc. These may be mechanical and routine activities. However to assess health problems this is an important area.

When one member in the family becomes sick and that person has to be cared for routine daily activities: for living and the specific task allocation of caring for the sick person becomes a problem situation and has its impact on the health of the individuals, i.e. the sick receiving care and the person giving, the care. This functional assessment is called instrumental functioning assessment.

- ii) **Expressive family functioning:** deals with the emotional communication and beliefs of the members. Emotional communication refers to feelings like sadness, anger and happiness. These could be expressed verbally in direct communication within the members or non-verbally through body position, eye contact or gestures.

Beliefs refer to expectations and attitudes that the family possesses. These also have to be noted for assessment.

The proximity of distance of living between family members is a good example of a family's ability to solve its own problems.

- iii) Roles in the family establishes the patterns of behavior of the family members. Many of the traditional roles of the family members are changing with such changes like women going to work for earning leading to her changing role in the family. The community health nurse needs to know how the family members cope with their roles. Roles are there for which society- at large generally agrees upon as norm. Examples include the role of the mother, father, husband or friend. These reflect the pattern of behavior in specific family setting.

We have discussed various aspects of functional family assessment. The community health nurse can have a diagram of the family tree when she is, doing all the three categories of assessment described above-structural, developmental and functional. In order to obtain in-depth assessment, you may explore in detail, any specific area within each of these three categories.

Exercise 1

- i) What are the purposes of health assessment?

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- ii) What aspects are taken into consideration by the Community Health Nurse in the structural assessment of the family?

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2.4 Family Health Assessment

2.4.1 Skills

To undertake family health assessment, you have to use certain assessment skills. Following are the examples of some of the assessment skills for assessing the family or an individual:

Observation/Inspection

In making observation of the individual client, the nurse uses the senses of sight, sound, smell and touch. For example, what does the wound look like? Is the areas around the wound warm to touch? Similarly, for family it may be the size of house where they live or what kind of drainage system is there? Is there any foul smell from the drainage or garbage around? What type of environmental noise pollution is there?

In the above examples, we have seen that she has to use senses like sight, sound, smell, [etc. to](#) undertake assessment. In this assessment, sense of touch may be more or sense of feeling that is the feeling one gets about a family. It is the warn atmosphere, friendly or hostile nature of the family members, etc. which help us to assess the needs of the family or affect planning of-family nursing intervention.

Auscultation, palpation, percussion and collection of vital information

The nurse uses the skills such as auscultation, palpation, percussion to determine or describe the functioning of vital systems like: What is the blood pressure? Are the peripheral pulses palpable? Can she differentiate between the borders of the liver and fluid in abdomen by percussion? Similarly, the community health nurse collects such vital information about the family in form of biostatistics that describes the health status of the family. Information like birth, death, "sickness and illness or disease are the vital information about a family. These information help us to indicate the occurrence and distribution of health problems in the family among family members.

Laboratory values

Laboratory values are those values which help us to assess physiological or pathological changes. For example, hemoglobin, blood test for malaria, typhoid or throat swab culture. These assist the nurse to physiologically verify the impressions from the assessment or give direction for additional assessment like: what is the hemoglobin level, blood glucose level, etc. or the type of infection present in an individual. For example stool test will indicate worm infestation or infection.

Identification of family needs and problems.

What is an individual's thinking and feeling? What are the perceived health problems and ability to cope up with the problems and need for health services? What resources and support system is available to deal with the health problem? The community health nurse collects information about beliefs, values, perceived needs and goals of the family about health and life style. What is the attitude of family members towards health? The history of health problems, cultural values like girl's education, girl child, etc., psycho-social values like purdha system, daughter-in-law or mother-in-law relationship are extremely important in determining the priorities and appropriate alternative or interventions. In order to have impact on the family health problems, the nurse must assess and develop an understanding of the decision making system within the family. It is also important to understand how the family takes decisions and how interaction takes place among the members of the family.

Exercise 2

List the skills which are used for family health assessment.

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2.4.2 Recording Data

The recording system- depends mostly on the health agency's philosophy or style of nursing practice. In most of the agencies the recording system is comprised standard forms or formats. The community health nurse must distinguish what has been observed and whether inference of these information may be supplemented or modified depending upon need of the agency. It is recommended to avoid excessive details as data may become complex and difficult to comprehend.

The community health nurse can also identify family strengths and weaknesses or problems of the family. The strengths of the family can be used effectively to enhance family life or to cope with family problems. Listing of strengths and problems is a useful working tool that provides summary of family assessment. The community health nurse should summarize family assessment. Intervention plan are developed from strengths and weaknesses or problems identified by the community health nurse. The community health nurse needs to set priorities with families and start working with the priority issues of family assessment data which serve as a guideline for nursing interventions of family nursing care.

2.4.3 Interpretation Data

The community health nurse compares assessment data with certain norms and standards, like morbidity, mortality, growth and development of children and health status of antenatal women, etc. These comparisons will indicate if family health status is getting better or worse. What are the strengths as well as the limitations of the family? What is the development status of the family? How well is the family able to provide for basic needs of its members?

These data collected from the family are significant and are of primary concern for the community health nurse. At this stage, you must have realized that family assessment is the evaluation of the entire family system. The assessment is less on the individuals and more on the interaction among the individuals within the family, because family is viewed as interacting members. Community health nurse monitors and interprets information aspect like environmental sanitation, family life style, sanitation of the house, etc. which have impact on family health or may contribute towards changes in physiological values.

In conducting family assessment, the community health nurse operates under the assumption that individuals are best understood within their immediate social context. The individual's relationship with other family members and other members of the community is important information for family assessment. .

The evaluation of these interactions is the main thrust of family assessment. Once assessment has been completed, the community health nurse must decide whether intervention is indicated. Families have a developmental life cycle; their patterns of interaction can change over times; and it is upto the community health nurse to decide whether a particular problem, a need or risk should be approached within the context of the family. That is why, the indications for family assessment should be considered while planning to undertake it.

2.5 Assessment of Individuals

In assessing individual family members or other clients who will be receiving community health nursing services, the following general areas are of concern to the nurse:

- Health history
- Physical status
- Psychological status
- Nutritional status
- Life style.
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The information is mostly gained through subjective information from the client and observations by the nurse. The nurse then processes all the data, evaluating these by the nursing judgment and the perspective gained from knowledge and experience, and compiles the assessment. It includes information about individual being assessed on aspects like main complaints, present health status or illness, past history, family history, personal and social history. The present health status will include information on what health problem, the patient is facing now, what has happened since it started and its relationship with other factors. The past history which will include previous physical, mental, social or psychological problems faced, and any after effects of these problems. It is not necessary to pay much attention to past health conditions if these have been resolved and have no potentials for affecting present and future health status. The family history includes any genetic predisposition to a disease. The personal and social history will include: habits, occupational history like type of employment and whether it is leading to stress or strain, education, religion; cultural influences, any exposure, to communicable disease, relationship with other members of the family, mental and emotional status, socio-economic status and ability to meet the basic needs. Physical health assessment helps to know the general health of an individual, and nutritional and life style assessment helps to know how it affects health and well being of an individual. Now we will discuss how you can do physical, nutritional and life style assessment because these are the major areas of concern in individual health assessment.

2.5.1 Physical Assessment

In assessing the physical health status, the community health nurse will examine and observe the client and will secure subjective information relating to clients perception of his/her health status. During physical assessment, the community health nurse can assess the client's state of hygiene and general level of body care. The physical observation will include general systems like appearance, body weight, skin or any other general

systems. It will also give an opportunity for observation of eyes, ears, nose, throat and specific systems like cardio respiratory, gastro-intestinal, genito urinary, musculoskeletal and psychophysical status. Physical assessments is mostly carried out in screening clinics, school health clinics or occupational health settings. In home care situation, the community health nurse is responsible for reporting changes as observed during physical assessment. Physical assessment skills are developed and need practice which will be dealt with in detail in practical part of this course.

2.5.2 Nutritional Assessment

Nutritional status is assessed through observation of client and subjective information about the patterns of food intake. This can partly be carried out during physical assessment like obesity, malnutrition, dehydration, poor skin colour or hair and bone deformities and other symptoms of impaired nutritional status like deficiency symptoms. It is also useful to get some more information regarding the condition under which food is stored or handled. You as a community health nurse would be concerned about the nutritional value and the quality of food consumed. Many individuals continue to take junk food because of lack of knowledge and motivation. Nutritional assessment provides the bases for any health education related to nutrition and periodic assessment which can be used for measuring the effectiveness of health education.

2.5.3 Life-style Assessment

Assessment of life-style provides the community health nurse with information about the client's values on health as well as his/her beliefs about positive and negative forces that affect health. By understanding what is more important to individual than health, the community health nurse can find out methods of eliciting behaviours which require change and encouragement towards adopting healthful practices. In assessing the individual's life-style, the community health nurse wants to know:

- habits and routine of life, sleep and rest patterns,
- occupation,
- level of -stress and manner of handling stress,
- hobbies and diversions,
- level of dependence on alcohol, coffee, drugs etc.

The environment in which the individual lives and works reflects or contributes to his/ her life-style. The community health nurse wants to know, if the environment is safe and healthful or is it a constant source of threat to, the physical and emotional health of the client. Assessment of individual members of the family who requires the care on priority basis guides the

community health nurse in formulating the plans of the family. Family assessment provides the basis for future planning and nursing interventions with individual member of the family. Community health nurse is able to make nursing diagnosis and identify health problems for which nursing intervention is appropriate and. _ those which require use of the resources:

Exercise 3

- i) What aspects are included in individual health assessment?

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- ii) Explain nutritional assessment.

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2.6 Summary

In this unit you have learnt about assessment and purposes of doing health assessment. Health assessment requires skills to be learnt for assessment at any level like family, individual or community. Family assessment requires in-depth information regarding the family. During assessment, objective as well as subjective information is collected about the family, and individual member. This unit also gives details about individual assessment which when compiled for different individual family members is family assessment. For community health nurse family assessment is the key to nursing diagnosis and planning nursing intervention.

2.7 Glossary

Diffused	:	Spreading widely or thinly or not concentrated
Permeable	:	Admitting passage, ideas that flow through people to other people.
Disengaged	:	Not occupied, free from engagement or involvement
Mortality	:	Number of deaths
Morbidity	:	Number of people sick or information about disease conditions.
Inherent	:	Existing as a natural and permanent part.

2.8 Key to Exercises

Exercise 1

- i)
 - Surveillance of health status
 - Identification of problems and disease
 - Screening of diseases
 - Specific problems and diseases.
- ii) Structural assessment includes
 - Internal structures of the family with family composition, rank order, subsystem
 - External structures such as culture, religion, environment, extended family, and
 - Social status.

Exercise 2

- Observation/Inspection
- Observing vital signs by auscultation, palpation, percussion.
- Identifying family needs and problems
- Referring for laboratory values which help in taking decisions for treatment.

Exercise 3

- i)
 - Health history
 - Physical status
 - Psychological status
 - Nutritional status
 - Life-style.
- ii) Nutritional assessment means assessment of physical status like:
 - Malnutrition, obesity
 - Deficiency diseases
 - Intake of food and daily requirement, and
 - Quality of food intake.

UNIT 3

Health Risk Families

Table of Contents	
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3.3.2	Working with the Families at Risk
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3.0 Introduction

In all human populations, certain factors make some individuals or groups more prone to adversity than others. For example, a poorly nourished person exposed to an individual with communicable disease may contract the disease. Individuals who come in contact with tubercular person would have an increased probability of contracting tuberculosis. Risk situations and behaviours have become more complex with new developments in industry and technology. Risk situations constitute crisis and in these situations normal coping mechanisms are rendered inadequate. For example, when there is high level of stress, it has impact on cardiovascular system of individual. Other examples are unemployment and spouse abuse or poor nutritional status which have impact on individual and family. In unit one, we discussed principles and concepts of family health care and in unit two you learnt how to assess the family for providing family health care. In this unit, you will learn which families are at higher health risk and what factors contribute towards health risk situation of the family. You will also learn about the characteristics and identification of high health risk families. And at the end you will understand how to work with families at risk.

3.1 Objectives

In this Unit, you will learn about the families that are considered as high health risk families and their need for special care. You will also learn about how to identify health risk families in the community and plan family health care for families at risk.

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

- Define the concept "health risk"
- Identify the factors which contribute to health risk of the family
- List the criteria for high, moderate and low health risk family
- List the families in your area in the group of high, moderate and low risk
- Explain the importance of giving priority care to health risk families
- Work with family who has characteristics of high or moderate risk.

3.2 Health Risk Families

In this section, we shall try to understand the risk factors and how to identify risk factors in a family.

3.2.1 Definition and Meaning

The present unit is mainly concerned with the risk factors leading to the potentially high health risk families. Let us first understand what is meant by risk factors and what are health risk families.

Risk factors are those factors of the conditions that increase the potential for an adverse event to occur, resulting in a degree of disequilibrium. Risk factors can be defined as a factor that causes a person or group of people to be particularly vulnerable to an unwanted, unpleasant, or unhealthful event. Example: Smoking, alcohol, environmental pollutions, hazards at work site, overcrowded homes, overeating, genetic, broken homes, etc.

The presence of risk factors means that the individual or the group has greater probability of being affected by it than an individual or the group not exposed to the risk factor. For example, a person or child from a family with low socio-economic status is more likely to be malnourished than the one who is from high or from middle socioeconomic status.

The development of a particular disease or condition cannot be attributed to any one risk factor alone. While dealing with this, the time sequence and the number of factors must be considered. For example, a healthy individual who comes in contact with the tuberculosis patient will probably fight off the invading organism with little difficulty, but if the same person is unhealthy

because of unhygienic environmental conditions, the potential for resisting the disease would be decreased. The development of the disease or the condition depends on the interaction of agent, host, environments and risk factors.

Identification of risk factors and intervention to reduce or eliminate their impact are critical to the goal of improving community health and family health.

You have now understood what are risk factors. Now we shall discuss about health risk families.

Health risk families

Families at risk are those families who experience a particular event or several events that cause them to become more prone to the development of undesirable physical, psychological and environmental responses. The negative outcome of responses may progress from strained family to dysfunctional family. Clearly such events place a demand on the system for responses that will preserve the integrity and harmony of the family. The outcome of these can often be mediated by strengthening resources within the family.

Individuals and families face the stress and risk in their daily lives: where coping mechanisms are adequate, these events are without serious consequences. The magnitude of the stresses or the risk and the appropriateness of the coping behaviours will determine the outcome of the situation.

Exercise 1

- i) Define what are risk factors?

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- ii) What is meant by health risk family?

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3.2.2 Identification of Risk Factors in Families

Assessment of the family necessitates the identification of the actual or potential risk factors. These factors can be classified into five categories:

- Developmental factors
- Situational factors
- Hereditary factors
- Life-style factors
- Economic factors.

All these factors are often interrelated and have impact on each other. The impact may result into physical, social or psychological compromise. Let's further discuss these factors as given below.

Developmental factors

These relate to events that occur as a result of normal growth of the individual family members and the family itself. These are present throughout infancy, toddlerhood, school age, adolescence, adulthood and old age. Entering the school, marriage, child birth, menopause, retirement and anticipating death of self and others are typical developmental crises. A child is considered to be of high risk because of adverse genetic, prenatal; perinatal, neo-natal, postnatal or environmental influences which may lead to subsequent development of a handicap or developmental deviation. Toddlers and adolescents are particularly prone to accidents that occur in response to development of independence. For example, the toddler actively explores environment and has not learnt to distinguish between dangerous and safe situations. He/She tries to put any objects in mouth, nose or ear and thus cause accidents.

Adolescents usually try to prove their independence by being the peer groups often excluding parents. Such behaviour can lead to risk like experimenting with drugs, alcohol or other substances. Adolescence is the time of exploration and experimentation with new ideas and behaviours, but risk of injury or disease increases if these are in extremes.

Situational factors

These factors may appear in the family unexpectedly with no time for preparation. Although certain events may be anticipated and easily coped with, whereas some events are unpredictable and not subject to control. Risk factors may not have been identified or treated. Natural and man-made disasters, illness, accidents and assaults are examples of situational risk factors.

At the community level situational risk factors may be major calamities such as fires, flood and earthquakes, etc. Death, mugging rapes, murders and automobile accident are events that may have impact on individual, family or community. Sometimes it is not even feasible to take any preventive measures because these may not be predicted events.

Families may become separated or lose their possessions in natural disasters. During this period, normal sanitary conditions may not be possible and potential for disease also increases. Illness of acute onset is another type of situational risk factor. Even if the illness is of normal duration and uncomplicated, it may have major impact on the family unit. The individual or family affected by personal tragedies such as death, accident, injury or assault is likely to be vulnerable for health risk. Due to these potential risks for physiologic and emotional trauma increases for all members of the family.

Hereditary factors

These are those factors that place the individual at risk because of family history. For example, a member of the family with history of cardiovascular disease is more prone than others of such risk. Diseases such as hemophilia are inherited. Genetic testing for some of these conditions can determine carrier status of these diseases in a child and thus allow birth counselling.

Life-style factors

These are behaviours of family members like alcohol consumption, smoking, lack of exercise, poor nutritional practices, drugs use, etc. These behaviours can result into high health-risks and has impact on the whole family. For example, alcohol abuse is associated with automobile accidents and cirrhosis of the liver, smoking is a major factor in lung cancer and respiratory diseases. Lack of exercise, poor nutritional habits, high stress level are associated with cardiovascular condition. Thus life-style behaviours may have impact on the health of the individual, family and the community.

Economic factors

These factors are related to availability and utilization of financial resources. Economic resources are mostly from jobs. When there are threats in the jobs, it has impact on family economic stability and coping ability of family unit. A need to take loan from public fund may arise. Life-style changes may be necessary. Physical and emotional health may be compromised as a result of these changes. Previous coping patterns, reactions to stress and perception of

economic situation are the factors to be considered while working over economic issues of the family.

The above mentioned risk factors may or may not precipitate a crisis on the family. A family is in crisis when an event is perceived as being dangerous to normal functioning of the family or fulfilling the needs of its members. Although each family member will be affected and will try to cope in its own way but threat to the whole family as a unit still remains a major concern.

3.3 Identification of Potential Health Risk Families

Prevention of health risk is the primary goal of any health worker including nurses. Any health risk can be prevented if potential health risk factors of the family are known. The family which has chances of being at high health risk should be identified to prevent potential dangers due to risk factors. Accurate assessment of family functioning and risk factors provides data for designing implementing and evaluating nursing interventions. Family at health risk can be identified by working with the family by community health nurse by observation, history and examination of the members who complain of sickness or problems. We shall now discuss about the characteristics of potentially health risk families and how to identify them.

3.3.1 Characteristics of Potentially Health Risk Families

The high health risk family may have the characteristics as per the categories mentioned below. If there are more than two characteristics present in the family from the categories mentioned, it can be classified as high, moderate and low health risk family. The criteria for categorizing the family as per health risk are given below:

The criteria for high health risk family are the following:

- Size of family is more than six members
- Number of children below six years are more than 3 and out of these children one or two may be undernourished and have incomplete immunizations
- Mother is illiterate, cannot read and write, she is pregnant, lactating, malnourished, anaemic, etc.
- Number of school children suffering from malnutrition is two or more
- Two or more old people with geriatric problem
- Poor personal hygiene
- Fatalistic attitude towards disease and death and not much interested in health aspects.
- Dissatisfied with health services and not using health services.

The criteria for moderate health risk family are the following:

- Size of family six members
- Number of children under six is 2 to 3, slight degree of malnutrition; immunization may not be complete
- Mother illiterate or primary schooling
- Mother pregnant/lactating
- School age children with slight or moderate nutrition
- One old age member
- One or two members sick and take treatment from health agency
- Personal hygiene fair and environmental sanitation inadequate
- Health attitude-neutral
- Utilize health services whenever there is need.

The criteria of low health risk family are the following:

- Family Size -5 or below (including parents and two or three children)
Children below six-1 or 2, both well
- Immunization complete or in process
- Mother's education-literate at least high school
- Mother pregnant but good nutritional health
- Home and environmental hygiene maintained
- Whenever any one is sick, use health facilities.

Keeping these criteria in mind we can understand whether the family is high risk, low risk or moderate health risk. Family may not present with all features but should at least have 2 or 3 criteria, then we can categorize the family accordingly.

3.3.2 How to Identify High Health Risk Family

Families with potential health risk can be identified by:

- Working with the family, i.e. at home and at hospital
- Checking records and reports.

Let us elaborate on these as given below:

Working with family provides an environment to know all and understand the family in-depth. This will provide an opportunity to assess risk factors which are related to developmental, situational, hereditary factors and life-style behaviours. The economic situation of the family can be assessed by working with them for sometime and observing their life-style.

At home, during home visits, the family members feel free to communicate about themselves and others in the family. Observation of all relevant factors can be made simultaneously. Interpersonal relationship among the family members can be best observed during home visits or during nursing procedures at home.

At clinic, the community health nurse attends to the family member visiting the clinic with the health problem or for routine checkup. During this, she can make observation and relate the present health problems which can be a source of potential health risk to the family. For example, an antenatal examination and history will allow you to have more information on hereditary factors which have impact on child health.

At hospital, records and reports can also be used to identify high health families. Documentation of each family member's health and illness status over a period of time will give us evidences to their being at health risk or factors contributing to health risk. Record maintained at health clinics or home visits need to be compiled in one family folder and this can be a source to identify family which need priority care.

Exercise 2

- i) State how to identify a family with health risk factors?

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- ii) List the criteria for high health risk family.

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3.4 Working with Families at Risk

Risk factors as explained above cover a wide range of normal growth and development issues as well as disease. It also includes emotional problems or difficulties faced by the family. All these do have an impact on the personal life-style. Providing the optimum level of family centered nursing care requires that the nurse is constantly aware of the factors that may adversely affect the family functioning as a unit. Nursing interventions are therefore provided at primary, secondary and tertiary level of care.

The establishment of trust is the first step in provision of family nursing care. The case with which it can be established depends upon the functional level of the family. Functional assessment has been explained in Unit 2 (Family Assessment). Dealing with the family that functions at low level (high health risk) requires immediate attention and establishing reliable communication pattern. The community health nurse going through the steps of the family nursing process should take on a much more directive role in an early state of intervention. As the family develops more trust, learns new ways to handle day-to-day issues and improves communication and role functioning, the community health nurse's intervention can be less directive.

Families that are able to function but face a variety of problems need a different kind of assistance. These families generally have the basic role behaviours and communication pattern needed for appropriate functioning which offer leads to individual members growth. Health teaching, reinforcement of appropriate behaviours, increasing problem solving skills are important for such families.

In all types of interactions with the families, the family nursing assessment is tool of choice. It provides the means by which strengths and needs can be determined. This also allows evaluation and revision of nursing „are interventions.

Much of the health teaching done with families aims to impart information about prevention of risk and problems which are likely to arise within family environment. Use of community resources assists family unit to develop its fullest. The resources and services provided will vary from community to community. Community agencies and personnel should be used to fullest extent as and when need arises.

Exercise 3

- i) Fill in the blanks:
 - a) The Grit step in the provision of family nursing care is the establishment of
 - b) in all types of interactions with families during family nursing care....., is a tool of choice.
 - c) Health teaching done with families aims to impart information about..... of risk and problems which may arise.

3.5 Summary

When a family is in crisis, normal functioning and fulfillment of the needs of individual members in the family is disturbed. Although each family member will be affected and will cope with his or her own ways but the threat to the family as a unit is of major concern and focus of community health nurse. Identification of risk factors that may interfere with growth and function of the family individually or collectively is an important part of a nurse's responsibility. The community health nurse should not only recognise risk factors from the disease, but should also recognise risk factors from developmental, situational and life-style of the family living. Providing optimum level of family centered nursing care requires a community health nurse to be aware of factors that are adversely affecting family functioning as a unit. Nursing interventions should, therefore, be provided in relation to identified risk factors in the family.

3.6 Glossary

Vulnerable : Something that is capable of being damaged or when there is no protection against the damage. For example, children smokers.

Stress : Condition causing mental depression or times of trouble.

3.7 Answers to Exercises

Exercise 1

- i) Risk factors are those factors that increase the potential for an adverse event to occur resulting in a degree of disequilibrium. Risk factors can be defined as "a factor that causes a person or group of people vulnerable to an unwanted, unpleasant and unhealthful event".
- ii) Families at risk are those families who experience a particular event or several events that cause them to become more prone to development of undesirable physical, psychological, and environmental responses.

Exercise 2

- i) Assessment of family for presence of the factors which contribute to health risk can help in identifying a family at risk. These factors are developmental, situational, hereditary, life-style and economic factors of the family.
- ii) The criteria for high health risk family are the following:

- Size of family is more than six members.
- Number of children below six years are more than 3 and out of these children one or two may be undernourished and have incomplete immunizations.
- Mother is illiterate, cannot read and write, she is pregnant, lactating, malnourished, anaemic, etc.
- Numbers of school children suffering from malnutrition is two or more.
- Two or more old people with geriatric problem.
- Poor personal hygiene.
- Fatalistic attitude towards disease and death and not much interested in health aspects.
- Dissatisfied with health services and not using health services.

Exercise 3

- a) trust
- b) nursing assessment
- c) prevention.

UNIT 4

Nursing Intervention for Family Health Care

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4.0 Introduction

Community health action patterns are the basis for health planning. Each community will differ in its pattern of health actions depending upon the value people assign to health as compared to other needs and their characteristics way of taking action. This determines the way in which family or community as a whole will respond to health needs. Planning of family nursing interventions will depend upon family's health needs as perceived by the family and community health nurse.

Working with the family is the most important aspect of family nursing intervention. In Unit 3, you learnt about high health risk families. In this unit, you will learn concept and objectives of Family Nursing Intervention and the steps which you can take to do family nursing intervention. You will also be explained, how family nursing interventions are planned during family health crisis situations, in Section 4.3.

4.1 Objectives

In this unit you will be learning about nursing interventions for meeting family health needs.

After learning this unit you should be able to:

- Describe and explain the concept of nursing intervention
- Describe nursing intervention for family health care
- List the objectives of nursing intervention
- Identify the situations which require family nursing interventions
- Explain the steps of family nursing intervention in meeting health needs of the family.
- Undertake crisis intervention.

4.2 Family Nursing Intervention

We shall discuss the concept and objectives of Family Nursing Intervention in following subsections.

4.2.1 Concept of Family Nursing Intervention

The family has traditionally been the unit of service of the community health nurse as a means for focusing on all members of family, towards achieving higher levels of health. The role of community health nurse is to coordinate the health and social care system within the community with the health needs of the individual family. The nurse assesses the structure of families, the functions, and the developmental tasks of families as well as individuals within the family. Interacting with families representing different socio-economic conditions requires careful preparation by the nurse if she is to implement successfully, the activities which have been planned according to beliefs, values and culture of each family.

The community health nurse must utilise the knowledge of existing health behaviours and health needs of families for planning and implementing nursing interventions.

Any family with health needs requires the expert help of the nurse. Many times the family may not ask for such help due to ignorance or other inhibiting factors. In such instances the nurse may volunteer to help the family. Sometimes, a nurse may intervene in a family's activities as a well wisher; but the most correct time to intervene is when a family asks for expert help. This is only possible when a family is aware of their health needs and aware of their right to get help from the nurse. The community health nurse has to build a rapport with the people and educate them to ask for help whenever they need it. At the same time the community health nurse has to

be aware of these families who are incapable of identifying their health needs at primary level, so as to intervene early for family health promotion.

Nursing interventions require home visits, working closely with families, community leaders, grassroot level health workers and other related agencies like social welfare, educational institutions etc. Apart from all these tasks, nursing intervention requires a comprehensive system of maintaining health records.

For successful nursing interventions, the community health nurse must not consider caste, social or economical status of family for quality and quantity of services. Intervention requires knowledge and skill of working with the family with different, educational, cultural and socio-economic background.

Nursing intervention must start with building rapport with family members and helping them to do things which they cannot do on their own. Intervention must be of the nature which helps the family to meet its own needs. The family should feel capable of meeting its own needs. Nursing Intervention should be professional in nature so that the family gains knowledge and skills for their future course of action independent of the nurse.

4.2.2 Objectives of Family Nursing Intervention

Objectives of family nursing intervention is to help the family to help themselves. They are to:

- Assess and identify its own health needs,
- Set goals for meeting health needs,
- Workout alternate strategies to achieve goals and prepare plans,
- Implement plan,
- Evaluate their action and reassess the health needs.

If you go through the following situation you shall be able to understand better the objectives of Family Nursing Intervention.

Situation: You are assigned to a family in the community. This family has an antenatal women, who is anaemic and her three years old child is having diarrhea. An old woman in the family, is having fever since two days.

You as a community health nurse will help the mother to assess the health needs of the child who is having diarrhea, and the old woman who is having fever, since they require priority care. Your goals will be to get help for the child and the old woman. You will require to get the mother's check up done

in antenatal clinic. Implementing the plan of action will include actual health check up and follow-up of all these members.

Evaluation will involve identifying how much they have improved and will help you to re-assess the health. needs of the family that require antenatal check up and diet modification or iron supplementation. So objectives of family nursing intervention to help the family is to help themselves.

Exercise 1

- i) When does the nurse intervene for family health intervention for meeting family health needs?

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- ii) Who helps the family to meet family health needs?

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- iii) List the objectives of family nursing intervention.

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4.2 Steps In Family Nursing Intervention

In Unit I you learnt about nursing process and in Unit 2 on assessment of family care. The ultimate objective of a community health nurse is to assist the family in its efforts towards well-being or make it easy for them to accept the present reality. The nurse can do this by improving their coping skills, increasing their self-confidence and helping them to attain better levels of health.

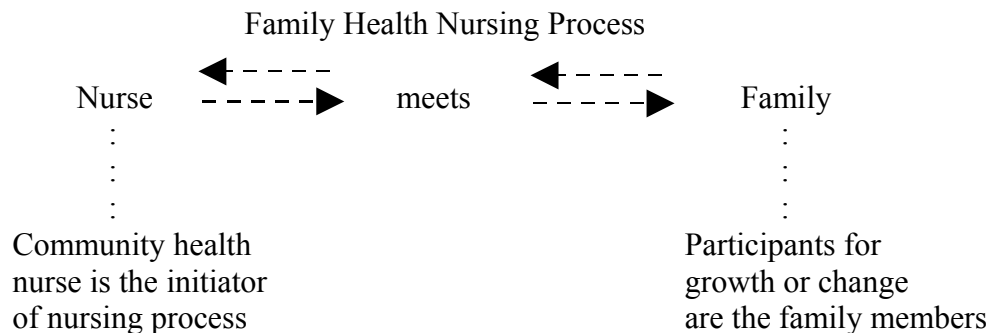
Now the measures to be taken remain the same as for community nursing process; and these are:

- a) **Assessing** - Identifying the need for the action

- b) **Planning** - Arranging for the methods and techniques necessary to meet assessed needs
- c) **Implementing** - taking the action required to carry out the plan to meet the needs
- d) **Evaluation** - Testing the outcome of the action against previous determined criteria.

When the family and community health nurse agree that essential and desired goals have been reached satisfactorily, then we can say that the community health nurse has accomplished the purpose of helping the family by her nursing intervention.

Nursing process for implementing family nursing interventions can be diagrammatically explained as given below.



Assessment involves observation of family situation while eliciting health concerns of family and establishing person oriented relationship in which trust and openness exist.

Planning involves where family members and nurse mutually agree regarding focus of health concern.

Implementing involves putting into action the nursing care plan which seems feasible and appropriate and any crisis intervention.

Evaluation involves assessing the performance of community health nurse and family members responses and this behaviour changes. You have now got an idea of the process of Family Nursing intervention. Let us discuss each one of these in the following subsections.

4.3.1 Assessment

In order to provide family health services, a nurse must be alert to the health needs of its members. Care should be taken to deal with the family needs in order of importance so that the problem of greatest urgency is dealt first.

Assessment is a continuous process which become more important when it helps in identifying needs. Nursing assessment is a systematic, critical and precise method of collecting, validating, analyzing and interpreting information about physical, psychological and social needs of individual members of the family. While determining needs the nurse will concentrate only on those needs which can be influenced by nursing intervention. The assessment includes:

i) Observation of family situation while eliciting health concern of family

To make detailed assessment of the family is time consuming but it must include the family's physical and environmental status, present health and medical history of each family member with special consideration to housing, number of rooms in relation to size of family, ventilation, cleanliness, sanitation, source of water supply, sewage disposal and general safety should be noted. Other aspects which should be considered during assessment are:

- family's cultural background
- family's economic factors
- development levels of family members
- psychological factors including family members' relationships
- educational, vocational and recreational interest of its members
- family's resources and use of those resources.

ii) Establishing person oriented relationship in which trust and openness exist

When a relationship of trust exists between nurse and family members, direct appropriate questions can be asked. Family members feel more comfortable when such a relationship is established. They are honest in their responses.

The community health nurse must become acquainted with all the members in the household. The interactional pattern between family members must be observed whenever possible. It is important to meet the head of the family or household as he may have an influential role. Until all the members of the household are met and actively involved, a truly accurate assessment of a complex family health situation cannot be accomplished. By assessing the dynamics of family life, the nurse is able to give more appropriate and cogent assistance to a young mother. By giving importance to all the members of the household and their interrelationships, the nurse is in an excellent position to

gain their cooperation. All family members should be encouraged to state their views about health issues by means of direct and non-threatening questions. By assessing the family as a whole, nurse is able to assess the family situation in relation to health. By this interaction, the nurse is in the process of establishing relationship with the family.

4.3.2 Planning

Mutual agreement must be made between nurse and family members regarding focus of health concern.

When nursing diagnosis about the health needs of the family is gained and relationship is established, the community health nurse is faced with the necessity for planning. A plan is the method of action or the blue print for activity based on the resources available and goals desired. The family situation must be viewed from a realistic and objective standpoint to ensure that desired goals have the potential for successful fulfillment.

It is important that the family and community health nurse plan towards desired goals together, .because goals decided upon require action of both family and community health nurse. Depending upon the health care needs of the family, the goals must be directed towards (a) care of sickness or handicaps and (b) health teaching and counselling.

a) During care of sick at home community health nurse adapts nursing procedures to home situation. Family members can work with the nurse to improvise many articles to contribute to safety and comfort of the sick at home. Whenever possible, certain responsibilities should be delegated to family members so that they may participate in care of the sick. Family members will watch closely the nurse's techniques even if she is not teaching them. Family members can be shown how certain procedures can be done in her absence and this can be confirmed by return demonstration.

b) Health teaching and counselling is one of the main aspects of community health activities when planning nursing interventions for the family. Utilizing family strengths and resources requires involvement of family in any plan of health care. In health counselling most often, the approach varies from family to family. Anticipatory guidance is an important part of health counselling. A guided discussion of probable happenings or events provide an opportunity for clarifying ideas, for lessening anxiety and for constructive teaching. For example the community health nurse can explain objectively to the expectant mother, the mechanism of labour and delivery, using teaching aids. This may provide the mother with emotional support, so that she maybe better prepared to accept the experience of her delivery.

Planning a successful intervention with and for the family involves (i) team work (ii) maintenance of an open exchange of information, (iii) sharing of resources among team members. This is the ultimate goal towards which all the team members are working. Planning care and coordination with other team members of health leads to successful interventions and satisfying relationships.

4.3.3 Implementing

Implementing a nursing care plan implies that a careful assessment and planning process has been accomplished. Activities for the family are now available which will contribute to its well-being and facilitate its coping behaviour as related to its specific health problems.

Implementation is an on-going activity. Implementation of nursing care includes all the activities of the nurse undertaken to carry out the nursing care plan designed to enhance the well-being of the client and the family. Some times a crisis situation can arise in a family and as a nurse you should be prepared for crisis intervention. The . steps of crisis intervention which a Nurse must know are given below:

Crisis Intervention

Some of the activities which the community health nurse can perform in crisis intervention with an individual and family are:

- Help the family member to confront the crisis by helping her to verbalize and to comprehend the reality of the situation.
- Help the person to confront the crisis in a manageable way.
- Help the person or family to find the facts of the situation and explore possible ways of coping with it. When exploration is done mutually, the family member is helped to think and devise solutions which are possible.
- Help the family to recognise their strengths and encourage them to use their capabilities.
- Help the family to accept assistance from others as needed and when available.

The nurse, by being available, patient, willing to listen and supportive can enable the individual or family in a state of crisis to use the strengths to move

towards resolution of difficulties in an acceptable manner, and promote their sense of responsibilities and well-being at the same time.

4.3.4 Evaluation

Evaluation of the intervention of a community health nurse with an individual or family requires careful appraisal of nurse's performance and behaviour as well as the individual and family responses in terms of temporary or permanently changed behaviour. Evaluation involves measuring behaviour and interpreting the results in terms of the desired behaviour change.

Since the purpose of evaluation is to predict how individual or family will behave, it is better if objectives are written with the individual's agreement. Evaluation can be done by direct observation of behaviour, questionnaires or rating scales designed to elicit the opinions or attitudes regarding effectiveness of services. By making use of a combination of evaluation methods, evaluation results of nursing intervention tend to be more reliable.

The community health nurse should be watchful for evidence of change in individual or family behaviour. If the community health nurse decides that implementation is not showing the desired change, based on family responses, changes in nursing care plan should be made.

Activity

Out of the families in the community health field which require intervention, choose one? Select one health need of this family, apply steps of family nursing intervention to solve the problem or meet the health need?

Write down the stages of the intervention and its results. This activity is likely to take 5 to 6 visits or one week.

Choose a family which requires intervention, for example child having acute respiratory infection or diarrhea. This will require assessment of the situation and planning, keeping in mind resources and facilities available. Implement a plan of action by active participation of mother and by assessing the improvement.

Exercise 2

- i) List the steps in family nursing intervention.

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- ii) Who all should be involved in planning nursing intervention in the family?
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- iii) How can family members be involved in care of sick at home?
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- iv) What as a community health nurse can you do during crisis intervention?
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4.4 Summary

To meet the health needs of the family, it is a must for the nurse to intervene in families activities, when and if a family require help. This help can be provided through family nursing intervention process. Depending upon the need and family situation, family intervention if implemented by active participation of the family. This is a continuous process and once priority needs are met other needs can be taken care of through family nursing intervention. Early intervention is a step towards family health promotion which is the ultimate goal of the health team.

4.5 Glossary

Culture experience	:	development of individuals by training and of people or community
Identify	:	find our who or what of a person or of a thing
Vocational	:	special ability of individual
Improvise	:	using in place of something.

4.5 Key to Exercise

Exercise 1

- i) Nurse intervenes in family activities when family asks for it or when she is aware of family health needs.
- ii) Community health nurse helps families to learn to do things for themselves or meet their own needs. For things which they cannot do, nursing interventions are carried on by the community health nurse; family members gain knowledge and skill for, their future actions by observing the nurse.
- iii) Objectives of family health nursing interventions are to:
 - assess and identify the family's health needs,
 - set goals for meeting health need,
 - work out alternate strategies to achieve goals and to prepare plans,
 - implement plan,
 - evaluate the nursing intervention and reassess the health needs.

Exercise 2

- i) Steps of family nursing intervention are:
 - assessment
 - planning
 - implementing
 - evaluation
- ii) Members involved in planning nursing interventions in the family are:
 - community health nurse or team members
 - family members
 - member of the family who is sick or requires priority care.
- iii) In the case of a sick person in the family, family members can be involved. Family members can work with the nurse to improvise articles to contribute to safety and comfort of the sick at home. Family members can learn certain procedures which they can follow in the absence of a community health nurse or in an emergency.

- iv) Activities which a community health nurse can perform during crisis intervention are:
- help the patient to confront the crisis by verbalizing and ending this to comprehend the actual situation.
 - explore possible ways of coping.
 - think and devise solutions which are possible.
 - help the family to accept assistance from other in solving their problems.

UNIT 5**Family Health Records**

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5.5	Glossary
5.6	Keys to Exercises

5.0 Introduction

In Unit 4 you have learnt about the Family Nursing Intervention which focuses on assessing the health needs, planning, implementing and evaluating the care. So once you have done this, you would like to record the case. How do you do it? This is explained in Unit 5. In this Unit, you will learn about health records; types of health records which are maintained for family health; what type of information is recorded and criteria for recording. This would also help you in filing and storing health records.

5.1 Objectives

In this unit you will learn about family health records and evaluation of family health service. After going through this unit, you will be able to:

- Explain what family health record means
- List the purposes of maintaining family health records
- Write up in family health records keeping in mind the criteria for recording Identify different family health records maintained in the agency you are working

- Evaluate the importance of information included in family records for further health care planning
- Arrange family records as per filing and storage system of records in the agency you are working, and
- Decide on the type of records which you wish to maintain for the family under your care.

5.2 Family Records And Purposes

Maintenance of family health records is one aspect of the total records system of a health agency. In most of the agencies the record system comprises a mixture of prescribed and standard forms often identical to those of other agencies, which can be designed or modified to meet the needs of particular agency. Use of common forms for records facilitates inter-agency and inter-unit comparisons and makes reporting of service data easier. Even if these forms are supplemented or modified still they retain enough similarity to provide a base for comparison.

Maintenance of family health records and evaluation of the family health service are complementary to each other. Records are necessary for continuation of delivery of family health care services and its evaluation. And evaluation of family health services is necessary to identify now and continuing family health needs.

Family records include information based on factual events, observation results or measurements taken, like height, weight, body circumference or investigations carried out like hemoglobin, urine test, stool test and sputum examination depending upon the problem of the family. These also have records of immunization, nutritional status, medical prescriptions and curative procedures carried out.

Demographic data and individual personal history is also included in the family folders. We shall now discuss about purposes of records, criteria for recording in family health records and types of family health records in the following subsections. Let us begin with purposes.

5.2.1 Purposes

Purposes of family health records are:

- to serve as guides to nursing care,
- to provide the practitioner or community health nurse with data that is required for improvement of family health care,
- to provide the staff, administrator or governing body with documentation of services that have been rendered, and
- to provide data that are essential for programme planning and evaluation.

The purposes of documenting family health history, which is an important component of family health records, are:

- to provide facts that are necessary for evaluating health situation of the family; it should also describe the nature and impact on health threat. It should describe the health condition and interacting forces within the family in their daily living,
- to afford an opportunity for mutual exploration of the health situation by the nurse and by the family so that they can explain to each other their concerns, expectations and probable actions,
- to provide baseline and periodic data from which to estimate the long-term changes, services provided and response of the family to these changes and services.

Family health records should represent a comprehensive, systematically organised data and information that are essential for nursing care decisions. The community health nurse must assure adequate records support for her actions. It is the grassroot level workers who write most of the family history and progress record. You as a community health nurse and other grassroot level workers have much to gain if these records are comprehensive, available and relevant to service needs.

Though each agency has its own system of recording, the community health nurse can find her own ways of adapting family history and progress record to her own practice, style and informational needs. Her records may be a valuable resource when agency records are being revised or the system is being reorganised.

The community health nurse may need to build into the records, methods for incorporating information necessary for case planning and assessing health service utilization.

5:2.2 Criteria for Recording in Family Health Records

The criteria should reflect both the purpose and process of community health nursing practice.

- Record should concentrate on the family and community as focus of care. It should reflect not only the health of the members of the family but also the ways in which the functioning of the family as a unit has an impact on the health of the family as a whole. It should also specify the ways in which family functions within its physical and social environment.

- Family health cords should serve as guides for comprehensive care. These should include health threats and health behaviours that have significance for family health. For example, an adequately immunized family may have a health threat from emotionally immature and impulsive parents.
- An apparently healthy family may have poor nutritional habits and poor house keeping practice inviting accidents. It is important that records show the problem as it develops so that the change can be identified.
- The record should indicate the expected outcomes and also the degree to which outcomes are achieved. This means that the goals of care to a family are also defined in the records.
- The family health record should have specific actions planned for the family actions actually taken and distribution of responsibility to family and other community resources so that necessary activities are carried out. Action taken should be recorded in such a way that it can be easily located and future planning can be done.
- The family record should indicate family response to nursing action.
- Since initial planning and implementation can redefine a problem the record must show revision in the status of the problem so that further planning can be done accordingly.
- Record systems should possess sufficient uniformity to make recording, tabulation, and collection easy and to permit inter-unit in-service comparisons and easy reference.
- Maintenance of records should require minimal amount of time. Unimportant and irrelevant data reading may also require more time and lengthy records may result in errors.
- Family records should be quickly available to the user. Accessibility is not always easy to achieve. Compiled individual and family records can be made available at a central location for easy reference, only for professional use.
- Family records require reasonable storage space. As number of individuals are added, the records also increase and require more storage space and facilities.

- Depending upon the number of years records should be retained, according to agency policies and storage space will be required.
- Family record system should provide confidentiality of record content. For example, sometimes a mother in the family may not like information about family planning methods she has adopted to be shared with other members of the family or her neighbourhood women. There should be provision for such confidential information and sometimes official records in the agency do not have provisions for such recording. The community health nurse must find her own ways to incorporate such summarization into her recording so that priority needs can be attended to first.

Exercise 1

- i) What are the purposes of family health records?

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- ii) List the criteria of recording in family health records.

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5.2.3 Types of Family Health Records

Different family health records which are commonly used are grouped in different ways. These may be grouped according to:

Age of family member for whom records are used such as:

- Newborn care
- Road to health card
- Toddler card
- Adult card
- Old age or elderly card
- Mother-child link card

Health care requirement cards as per health conditions and morbidity status

- Pregnant women or antenatal card
- Intranatal care card or labour record
- Person with illness: for example
 - Tuberculosis record
 - Diabetic record
 - Hypertension care card
 - Malaria record.
- Drug addicts or alcoholics record
- Any chronic care record
- Immunization record.

Records used in the

- Clinic
- Home
- Head Office.

These records are in the form of

- Cards
- Folders
- File
- Charts, etc.

Usually for family health services a family folder including different cards is maintained. This includes socio-demographic information, children health status (including height, weight, immunization and feeding habits, etc.) maternal records, morbidity records and observations -of general health status of family and the environment of the family.

These records have individual formats and styles of recording which is prescribed for each agency. The method of recording is usually a standard one and general instructions are provided. Examples of records for infant, toddler, antenatal women, immunization and family planning are shown in Appendices 1 to.3 (which is given at the end of this block) and, similar kind of record you may find in the agency where you are working.

5.3 Filing and Storage of Records

We have discussed about the purposes, criteria and types of records. Let us discuss how these records are filed, as given below.

To have quick access to records for efficient use of records, a proper filing system must be adopted. In a primary health care set up in community health nursing this aspect needs special attention.

Filing will depend upon the type of records. If it is a family folder, it is filed as per geographical location or as per house number in the area. These family folders may be filed as per the name of the head of family. If community members and the health worker is familiar with house numbers, it is as per house number in the area. In a rural community where a family is known by the name of the head of the family, the folder is filed as per the name and arranged alphabetically. Since these records are preserved for a long period of time and needs frequent handling, they should be kept in the pro; filing space or in a shelf with labels so that a file can be easily traced when a family member is visiting the health centre or a family visit is to be planned.

At a health centre, when cards are maintained as per age groups or type of morbidity conditions, these may be filed under these headings.

The record system requires reasonable space for storage. The proliferation of records as well as increase in number of people under care, may create a serious problem of storage. The period for which records are maintained is usually the agency's policy; often the period of retention is as low as five years. A short retention period does save space but it also presents problems, since community health needs and methods are changing and the period over which care is provided to the family is likely to be more prolonged.

5.4 Summary

In order to assemble in one place the comprehensive family information needed by a community nurse providing general family care, it is necessary to have a record system that permits quick and easy transfer of information among the care providing team members. The individual practitioner on the community health team must be able to assure adequate record support for her own actions. It is mostly the grassroot level practitioner who writes most of the family history and progress record. It is she who has most to gain if records are comprehensive, available and relevant to service needs. Using of family history and progress records is as important as developing and maintaining them. It is important to find and read the record as a basis for planning and taking nursing action for the family. Thus the nurse who uses records can value and monitor her own recording programme.

5.5 Glossary

Comprehensive	:	Including wide range of activities.
Criteria	:	Principle by which something is measured for value.
Grassroot level workers	:	Workers at the community or peripheral level who are mostly part of the community also.
Prescribed records	:	Records which are used in the agency on the advise of the authority.
Uniformity	:	Condition of being the same throughout

5.6 Keys to Exercises

Exercise 1

- i)
 - help to the family in self-assessment.
 - guidance for evaluating and improving on care planned
 - feedback of aid in evaluation of services
 - information on family for planning health services
 - should include how family functions
 - its present status and health situation
 - it should serve as guide for future actions
 - it should indicate family expectations and family response to actions taken
 - a summary of total record should be included.

MODULE 2**UNIT 6****Family Health Care Old Age**

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6.0 Introduction

In the preceding unit, you have learnt about the Family Health Records and evaluation of Family Health Services. This unit focuses on Family and Old Age. With the increasing number of people who are surviving into old age, the care of the elderly and elderly sick or disabled is accepted as a major commitment of health and social services. Some people are adversely affected by the process of ageing and they need care, treatment and support. As you go through this unit, you will learn about ageing process, health needs of the old age. You will also be explained about the family based preventive and rehabilitative care in old age.

6.1 Objectives

In this unit you will learn about the old age persons in the family and what is your role as community health nurse in meeting the health needs of old age persons.

After going through this unit you should be able to:

- identify factors which influence ageing and ageing process
- list the physical, psychological and social effects of ageing and impact of these on body functioning
- identify the health needs of old age persons and list them as per priority
- help the family members to learn how to take care of old persons at home
- plan and undertake health care for an elderly person which will enable him/her to live as independently as possible, and
- explain how rehabilitation is essential during old age and who all can help in rehabilitation of elderly.

6.2 Old Age and Ageing Process

The concept of ageing process and factors affecting ageing are discussed in the following subsections.

6.2.1 Ageing Process

Old age is not, in itself, a disease but a stage in the human life span. The human life span follows a recognised pattern from birth to death. If this remains uninterrupted by genetic factors, disease or accident, death is preceded by the period- of life we refer to as old age. The inner strengths and resourcefulness of older people enable them to adapt and adjust to life changes.

Old age is considered as normal part of human development.

Before we come to the concept of ageing we would like to explain two terms:

- **Gerontology:** It is the study of the ageing process.
- **Geriatric care:** It focuses on the disease process of old age. Geriatric care aims to restore the elderly person to the best possible degree of independent living of which he or she is capable, and to achieve for the elderly person a reasonable quality of life which is acceptable to the individual concerned.

Ageing is associated with a decline in physical and mental health. Biological ageing varies among individuals. Individuals do not change as they grow old, they become more what they always have been. There is a gradual slowing of intellectual functioning, memory deteriorates and speed in performance of many tasks decreases. Alteration in or loss of social functions performed within the family or community network can change person's self concept and feeling of personal worth. The physical and social environment has an impact on bio-social aspects of ageing for each individual.

6.2.2 Factors which Influence Ageing

Wide variations in the rate at which ageing proceeds can be due to a number of hereditary and environmental factors.

Hereditary factors:-the possibility of survival into old age is, to some extent, determined by hereditary factors. Some families are more long-lived than others, given the same circumstances. A predisposition to certain diseases and physical strength determines health and vitality and have genetic basis.

Environmental factors:-There are three types of environmental factors which can influence rate of ageing in man and these are:

- Abiotic factors
- Biotic factors
- Socio-economic factors.

Abiotic factors are those physical and chemical components of environment, such as climatic influences, pollutants and radiation.

Biotic factors are those which result from the influences of living organisms; and these organisms share man's environment. The ageing process is affected by such things like pathogens, parasites and quality or availability of food products.

Socio-economic factors are sometimes responsible for adverse living or working conditions which increase 'wear and tear'. Stressful living conditions are considered likely to accelerate the process of ageing. These stress factors are more prevalent in modern industrialized society.

6.3 Effects of Ageing

Ageing affects all the structures and functions of the body. There is a gradual reduction in the number of normally functioning cells as the ageing process continues, and the ability to adapt to the environment is decreased.

The effects of ageing are reflected in functioning abilities of the individual. Physical, psychological and social activities are influenced by ageing. The changes determine the individual's response to ageing.

Let us discuss each of the effects i.e. physical, psychological and social effects, in the following subsections.

6.3.1 Physical Effects

Physical effects due to ageing are:

Appearance: The changes of ageing are reflected in the appearance of the individual. The skin becomes dry and wrinkled because of loss of elasticity and subcutaneous fat. The greying of hair continues. Bony prominences become prominent or marked as subcutaneous tissue is lost. The impact of the individual's appearance has an important influence on his/her self image of the individual and on the attitude of others towards the individual.

Bony changes: Bone changes depend upon the amount of bone development and the type of skeleton an individual has. Women have higher incidence of osteoporosis after menopause and excessive bone loss also occurs when an individual has had partial gastrectomy or received administration of corticosteroids.

The joints: As old age advances movement in joints becomes limited. Lack of use of joint leads to loss of function.

The teeth: Teeth are often lost at an early age. In old age gums recede, causing difficulty with wearing of dentures, leading to problems of eating and speaking. Individuals who are sensitive about their appearance may avoid social contact and activities.

The muscles: The peak of muscular strength is reached by the age of 30 years. There is then gradual reduction in power of muscles. Physical reactions become slower because of changes in nervous system. Stamina is reduced and there is decreased capacity for continuous muscular effort over a period of time.

Cerebral functions: There is a progressive loss of neurons in many individuals as ageing progresses. Neuromuscular coordination is diminished, reducing the elderly person's ability to learn new skills. Well established skills are maintained unless the neuron loss is severe. That is why ability to adapt to changes in the environment or in daily routine is considered to be limited during old age.

The senses: There is a reduction in the efficiency of sensory perception as a result of degenerative changes. The ability to respond to the information provided by senses is also reduced.

Atrophy of nerve mechanisms and cells affects hearing and sight and this may limit social contacts and may also contribute to withdrawal and isolation.

Temperature regulation: The centre of the thermoregulation of the body is in the hypothalamus. A constant temperature is maintained in the body by various regulatory mechanisms such as vasoconstriction, vasodilation and sweating. A number of factors contribute to a failure of efficient temperature regulation in the elderly such as reduced appreciation of cold, environmental factors like poor heating, inadequate clothing and poor nutritional [status](#). [Hypothermia](#) is a common problem among elderly.

Cardiovascular system: Some changes in heart take place as ageing progresses. The ageing myocardium is capable of hypertrophy in response to increased demand put on it. Degeneration of arterial system in old age predisposes to development of a number of pathological lesions, especially in brain, heart and lungs.

Respiratory system functioning: There is a fall in vital capacity. The older people require to breathe more deeply in order to achieve expansion of lower lobes. Increasing rigidity of chest wall and rib cage becomes more immobile limiting the movement. necessary for effective respiration.

Endocrinal functions: These are effected by a loss of active cells from the glands which occurs in old age resulting in reduced function and lowered production of hormones. The efficiency with which the ageing body metabolizes carbohydrate diminishes drastically. Highest incidence of diabetes is found in between 60 to 70 years of age. Diabetes usually remains undetected unless complications occur. The early detection and treatment can contribute to reduction in the severity of symptoms and help to maintain health of the individual.

Reproductive functions: Ageing brings about changes in reproductive functions at a comparatively early age. In women menstrual cycle ceases around the age of 47 years as a result of degenerative changes in ovaries, some atrophy of the vagina, uterus and breast occurs. Degenerative changes in tests and prostate gland in man occur more gradually. Sexual activity may continue for a longer time but men become impotent by 75 years of age.

Digestive functions: Digestion will be less efficient as secretion of digestive juices and enzymes diminishes during old age. Appetite may also reduce. Reduced sensory awareness in relation to taste and smell will contribute to the need for attention to be given to preparation of food for elderly in an attractive manner.

Excretory functions: Kidneys atrophy in later years of life. Vascular changes may disturb renal function more than age related changes. Unable to control excretions is associated with age related changes. The individual is disturbed at night to empty the bladder.

Constipation is common in elderly and is due to variety of causes. Poor bowel function in early years, a limited diet lacking roughage and lack of exercises can contribute to constipation more than the effects of ageing.

6.3.2 Psychological and Social Effects

Reactions to ageing and loss of mental abilities in old age vary from one individual to another. Physical and environmental factors have an important influence on mental abilities. There are personality changes which affect activity, and social adjustments like retirement.

There are also changes in remembering, forgetting, intellectual abilities and learning abilities. These decline as age advances.

Understanding of learning processes in old age is especially important to a nurse involved in rehabilitation. She is concerned with helping the elderly individual to learn to live with limited capabilities and to relearn the lost skills, such as walking and other activities of daily living. We shall now come to other part of this section i.e. social effects.

Social effects: Society determines the role of the elderly person to an even greater extent than physical and mental conditions associated with ageing. For instance, retirement can lead to loneliness and deprivation and is often associated with reduced income, deteriorating housing standards and a poor nutritional level. As people grow older, the chances of them facing bereavement increase.

Exercise 1

- i) List the factors which influence ageing.
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- ii) What are the physical effects of ageing?
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- iii) Why it is important to know physical effects of ageing for a community health nurse?
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6.4 Health Care in the Old Age

We now come to the important aspect of ageing or old age i.e. the health needs and preventive and rehabilitative care. These are discussed in the following subsection.

6.4.1 Health Needs in Old Age

A positive approach to old age implies that activity is directed towards ensuring that people reach old age and that they continue to live the last years of their lives in the best possible state of mental and physical health and that disease or disability are reduced to the minimum possible.

Elderly members of the community make a heavy demand on most health and social services. Preventive services that help to achieve the best possible state of health and independence in old age not only add to the quality of life enjoyed by the elderly, but also reduce the demand for curative services.

Many old people and families caring for them, struggle on until a crisis situation is reached and when the possibility of successful treatment and rehabilitation has become remote. The identification of nursing needs in the elderly through an adequate assessment system should be done by team members using health need assessment tools. Then by means of crisis

intervention plan help in caring for the aged. Without such a system the burden of-tare imposed on relatives can becomes intolerable before referral is finally made.

As discussed earlier in changes during old age, old person requires positive approach towards health and well being. An old person also requires promotion of health, prevention of illness, early diagnosis, treatment and rehabilitation. However, the needs as per changes in old age which require priority care are:

- Monitoring health, physical, social, physiological and social health.
- Prevention of:
 - accidents
 - malnutrition
 - diarrhea/constipation
 - skin dryness or infection
 - mental, social or emotional problems
- Rehabilitation of old age person with regard to:
 - physical care
 - economical and social life
 - mental activities.

These needs, if met, would help to promote health and prevent illness.

6.4.2 Preventive Care in Old Age

Objectives of preventive care in old age are:

- to help the individual towards a satisfactory adjustment to old age.
- to disseminate knowledge about understanding of ageing and its problems to the community and people approaching old age.
- to recognise early preventable and treatable conditions
- to prevent further deterioration in health or social functioning of the elderly individual identified as at risk.

All these can be achieved by proper preparation for old age. Health education throughout life should include programmes about effects of ageing, the conditions for successful ageing and the factors determining the quality of life in old age.

Activities for the elderly should be related to health promotion and prevention of illness and should include.

- screening of old age group
- check and control of environmental factors of the elderly
- personal attention to factors in health
- nutritional care and prevention of nutritional deficiencies
- exercise
- care, of skin, feet, etc.
- prevention of constipation and diarrhea
- accidents and prevention of accidents
- society and old age
- prevention of disabilities.

Exercise 2

- i) Identify persons who can help in prevention of old age health problems?

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- ii) What health promotion activities can be arranged for old aged people?

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6.4.3 Rehabilitation and Old Age

Rehabilitation for the elderly includes all those activities which aim at restoring the person's highest degree of independent living of which they are capable. Rehabilitation should be an integral part of continuous care. Family members may require the help of physiotherapist, occupational therapist, the social worker and the speech therapist. Purposeful activities should be encouraged. Occupational therapist can be of help in providing information - on aids, gadgets, equipment and special furniture which can be used for old persons whenever required. The social worker assesses the need for assistance which should be provided to old people. Interdependence of physical, mental and social factors in the elderly can make it essential for a social worker to help the old aged in the community. Rehabilitation of the elderly person has to be a continuing process which is recommended as soon as any problem arises or is identified.

Conditions which normally require rehabilitation are functional loss, diseases or specific conditions, mental status involving emotional problems and any sensory deprivations which cause defects in hearing, vision, touch or physical balance. Special problems which arise during old age are arthritis, stroke, Parkinson's disease and incontinence. All these require the expert guidance of the rehabilitation team.

Exercise 3

- i) What role can family members play in care for the elderly?
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- ii) What rehabilitation activities can be arranged for aged in the community?
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6.5 Family and Old Age

An elderly person in the family should be helped to live independently as far as possible. Family members should help an elderly person to achieve a reasonable quality of life which is acceptable to him/her.

Family members should understand that an elderly person has a slower pace of living. An elderly person also has high level of dependency because of illness and disability. Comfort and safety are important in the day-to-day living. Hence, rehabilitation and socialization has an important place of total care.

The family should consider that an old person has self respect and dignity as an individual. The family environment should be such that the elderly person has the feeling of physical, mental and social independence and has opportunities for mental activity and interest.

An elderly person requires care by team members because of the interdependence of physical, mental, and social factors. Medical, nursing, remedial and social problems can seldom be dealt with in isolation. The care of an old person accordingly need to be coordinated with the activities of family members and geriatric caring team.

Comprehensive assessment should be carried out to determine needs that have to be met. Assessment should include family environment and personal and social factors which influence needs and problems. Assessment of nursing needs will be determined by measurement of functional ability and dependency level of the aged persons. Based on the assessment, specific exercises, occupation, aids, appliance, clothing and other needs will have to be met.

Social needs will depend upon the personal situation like who are living with the old person and what is his family environment. These situations will reflect his living, sleeping, cooking, laundering arrangements and facilities. The financial situation of the old age member would affect his future care arrangement.

Family members should see that an old aged person in the family gets chances to express his personal choices and has liberty to do something on his own for his own care. Respect for the elderly persons feelings and emotions should be shown. Limitation of physical and mental disabilities does not imply that the individual should be patronized or treated as being incapable of normal human being feelings and responses. A sympathetic and considerate-Approach is more likely to be successful than an authoritarian one.

Elderly persons have difficulty in understanding of what is said to- them because of loss of sensory functions and reduced comprehension. They should be spoken to face to face, clearly. They should be encouraged to be out of bed as much as possible so as to promote mobility and mental activity and to reduce the risk of complications such as pressure sores, contractures, dehydration, thrombosis and dependency. Independence encourages self respect. Cleanliness and personal tidiness are important to health and safety but should not become dominating issues. Lifelong habits of an elderly person should be accepted whenever possible, and should not be made reason for unnecessary clashes.

Physical comfort and safety of the elderly is also important aspect. Due to changes in skin, bony structure, temperature regulation and fluid balance, special attention should be given to care of skin, movement of joints, exposure to heat and cold and fluid intake should be adequate. Good lighting, correct height of bed, chair and other environmental features should contribute towards the safety of the elderly person. Infection and over medications are hazards which should be constantly kept in mind.

Promotion of mental activity and interests of the elderly may contribute to the feeling of well-being. Consideration must be given to meet the intellectual and recreational needs of an individual. This will be a source of mental stimuli which is essential for improvement of maintenance of mental functioning. This will also create interest in living and add meaning to life beyond mere physical existence. There should be balance between shared activities and individual activities. The limitation disabilities and pathological lesion, if any, should be taken into consideration when planning such activities.

6.6 Summary

Nurses can be supportive to old people. Ageing as a process leads to healthful and satisfying living in the later years if there is support from community and family. Familiarity with factors which bring about ageing and effects of ageing contributes to identifying the health needs and problems of old age. Preventive care helps individual to adjust to old age and prevents further problems. The family has an important role to play during the old age of their parents or grand parents. Rehabilitation during old age is important to prevent further problems.

6.7 Glossary

Degenerative	:	having passed from a stateness, wellness to a Lower state of well-being which is considered normal or desirable.
Deprivation	:	some which is taken away or prevented from having
Rehabilitation	:	restore to a good condition or bring back a person who is physically or mentally disabled more towards a normal life by special treatment.
Screening	:	investigating person's history to identify the ones who require care.
Sympathetic	:	sharing feelings, trouble or pain of others.

6.8 Keys to Exercises

Exercise 1

- i) Factors which influence ageing are:
 - hereditary factors
 - environmental factors, and
 - socio-economic status.
- ii) Physical effects which are commonly occur in the process of ageing are:
 - change in physical appearance
 - bony changes
 - lessened mobility in joints, muscles
 - slowing of central nervous system functions
 - imbalances in temperature regulation
 - changes in cardiovascular system
 - excretory system
 - reproductive system and
 - impaired digestive system functioning.
- iii) As explained the community health nurse needs to know the physical effects as this will help her to identify the needs of the elderly and plan care accordingly.

Exercise 2

- i) Elderly persons themselves by having health promoting behaviour
 - family and other community members
 - community health nurse and team members

ii) Health promotion activities should include:

- health screening
- nutrition counselling and prevention of deficiency
- health education related to environment, sanitation and personal health habits
- prevention of accident and disabilities

Exercise 3

i) Family members can' help in restoring health of elderly by providing:

- physical comfort
- environmental adjustment
- meeting social needs
- care during sickness
- promotion of mental activities
- assisting in rehabilitation during old age.

ii) Rehabilitation activities include:

- physiotherapy
- occupational therapy
- speech therapy
- social worker.

Rehabilitation of elderly persons is an integral process. Conditions which normally require rehabilitation are functional loss of organs or conditions related to ageing process.

LIST OF WORK CENTRES

S/.No.	Name of College	Hospital/Medical College
1.	College of Nursing	B.J.Medical College New Civil Hospital . Ahmedabad – 380016
2.	College of Nursing	Fort, Bangalore – 560002
3.	College of Nursing	K.L.V. Society, Belgaum
4.	Institute of Nursing Education	J.J. Group of Hospitals Bombay – 400008
5.	College of Nursing	Armed Forces Medical College Pune – 411040
6.	College of Nursing	S.S.K.M. Hospital Calcutta – 700020
7.	College of Nursing	Medical College Hospital Guwahati – 781001
8.	College of Nursing	Nizam's Institute of Medical Sciences, Hyderabad
9.	College of Nursing	Indore – 452001
10.	College of Nursing	Jaipur – 302004
11.	College of Nursing	G.S.V. Medical College Hospital Kanpur – 208002
12.	College of Nursing	Christian Medical College Ludhiana – 141008
13.	College of Nursing	Sri Ramakrishna Institue of Para Medical Sciences, Coimbatore
14.	R.A.K. College of Nursing	Andrews Ganj, New Delhi – 110024
15.	S.J. Hospital	Ansari Nagar, New Delhi – 110029
16.	College of Nursing	Medical College Hospital Trivandrum – 695011
17.	College of Nursing	Kottayam, Kerala

UNIT 7

Review of Productive System

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7.0 Introduction

In the preceding units, you have learnt Family Health Care which included concepts and principles of family health care, assessment of family needs, identification of risk families, nursing intervention and family health records. In this module, we deal with one of the important aspects of family health care i.e. Maternal and Child Health. In this unit, you will review the anatomy and physiology of female and male reproductive systems. You will also gain deeper understanding of female reproductive organs and the importance of the related pelvic organs. We will also discuss, to some extent, the female pelvis and foetal skull and their importance and relationship in obstetrics.

7.1 Objectives

In this unit you are going to learn about the anatomical structure of female and male reproductive organs and their physiological functions.

After going through this unit you should be able to:

- Classify the female reproductive organs
- List the organs of female reproductive system
- List the related pelvic organs of female reproductive system.
- Describe the physiology of female reproductive organs
- List the male reproductive organs
- Describe the physiology of male reproductive system.

7.2 Anatomy and Physiology of Female Reproductive System

You know that the female reproductive system is divided into two groups - external and the internal reproductive organs (genitalia). Let us discuss these external and internal organs, and breasts and other accessory organs in the following sub-sections.

7.2.1 External Organs

The external reproductive female organs i.e. vulva (Pudendum) (the term which is derived from the Latin word meaning covering) includes everything that is visible externally from the lower margin of the pubis to the perineum. These structures are shown in Fig. 1.1.

Mons Pubis (Mons Venaris): It is a firm cushion like formation. It covers the symphysis pubis and is covered with hair. It constitutes the upper aspect of the [vulva](#). It is composed of adipose tissue. It lies anterior to the vaginal and urethral openings.

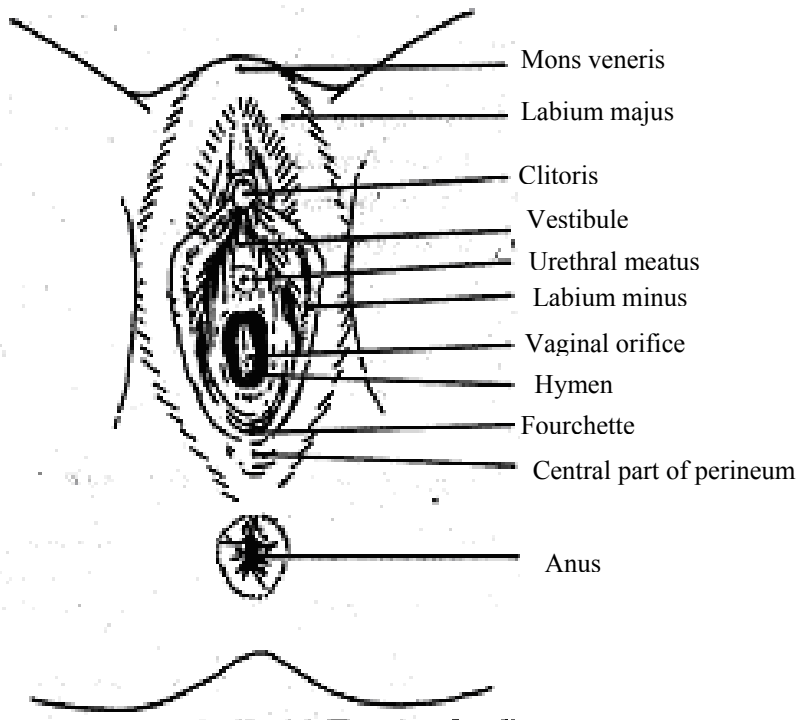


Fig. 1.1: The External genitalia

Labia Majora (Singular-Labia Majus): These are bilateral prominent cutaneous folds extended downwards on each side from mons pubis in front to end at perineum. Each fold is 7-9 cm long, 2-4 cm wide. The labia majora contains fatty areolar tissue, veno plexus and nonstriated muscle fibers with a covering of stratified squamous epithelium of skin. The covering skin is hairy on outer aspects of labia. Both inner and outer surfaces contain sebaceous and sweat glands. Child birth trauma can cause vulval haematoma. Labia majora is homologous with scrotum in male.

Labia Minora (Singular-Labia Minus): The labia minora are two thin folds of cutaneous tissues lying between and parallel to the labia majora. They are reddish in colour. Each fold is about 5 cm long, 0.5 - 1 cm thick. The inner surfaces generally remain in contact with each other. Upper divisions of each labia minus unite to form a hood like structure for the clitoris. This skin fold hanging over the clitoris is termed as prepuce. The lower divisions unite to form frenum of clitoris. Posteriorly they unite in the middle to form a thin ridge of skin called fourchette. Labia minors contain two of nonkeratinized skin containing elastic tissue, veins, a few smooth muscles, abundant; nerve endings, and sebaceous glands but no hair follicles or sweat glands. They become erectile on sexual activity. They are homologous to pineal urethra in male.

Clitoris: It is a midline 2.5cm cylindrical erectile structure attached to the undersurface of symphysis pubis by suspensory ligament. Clitoris lies 2.5 cm above external urinary meatus and its body lies in front of symphysis pubis. Childbirth can cause tear around clitoris and excessive hemorrhage. Clitoris is an analogue to penis in male.

Vaginal Vestibule: It is a triangular area between the labia minora laterally, from clitoris at the apex to fourchette anteroposteriorly. There are four openings into the Vestibule.

- i) **External urethral opening:** This is a midline anteroposterior slit with two lateral lips lying behind clitoris and just in front of vaginal orifice. Paraurethral duct (Skene's duct) opens on either side of external urethral meatus or on its posterior wall inside the orifice.
- ii) **Vaginal orifice (introitus):** It is a median slit behind urethral opening. It is completely guarded by a septum of mucous membrane called hymen. In a virgin, hymen has a small eccentric opening not usually admitting the finger tip. On coitus it gets ruptured. Following childbirth per vagina hymenal tags (carunculae myrtiliformes) are visible. Hymen is composed of double layer of stratified squamous epithelium with intervening vascular connective tissue. Vaginal introitus gets dilated on coitus and child birth.
- iii) **Two openings of Bartholin gland ducts:** Bartholin glands are pea sized mucus secreting oval glands. Each gland is situated posterior to Vestibule. The duct is about 2 cm long and opens in the groove between hymen and labia minus. The gland and duct are lined by single layer of columnar epithelia, except for the duct opening which is lined with stratified squamous epithelium. On sexual excitement, Bartholin glands secrete alkaline mucus that lubricates the vaginal introitus to facilitate coitus. The gland can become infected and infection is termed as Bartholin abscess or Bartholinitis.

The vulva receives its blood supply from the pudendal arteries and nerve supply from pudendal nerves.

Now we come to the important organs of reproduction i.e. pelvic floor and perineal region.

The Pelvic Floor and Perineal Region: The pelvic floor is also known as pelvic diaphragm. It is composed of two pairs of muscles, levator

ani muscles and the coccygeus muscles. The diagram of pelvic floor is given below in Fig. 3.2.

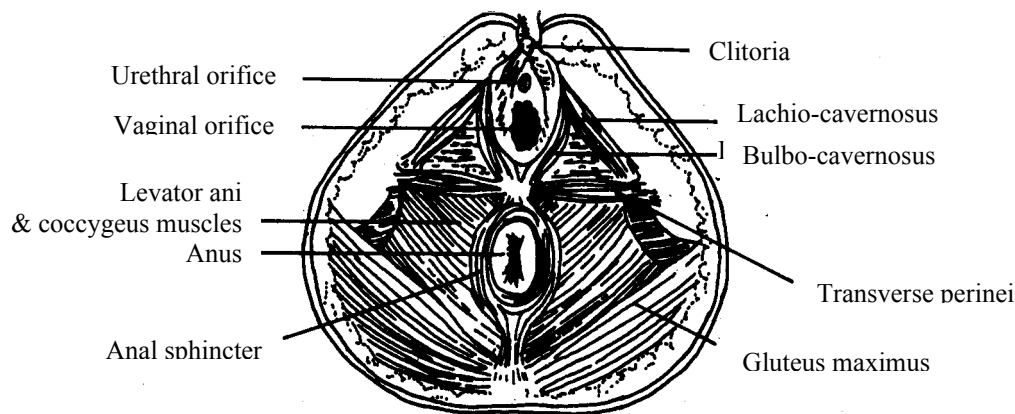


Fig. 1.2: The Pelvic Floor

The deeper layer is composed of three pairs of coccygeus muscles:

- i) The Pubo Coccygeus Muscle
- ii) The Ilio Coccygeus Muscle
- iii) The Ischio Coccygeus Muscle

The superficial layer is composed of fine muscles:

- i) The external anal sphincter
- ii) The transverse perennial muscle
- iii) The bulbo cavernous muscle
- iv) The ischie cavernous muscle
- v) The membranous sphincter of the urethra.

The functions of this region includes the following:

- i) Supports the weight of the abdominal and pelvic organs
- ii) Its muscles are responsible for the voluntary control of micturition, defecation and play an important part in sexual intercourse.
- iii) During childbirth it enhances passive movements of the foetus through the birth canal.

Perinial Body and Perineum: The perinial body is a wedge shaped mass of fibrous muscular tissue that extends upwards from the perineum and occupies the area between the vagina and the rectum. The base is called perineum. The perinial body is 4 cm in width and depth. Deep and superficial muscles fuse in the centre of this

body. The perineal body is stretched and flattened when the vagina is distended as the foetus passes through birth canal during delivery.

Exercise 1

- i) Fill in the blanks:
- a) The skin fold overhanging the clitoris is called.....
- b) Tags of torn hymen after childbirth are called.....
- c) Inflammation of bartholin gland is called.....

Activity

- 1) Draw a diagram of external genitalia of female and label it.
- 2) Draw a diagram of the pelvic floor and label it.

7.2.2 Internal Organs

The internal reproductive organs are contained in the true pelvic cavity and comprises the uterus, vagina, ovaries and fallopian tubes.

Uterus: Uterus is a hollow muscular, pear shaped organ contained in the cavity of the true pelvis. It is situated behind the urinary bladder and in front of rectum. It has a body which has a rounded upper part called fundus and a lower part called neck or cervix. It measures approximately 7.5 cm in length, 5 cm in width at its widest part and 2.5 cm in thickness (in anteroposterior diameter). It weights approximately 60 gm. In it, the fertilised ovum embeds, is nourished and protected for 40 weeks, until during labour, the fetus is expelled by the powerful constructions of the uterine muscle.

The angle where the Fallopian tube is inserted is known as the Cornu or horn. The body of the uterus gradually tapers downwards and the constricted area immediately above the cervix is known as Isthmus which distends during pregnancy to form the lower uterine segment.

- **The perimetrium** is a layer of peritoneum; which covers the uterus except at the sides, beyond which it extends to form the broad ligaments. The perimetrium is firmly attached to the uterine wall except at the lower anterior part where, at the level of the isthmus, the peritoneum is reflected on to the bladder.
- **The myometrium**, or muscle coat has very great expansile properties. It forms seven-eighths of the thickness of the uterine wall and consists of three layers, an inner circular layer of fibres, a thick intermediate layer, the fibres of which form an encircling figure of eight arrangement surrounding the blood vessels, and by constricting them act as living ligatures to control, bleeding during the third stage of labour. The fibres of the outer muscle layer are arranged longitudinally and because they are four times more plentiful in the fundus the decreasing gradient plays a part in the expulsion of the fetus.
- **The endometrium** lines the body of the uterus and consists of columnar epithelium glands, which produce an alkaline secretion, and stroma or connective tissue cells capable of the rapid regeneration necessary following menstruation. It is also a rich source of prostaglandins. The endometrium is richly supplied with blood and is about 1.5 mm thick. When embedding of the fertilised ovum occurs

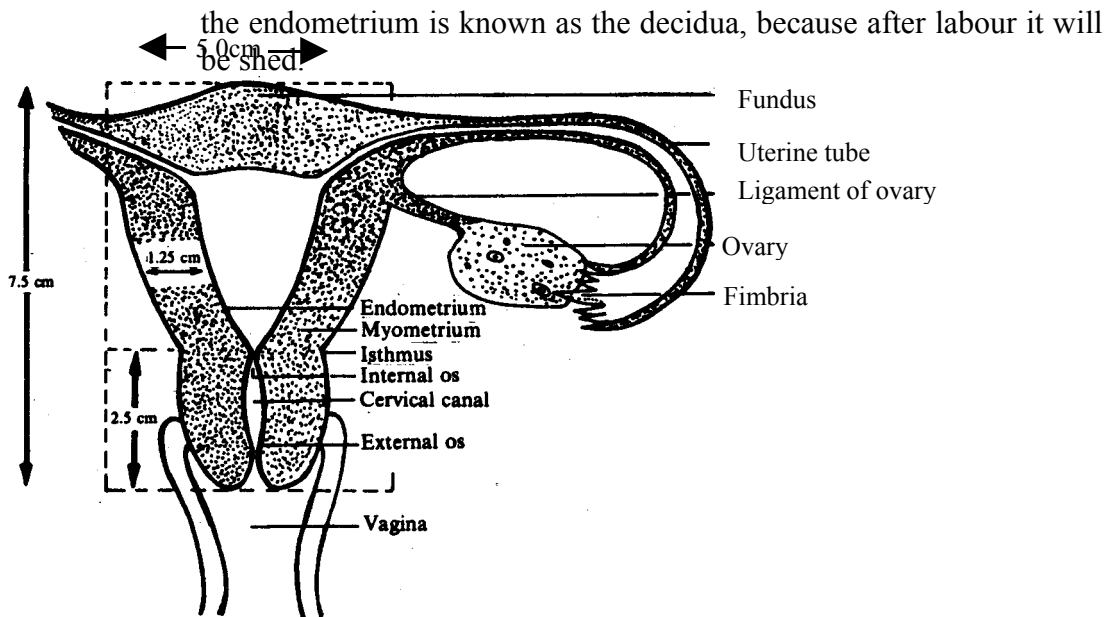


Fig. 1.3: The uterus and the left uterine tube and ovary

There are 4 pairs of ligaments which give additional support and maintain the uterus in its forward inclination. These are:

- The two broad ligaments-continuous structure that is formed by a fold of the peritoneum.
- The two round ligaments, one on each side, are fibromuscular chords composed of muscles prolonged from the uterus and a small amount of connective tissue.
- The two utero-sacral ligaments, again one on each side extend backward from the cervix, pass on each side of the rectum, and insert at the posterior wall of the pelvis.
- The transverse cervical ligaments gives support to the uterus from below. The blood supply to the uterus is through the uterine artery which is a branch of the internal iliac artery. The autonomous nerves (sympathetic and parasympathetic) supply the uterus.

Vagina: Vagina is a muscular membraneous canal. It connects the internal and external reproductive organs.

The vagina consists of

- a muscular layer

- a loose connective tissue layer
- the mucous layer which is arranged in folds called rugae.

During child bearing years of life the vaginal secretion is normally acidic, with a pH ranging from 4.0 to 5.0 due to lactic acid resulting from breakdown of glycogen by Doderlin bacilli.

The space between the cervix and vagina is termed as fornix (an archlike structure). There are four fornices of vagina: the anterior, the posterior and two lateral fornices. The posterior fornix is considerably deeper than the anterior because posterior wall of vagina is larger. Anterior wall of vagina is 6.7 cm long whereas posterior vaginal wall is 8.5 cm long. Fornices are important in pelvic examination.

Fallopian Tubes or Uterine Tubes or Oviducts: Fallopian tubes, are two slender muscular tubes, that extend laterally from the cornua of the uterine cavity, one from each side. It consists of three layers:

- Serous layer- the outer layer, made up of peritoneum covering
- Muscular layer- the middle layer
- Epithelial layer - the inner surface is lined by ciliated and nonciliated, secretory cells.

The length varies from 7 to 14 cm. and thickness also varies. The proximal end is very small, but there is a slight gradual increase in width distally. Each tube has four parts:

- The interstitial portion - passes through the muscle wall
- The Isthmus is immediately adjacent to the cornua of uterus
- The Ampulla is the expanded lateral portion
- The fimbriated end or infundibulum, is the wide distal funnel shaped opening

Ovaries: The ovaries are the female sex glands (gonads). They are two small, flattened almond shaped organs located one on each side of the uterus. Each ovary is attached to the posterior surface of the broad ligament by the mesovarian ligament. The ovaries and fallopian tubes are supplied by the ovarian arteries.

An ovary is usually described as having the size and shape of an almond; each is about 4-5 cm long, 2 cm wide, and 1 cm thick and weighs about 3 gm.

The ovary consists of two parts: central portion or medulla, and an outer layer or cortex. The medulla is composed of connective tissue, blood and lymph vessels and nerves. In the cortex numerous minute follicles are embedded, each of which contains an oocyte, germ cell of the female. These are produced during the first five to six months of fetal life.

It is estimated that 200,000 oocyte are present in each ovary at birth. At the beginning adolescence 500,000 oocyte are present, called primary oocyte. At mature stage during reproductive period these are termed as graafian follicle. The ovaries perform two vital functions:

- i) they produce, mature and extrude ova
- ii) they secrete hormones

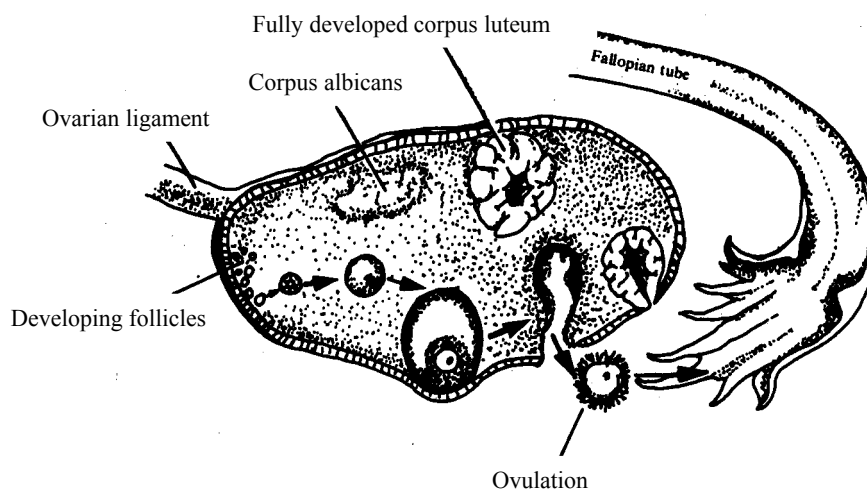


Fig. 1.4: Life cycle of the Graafian follicle

The function of ovaries will be described in detail in subsection 1.2.5.

Exercise 1

- i) List the three layers of the uterus.
 - a)
 - b)
 - c)
- ii) Name two main blood vessels which supply blood to uterus.
 - a)
 - b)

7.2.3 Related Pelvic Organs

We have already learnt about the external and internal reproductive organs of the female. Now you will learn about the related organs such as bladder and rectum which are situated in the pelvic cavity, and lie in close proximity to

the reproductive organs. We will learn in brief the structure, function and exact location of these organs. If bladder or rectum is full, it interferes with satisfactory pelvic examination of woman. Full bladder and rectum also cause delay in the progress of labour. Injuries to bladder and rectum do occur sometimes at the time of childbirth. Let us discuss bladder and urethra first and then talk of rectum.

Bladder and Urethra: The urinary bladder is a muscular membranous sac. It is situated behind the symphysis pubis and in front of the uterus and vagina. Urine is collected into the bladder by the ureters. The ureters pass across the brim of the bony pelvis, to the posterior part of the bladder, which they enter-somewhat obliquely at about the level of the cervix.

The bladder empties through urethra - a short passage/tube 3-8 cm long that terminates in the urinary meatus. The meatus is a small opening situated in the middle of its vestibule between the clitoris and vaginal orifice.

Rectum: The lowest segment of the intestinal tract is situated behind and to the left of the uterus and vagina. The terminal inch of the rectum is called the anal canal. The anus is a deeply pigmented, puckered opening situated 4-5 cm below the vaginal orifice. It consists of bands of circular muscles, the internal and external sphincter ani muscle. Veins of the lower rectum and anal canal sometimes become engorged and inflamed during pregnancy, as a result of pressure exerted by greatly enlarged uterus. The distended veins or enlargement of veins of lower rectum and anal canal are called hemorrhoids or piles.

7.2.4 The Breasts

The breasts of the female may be regarded as accessory glands of the reproductive system. These are two in number. Breasts are situated one on each side of the chest between second and sixth ribs. The nipple and areola is covered by small elevations known as the Tubercles of the Montgomery.

The breasts are compound secretory glands composed mainly of glandular tissue which is arranged in lobes, approximately 20 in number (see Fig. 1.5). Each lobe is divided into lobules and consists of alveoli with secretory cells which produce milk. Small lactiferous ducts carrying milk from the alveoli of each lobe, unite to form 20 large ducts. These ducts, before opening on the surface of the nipple widen to form ampulla which act as temporary reservoirs for milk.

The nipple, composed of erectile tissue is covered with epithelium and contains smooth muscle fibres which has a sphincter like action in controlling the

flow of milk. Surrounding the nipple is an area of loose skin known as the areola.

In early puberty the breasts undergo extensive changes. Mammary growth is controlled by hormones. The combined influence of the ovarian hormones (estrogen and progesterone), the anterior pituitary hormones, somatotropin (growth hormone) and prolactin bring about normal growth of the breast. At the end of puberty the breasts reach a size that is characteristic for the individual woman. During pregnancy major changes take place in the development of secretory tissue

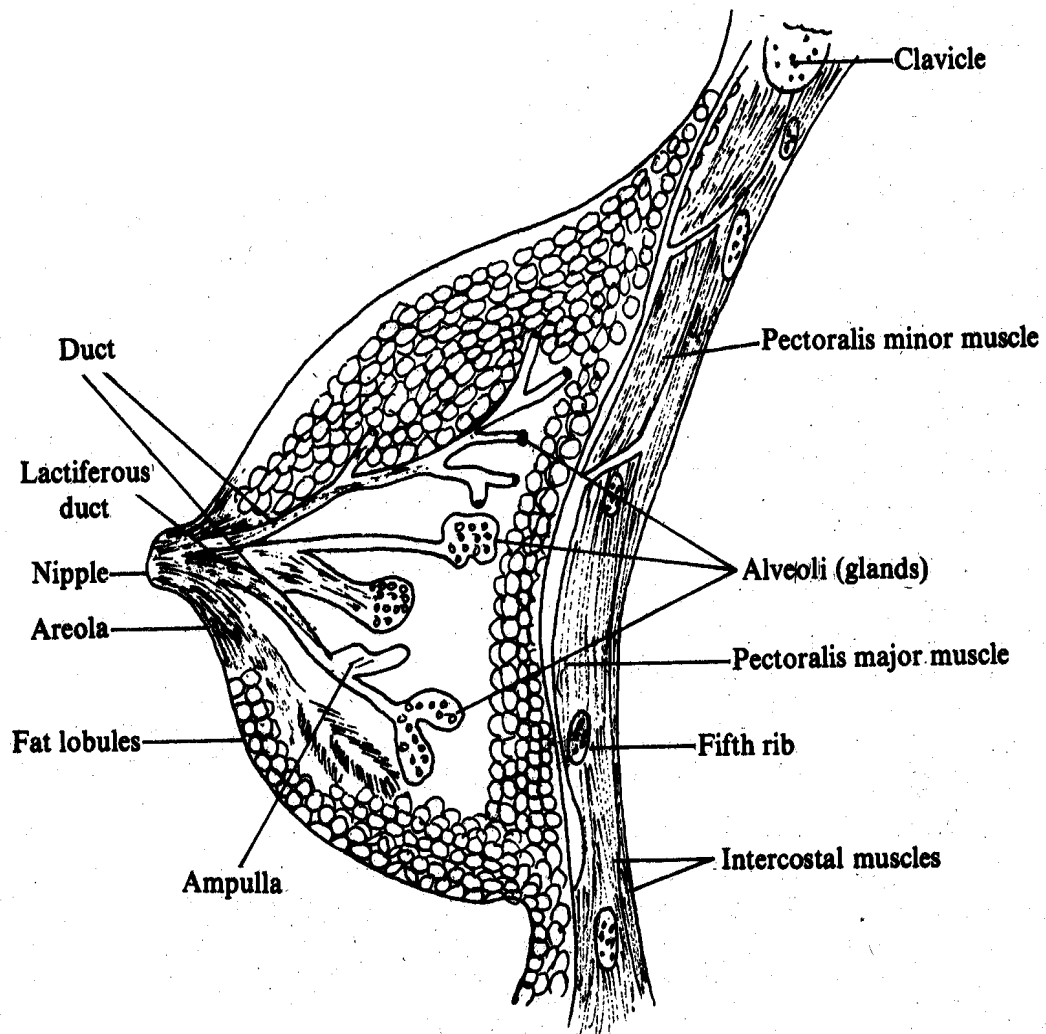


Fig. 1.5: The Breast

As early as six weeks of pregnancy, the breasts become enlarged, tense and sometimes tender. The growth of breasts continue throughout pregnancy. The nipple becomes darker in colour and more erectile.

The primary areola: At 12 weeks there is darkening of the area around the nipple. this time a clear fluid can be expressed from the breasts, but true clostrum does not appear until the 16th week.

Montgomery's tubercles: From the 8th week onwards, 12 to 13 small nodules appear on the primary areola. They are the pouting mouths of sebaceous glands, and the sebum they secrete keep the nipple soft and pliable.

The secondary areola: It is seen after the 16th week. It is a mottled zone of pigmentation, extending beyond the primary areola and sometimes covering half of the breasts. The breast pigmentation may persist for 12 months after childbirth.

Exercise 3

Match the statements given in Column 1 with those in Column 2

Column I	Column II
i) The nipple composed of special tissue covered with epithelium and contain plain muscle fibres.	a) 13 weeks
ii) Dark area around the nipple.	b) 12 weeks
iii) Growth of breasts is controlled by hormones.	c) Estrogen
iv) Small nodules appear on the areolar at.....	d) Mongtomery Tubercle
v) Clostrum present in the breast at.....	e) 16 weeks
	f) 14 weeks
	g) Erectile
	h) Areolar

7.2.5 The Physiology of Female Reproductive System

During childhood the reproductive system undergoes gradual growth, along with other parts of the body, and becomes mature during adolescence. About the age of 9 to 11 years the reproductive organs begin to undergo rapid development. Given below is a note on the physical changes of puberty; i.e.

the usual sequence of sexual development in girls and the average age at which these changes are first seen:

- Before 8 years precocious sexual development
- Appearance of secondary sex characteristics before the age of eight years in girls. (Certain pathological conditions may stimulate the ovaries to premature activity)
- 12-13 years - average age of sexual development
- After 12-13 years-Delayed sexual development, physical changes, growth of bony pelvis and widening of hips ,
- Certain changes in breasts also appear
- Growth of public hair, auxiliary hair, growth of external genitalia
- Acceleration of growth
- The first menstrual period is termed as menarche. Menarche appears between 9 to 17 years.
- Ovulation usually begins one or two years following menarche.

Functions of the mature reproductive cycle

After the ability to reproduce has been attained, the reproductive organs of the female go through a series of cyclic changes each month throughout child bearing period (like menstruation) except during pregnancy, lactation and cessation of menstruation (menopause). These changes involve two cycles:

- i) Ovarian cycle
- ii) Endometrial cycle or menstruation

Let us discuss ovarian cycle first.

The Ovarian Cycle

The ovarian cycle consist,-. of the series of changes in an ovary that are repeated at ,, monthly intervals. Main phrase of the cycle includes of development of the-graafian follicles, ovulation and formation. of corpus luteum.

Let's discuss briefly these three developments below.

Graafian Follicles: It is estimated that at birth each ovary contains two lacs of immature follicles. Approximately fifty thousand are present in each ovary when puberty is reached. From the time ovulation begins during puberty until the menopause, some of the primary follicles, under the influence of follicle stimulating hormones (FSH) from the anterior pituitary develop to full maturation. The structure of a fully mature graafian follicle (see Fig. 1.6) shows the following structures.

- Theca internal - inner layer
- Theca external - external layer
- Mendera ganulosa - cells lining the graafian follicle
- Discus proligerous - mass of cells
- Liquor follicle - fluid accumulates in the centre of the graafian follicle
- Ocyte - enclose in discus proligerous.

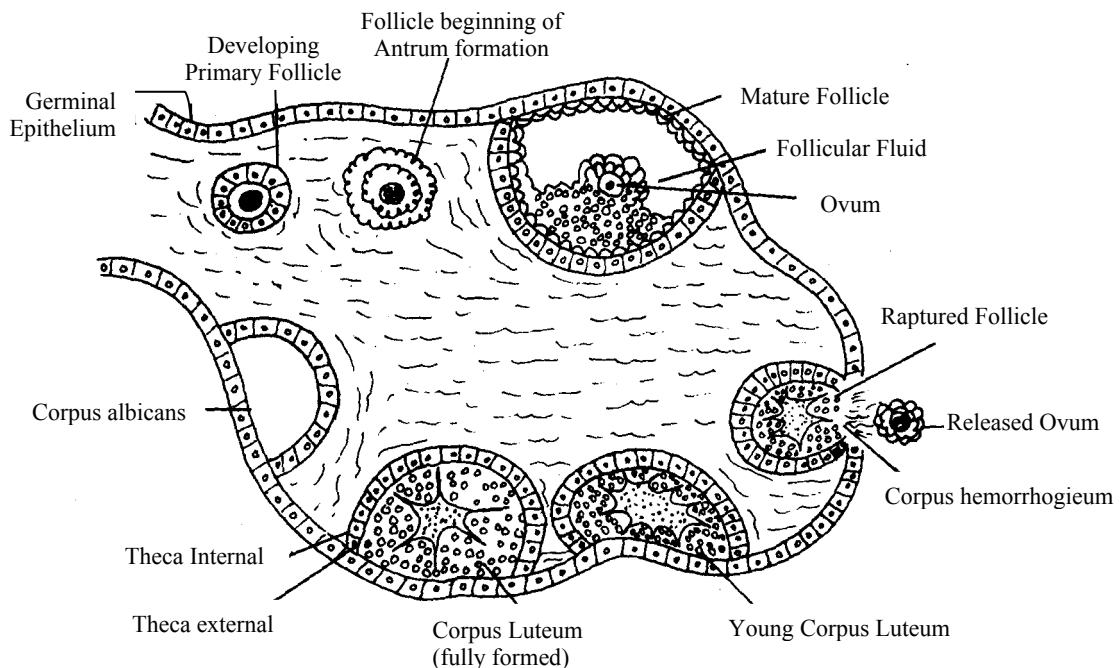


Fig. 1.6: Ovulation

Ovulation: When a graafian follicle, with its enclosed maturing oocyte, reaches the surface of the ovary, its wall becomes thinner and it finally ruptures. The process of extrusion of a matured oocyte from the ovary through rupture of graafian follicle is called ovulation. The ovum is discharged near the fimbriated end of the fallopian tube. Ovulation is the dividing period between the two phases of the ovarian and menstrual cycle. The pre-ovulatory period is termed follicular phase and post-ovulatory period termed luteal phase.

The time of ovulation is approximately 10 days before the end of a cycle.

Several signs and symptoms may give evidence that ovulation will or has taken place. These are:

- i) Mid-cycle abdominal pain.
- ii) Mid-cycle vaginal bleeding amounting to no more than spotting.
- iii) A shift in basal body temperature. Body temperature is relatively higher during post-ovulatory period. The basal body temperature shift is a useful clinical method of determining the approximate time of ovulation. The woman is instructed to take her oral temperature daily for six months immediately after awaking in the morning and before getting out of bed to determine the time of ovulation.

Corpus Luteum: After ovulation the cavity of the ruptured graafian follicle is replaced by a compact mass of tissue termed as corpus Lueum (Yellow body), so named because it is of yellow colour. The corpus luteum functions as an endocrine organ. It produces progesterone and -sécrites the follicular hormone estrogen. Corpus luteum degenerates and forms the corpus albicans. If pregnancy occurs, it is termed corpus luteum of pregnancy, and continues approximately three months.

Ovarian Hormones

The ovaries produce two steroid hormones: estrogen and progesterone.

- i) **Estrogen:** is a female sex hormone. It is responsible for the growth of female reproductive organs and the mammary glands. Estrogen is also involved in a number of systemic processes such as fluid, electrolyte balance and body temperature. The functions of estrogen are as under:
 - a) Changes cervical mucus to favour migration of sperms.
 - b) It stimulates mobility of fallopian tubes to propel matured ova through them.
 - c) It prepares endometrium for implantation of fertilized ovum.
 - d) It helps in the growth of uterus and breasts during pregnancy.
- ii) **Progesterone:** The corpus luteum secretes progesterone in large amount and also some estrogen. Progesterone is a progestational hormone. Its functions include the following:
 - a) It prepares uterus for implantation of a fertilized ovum and maintenance of pregnancy.
 - b) Progesterone along with estrogen causes cyclic changes in the reproductive tract.
 - c) It is necessary for the complete development of the mammary glands.
 - d) It has some effect on metabolic process.

Ovarian hormones bring cyclic changes in the cervix and vagina.

Cervical Mucus: Varies considerably in its characteristics during the course of each cycle. Cervical mucus can be examined and evaluated for its qualities to determine approximate time of ovulation and to assess ovarian functions.

Vaginal Mucosa: Mucosal cells and the secretions of the vagina undergo regular changes during each ovarian cycle. Vaginal smears may be used to estimate estrogen activity.

Now we will come to the discussion on endometrial cycle.

Endometrial cycle (menstrual): As the ovary undergoes cyclic changes, so the endometrial lining of the uterus also undergoes a series of changes. The endometrial cycle can be described in three main phases:

- i) **The Follicular Phase:** This phase commences about two days after the cessation of menstruation and lasts until ovulation takes place (14 days previous to next menstruation period). Estrogens are responsible for the growth of the endometrium which takes place at this time.
- ii) **The Luteal Phase:** The premenstrual phase commences after ovulation, when progesterone causes the endometrium, which has already been growing under the influence of estrogens to hypertrophy still further. The endometrium glands increase in size, the capillaries are distended with blood, and small haematoma form under the epithelium producing red congested surface. This thick soft vascular membrane is admirably prepared for the reception of the fertilised ovum. Should fertilization not take place, the ovum dies, the corpus luteum disintegrates, the secretion of estrogens and progesterone falls and endometrium shows degenerative changes which are followed by desquamation and bleeding.
- iii) **The Menstrual Phase:** The menstrual phase, characterised by vaginal bleeding, lasts for three or four days, and occurs every 28-30 days from puberty to the menopause in the normal woman. This is the terminal phase of the menstrual cycle. The superficial layer of the endometrium is shed, along with blood from the capillaries. The unfertilised ovum is also discarded. As soon as menstruation ceases the regeneration of the endometrium begins. The remaining glands and stroma cells multiply and the effused blood is absorbed as in the healing of a wound. The endometrium is reformed. Certain signs and symptoms appear a few days before the onset of menstruation. Collectively these signs and symptoms are called premenstrual syndrome.

Let us discuss the premenstrual syndrome.

Premenstrual Syndrome

A few days before bleeding begins, certain promontory signs are frequently noticed. Common signs are abdominal distention, headache, backache, breastfullness, bladder irritability, constipation and pre-menstrual tension characterised by depression or anxiety. These signs and symptoms should be considered as normal. It is believed that if menstruation is accepted/regarded as a normal physiological process it often reduces discomforts of menstruation such as dysmenorrhoea.

The Climacteric or Menopause

The cyclic changes of the reproductive organs of female continue during the child bearing period. Beyond this period the function of the ovary gradually decreases and ultimately stops. This period is called climacteric or menopause.

The climacteric, frequently termed as the menopause and sometimes called "the change of life", is the period of life at which ovarian function gradually decreases and eventually stops. Menopause means permanent cessation of menstruation. The climate occurs between the age of 40 and 50, but there is considerable variation of time. As menopause approaches menstruation often occurs irregularly. The flow sometimes increases slightly, but usually begins to decrease in amount.

Vaso-motor changes - hot flushes - of the face and neck sweats and flashes of heat that may involve the entire body are the most characteristic symptoms of climacteric.

Exercise 4

- i) Define "Ovulation".

.....
.....
.....
.....

- ii) List the signs and symptoms of premenstrual syndrome.

.....
.....
.....
.....
.....

7.3 Anatomy and Physiology of Male Reproductive System

In the foregoing section and subsections you have learnt about anatomy and physiology of female reproductive organs. In this section we shall focus the anatomy and physiology of male reproductive organs. The description of these organs is given below in subsection 1.3.1.

7.3.1 Organs of Male Reproductive System

The male reproductive organs are:

- Testes
- Epididymis
- Vas deferentia (Singular -vas deferens)
- Seminal Vesicles
- Ejaculatory ducts
- Prostate Gland
- Bulbo Urethral Glands (Cowper's Glands)
- Penis
- Scrotum and Spermatic

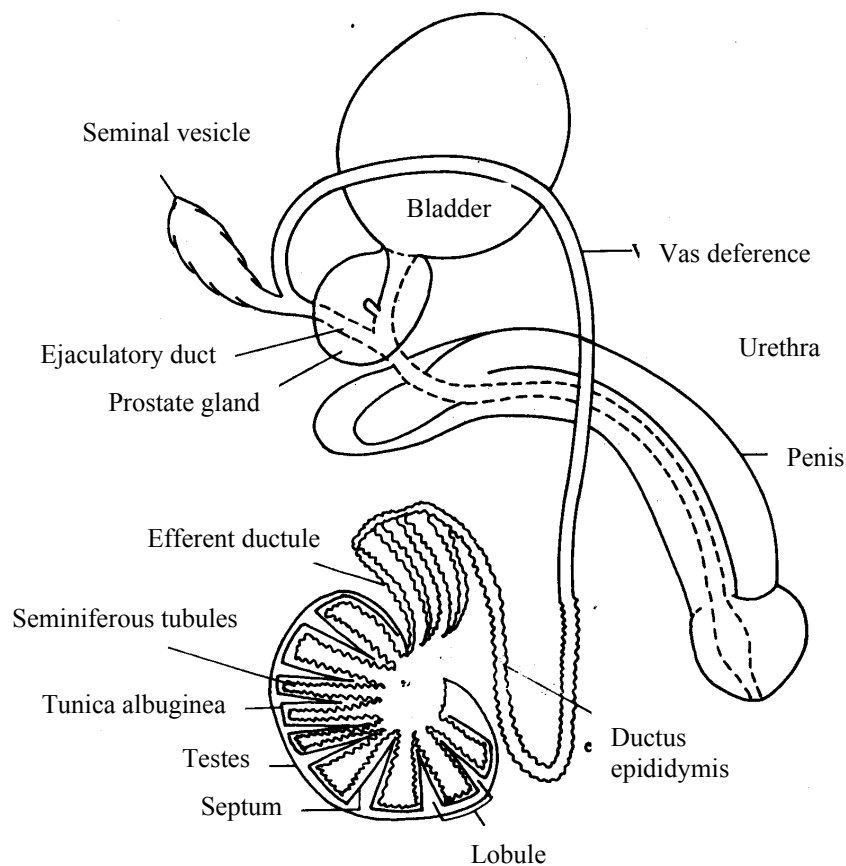


Fig. 1.7: Male reproductive organs

Let us discuss each of these organs.

Testes: The testes, the sex organs or gonads, of the male are two slightly flattened, ovoid, glandular bodies. The testes are formed in the peritoneal cavity during foetal development and then normally migrate through the inguinal canal into, the scrotum during the eight or ninth month of pregnancy, or occasionally soon after birth. Descent into the scrotum by the age of puberty is essential for normal spermatogenesis; which is adversely affected by the relatively higher temperature within the body. Each testes has a mass of narrow, coiled tubules, called semiferous tubules. These tubules are from 1 to 3 feet long. The combined length of many tubules in one testis equals almost one mile.

Epididymis: The epididymies are bilateral narrow bodies situated along the upper posterior part of each testis. Each contain a narrow, tortuous tubule approximately 20 [ft.in](#) length. This tubule serves as the area to which the spermatozoa that have been released into the semiferous tubules are conveyed, and where they may remain for about three weeks. Here they are retained until physiological maturation is complete and until they become motile. As the tubule of the epididymis leaves the body, it becomes known as vas deferens.

Vas deferentia: The vas deferentia are bilateral ducts, approximately 18 inches long, which continue from each epididymis and then terminate in the bilateral ejaculatory ducts, which open into the urethra. A vas deferens ascends from each testes through a spermatic cord, passes through the inguinal canal, crosses the pelvic cavity, and after coursing upward and medially, passes downward to the base of the bladder where it widens into an ampulla. This terminal end joins with a duct from seminal vesicle, and they become the ejaculatory duct. The vas deferens serves as a storage site for sperm.

Seminal Vesicles: The seminal vesicles are two membraneous pouches, situated between the lower part of the bladder and the rectum. Through a short duct each vesicle joins the terminal end of a vas deferens and with it becomes an ejaculatory duct.

Ejaculatory Ducts: The ejaculatory ducts are paired, narrow, short tubes formed by the joining of the terminal ends of the vas deferentia and the ducts from the seminal vesicles. These two ducts descend between the lobes of the prostate gland and open into the urethra into which they discharge sperm and secretions from the seminal vesicles and epididymis.

Prostate Gland: The prostate gland is located just below the bladder and surrounds the upper portion of the urethra. It secretes a thin, complex fluid that is discharged into the urethra through many small tubules that open into it.

Bulbo Urethral Glands (Cowper's Glands): The bulbo urethral glands are two small pea sized bodies located below the prostate gland within the pelvic floor. They secrete an alkaline, viscous fluid that is emptied into the urethra, through a small duct from each gland.

Penis: The penis is the male organ of copulation. Semen is ejaculated through it into the vagina of the female during intercourse, and the active spermatozoa in the semen can enter the cervix and travel through the fallopian tubes where fertilization of an ovum may take place.

The penis is a cylindrical organ composed of three elongated masses of erectile tissue. A slight enlargement at the end of the penis, called the glans penis, contains urethral opening and many very sensitive nerve endings. The skin of the penis extends over its end, covers the glans, and become folded upon itself. This is called the prepuce or the foreskin and is the portion that is surgically removed when a circumcision is performed.

Urethra: The male urethra, which extends from the neck of the bladder to the orifice in the glans of the penis, serves two purposes. It conveys urine from the urinary bladder at urination and transmits semen containing spermatozoa at copulation.

Scrotum and Spermatic Cord: The spermatic cords originate just above the inguinal canal, pass through the canal, and down to the scrotum. Scrotum a pouch like double chambered structure is made up of skin, fascia and muscle. The testes, epididymis, and parts of the spermatic cords are enclosed.

7.3.2 Physiology of Male Reproductive System

Physical changes occur in puberty in boys. The earliest physical changes in boys are , testicular growth, and thinning and pigmentation of scrotal skin. The growth of genital organs then continues.

Pubic hair begin to appear. Prostate growth and secretory activity begins. Breast also enlarge slightly. Axillary hair grow. Fine hair appear on upper lip. Deepening of voice occur at this time. Physical growth is accelerated and height production increases rapidly.

Boys continue to grow even beyond the age of 18 years. Fertility develops soon after mid puberty in boys.

The mature reproductive organs of the male performs three major functions i.e. of hormones, spermatogenesis and secretions from glands. The hypothalamus and pituitary gland are closely inter-linked with function of the reproductive organs. Hormonal function is carried out by specialised cells of the testes called interstitial cells. These cells secrete the male hormone testosterone. Testosterone is necessary for normal development and activity of male organs. Spermatogenesis also takes place in the lining of seminiferous tubules. The secretions from the male accessory glands are as follows:

- The semen - produced and released from testes
- The seminal fluid - the seminal vesicle secrete a yellow fluid
- The secretion from the prostate gland the combined secretion from the seminal glands provides a fluid that serves as a medium for sperm transport and as a favourable substance to sperm fertility.

The pH of semen varies 7.35 to 7.50. Semen is ejected from the male genital tract in an average volume of 3 ml. Each milliliter of semen normally contains 50 to 150 million spermatozoa.

So far we have discussed the anatomy and physiology of female and male reproductive systems in general. Now we shall talk of obstetrical anatomy which is important from the point of view of MCH care during pregnancy, child birth and postnatal care.

7.4 Obstetrical Anatomy

The internal organs of the female are contained in the pelvic cavity. The size and shape of the pelvis is important because the foetus has to pass through it during labour.

There are three factors which are concerned during labour.

- The passage - The pelvis (hard and soft parts)
- The passenger - The foetal skull (the whole)
- The powers - The uterine contractions (the general health of mother).

The passage and passenger will be described here. The powers i.e. the uterine constructions will be discussed in Section 2.4. Let us begin with passage i.e. pelvis first.

7.4.1 Pelvis

Pelvis has been classified into four types according to the shape of the brim (Fig. 1.8).

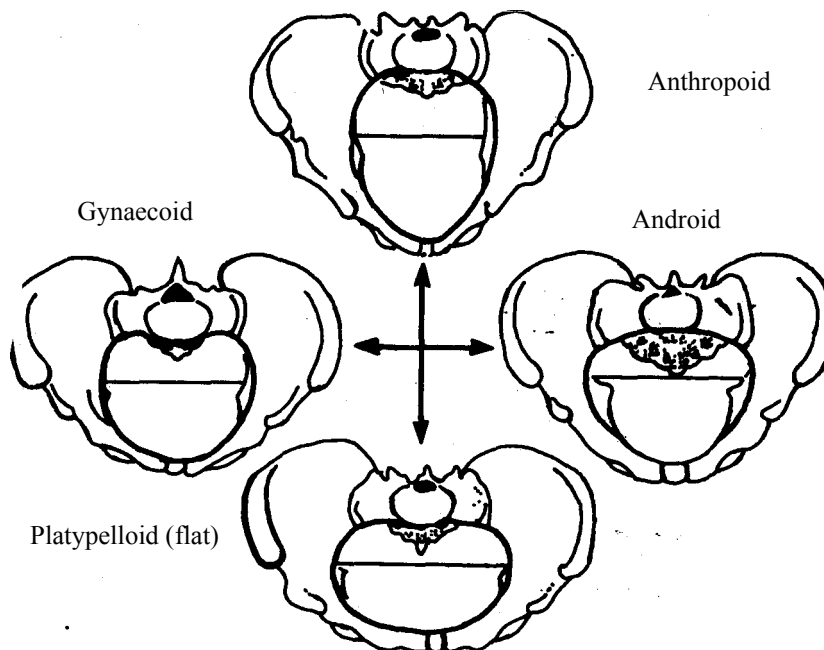


Fig. 1.8: Characteristic inlet of the four types of pelvis

- The gynaecoid pelvis - or true pelvis, has a round brim
- The android pelvis - has a heart shape brim
- The anthropoid pelvis - has an oval brim, diameter
- The platypelloid pelvis - or simple flat pelvis, has a kidney shaped brim, in the anteroposterior diameter

We will discuss only gynaecoid pelvis here as it is of obstetric importance.

Gynaecoid pelvis

The gynaecoid pelvis is composed of:

- i) Two innominate bones or hip bones composed of three parts:
 - Ilium
 - Ischium
 - OS pubis

- ii) Sacrum
- iii) Coccyx

There are three pelvic joints:

- One symphysis pubic joint
- Two sacroiliac joints
- One sacrococcygeal joint

There are five pelvic ligaments:

- Interpubic ligament
- Sacroiliac ligament
- Sacrococcygeal ligament
- Sacrotuberous ligament
- Sacrospinous ligament

The pelvis is divided into two parts:

- False pelvis - The upper expanded part
- True pelvis - The bony canal

The true pelvis is divided into:

- Pelvic brim or inlet
- Cavity
- Outlet

The pelvic measurements are as follows:

Diameters of the pelvic brim or inlet

- i) Anteroposterior diameters also called the obstetrical conjugate is 11 cm
- ii) Oblique diameters is 12 cm
- iii) Transverse diameter is 13 cm

Diameters of the Cavity

Cavity is circular in shape. All the diameters are 12 cm.

Diameters of the outlet

- The anteroposterior is 13 cm
- The oblique diameter is 12 cm
- The transverse diameter is 11 cm

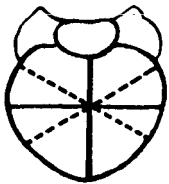
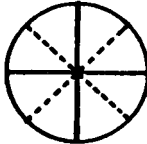
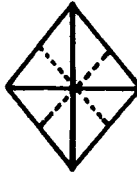
		Antero – posterior	Oblique	Transverse
Brim		11	12	13
Cavity		12	12	12
Outlet		13	12	11

Fig. 1.9: The pelvic measurements

Exercise 5

- i) Name the three pelvic joints.

.....

.....

.....

- ii) How is the true pelvis divided?

.....

- iii) What are the measurements of the pelvis?

7.4.2 Foetal Skull

The foetal skull contains the delicate brain which may be subjected to great pressure, during labour. It is large in comparison with the true pelvis. Head is the most difficult part to deliver. Some adaptation between skull and pelvis must take place during labour. Therefore the foetal skull is extremely important in obstetrics. See Figs. 1.10. and 1.11.

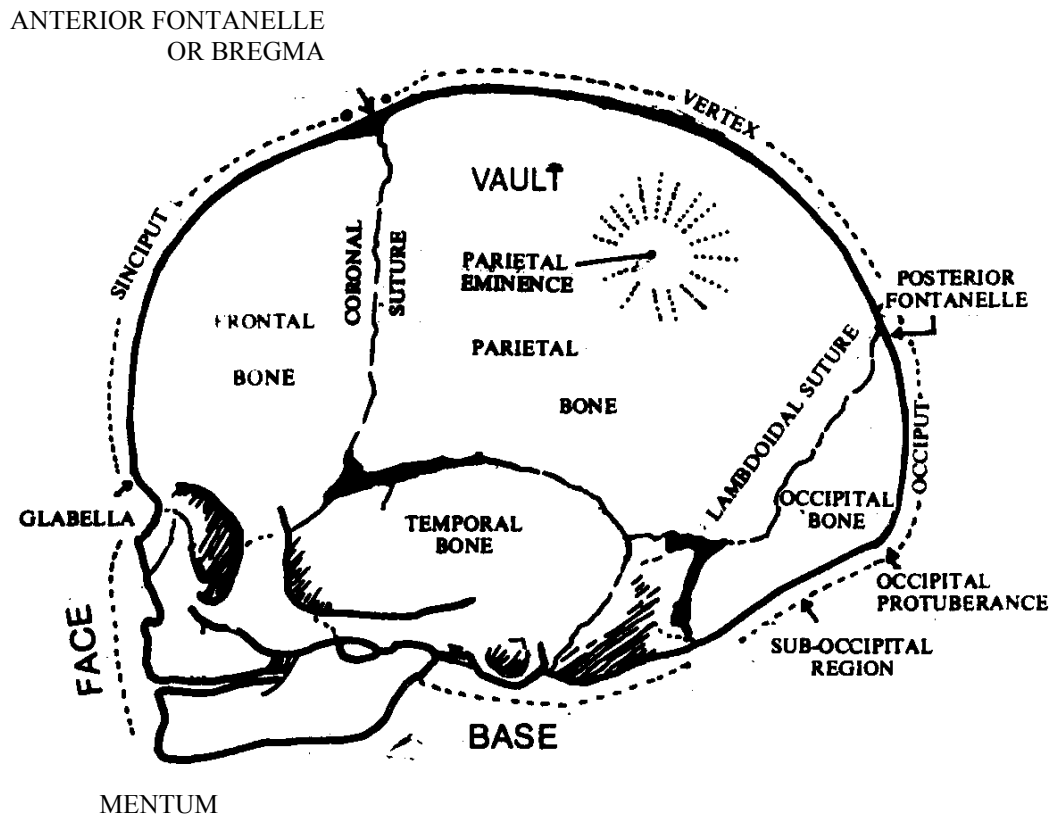


Fig. 1.10: Foetal skull, showing regions and landmarks of obstetrical

The foetal head may be divided into vault, face and base

Bones of the vault of the foetal skull are:

- occipital bone
- two parietal bones
- two frontal bones

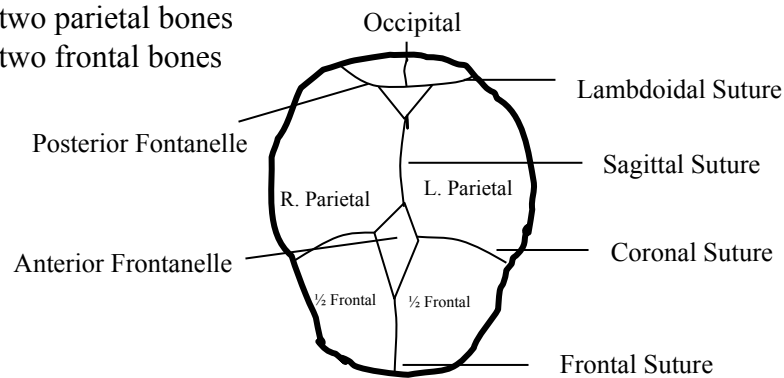


Fig. 1.11: Diagrammatic representation of the vertex area of foetal skull showing sutures and fontanelles

The Sutures - are cranial joints. The important sutures in the foetal skull are:

- The lambdoidal suture
- The sagittal suture
- The coronal suture
- The frontal suture

The Fontanelles - Where two or more sutures meet, a fontanelle is formed. There are two important fontanelles of foetal skull:

- Posterior fontanelle, closes 6 weeks after birth
- Anterior fontanelle, closes 18 months after birth

Regions of the foetal skull

- The occiput
- The vertex
- The sinciput or brow
- The face

The diameters of the foetal skull are given below:

- | | |
|-------------------------|---------|
| • Bitemporal | 8.2 cms |
| • Biparietal diameter | 9.5 cms |
| • Suboccipito bregmatic | 9.5 cms |
| • Suboccipito frontal | 10.5 cm |
| • Occipito frontal | 11.5 cm |
| • Mento vertical | 13.5 cm |
| • Submento vertical | 11.5 cm |
| • Submento bregmatic | 9.5 cm |

Moulding is the change in shape of the foetal skull that takes place during the passage through the birth canal, due to overriding of bones because of sutures and fontanelles.

Diagnosis of presentation and position of foetus are ascertained by means of palpation, vaginal examination, x-ray or ultrasound.

Exercise 6

i) The diameters of foetal skull are:

.....
.....
.....
.....
.....
.....
.....
.....

ii) The important sutures of foetal skull are:

.....
.....
.....
.....

7.5 Summary

You have seen that female as well as male reproductive organs are important for reproduction. Female reproductive external organs are collectively termed as vulva.

The internal organs are vagina, uterus, fallopian tubes and ovaries. The ovaries produce female hormones and ovum. Under the influence of hormones- uterus becomes prepared for pregnancy each month. When pregnancy does not take place, the endometrium of the uterus sheds off in menstrual flow. These cyclic changes continue throughout child bearing except in pregnancy and lactation. Related organs such as bladder and urethra are also important because of their close proximity.

The breasts are accessory organs of reproduction. Their main function is to secrete milk after child birth.

In male, reproductive organs and urinary organs, e.g. urethra, are together. Main functions of mature reproductive organs of male are:

- Hormonal
- Spermatogenesis
- Secretions from various glands

7.6 Glossary

Puberty	:	The period at which the generative organs become capable of exercising the function of reproduction.
Spermatogenesis	:	The phenomena involved in the production of spermatozoa.
Hormone	:	A specific chemical product of an organ transported by the blood or other body fluids, having specific regulatory effect upon cells remote from its origin.

7.7 Keys to Exercises

Exercise 1

- a) Prepuce
- b) Cruncuiae Myrtiformes
- c) Bartholinitis

Exercise 2

- i)
 - a) Endometrium
 - b) Myometrium
 - c) Parametrium
- ii)
 - a) Uterine artery
 - b) Ovarian artery

Exercise 3

Column I

Column II

i)	-	9
ii)	-	h
iii)	-	c
iv)	-	d
v)	-	e

Exercise 4

- i) The process of extrusion of a matured oocyte from the ovary through rupture of graafian follicle is called ovulation.
- ii) Common signs are abdominal distention, headache, backache, breastfullness, bladder irritability, constipation and pre-menstrual tension characterised by depression or anxiety. These signs and symptoms should be considered as normal.

Exercise 5

- i) One symphysis pubic joint
Two sacroiliac joints
One sacrococcygeal joint
- ii) Brim, cavity and outlet
- iii)

Pelvic	AP	OQ	TR
Brim	11	12	13
Cavity	12	12	12
Outlet	13	12	11

Exercise 6

- i)

-	Bitemporal diameter	8.2 cm
-	Biparietal diameter	9.5 cm
-	Suboccipito bregmatic diameter	9.5 cm
-	Suboccipito frontal diameter	10.5 cm
-	Occipito frontal diameter	11.5 cm
-	Mento vertical diameter	13.5cm
-	Submento bregmatic diameter	9.5 cm
- iii) The lambdoidal suture
The saggital suture The coronal suture
The frontal suture

UNIT 8

Review of Productive System

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8.0 Introduction

We all know pregnancy and labour are exciting periods for every woman. Have you ever thought of the physical and psychological processes of pregnancy, labour and puerperium? In this unit, the primary concern is to

enhance your knowledge regarding physiological and psychological processes of the maternal cycle and care of mother child. Safe motherhood is essential for every woman.

In Unit 1 you have learnt about anatomy and physiology of female and male reproductive organs which form the basis of discussion for this unit. In this Unit, you will become familiar with maternal care during pregnancy. To understand this you will be studying maternal physiology during pregnancy, nutritional needs of mother during pregnancy and lactation, physiological aspects of labour and puerperium, including care of the mother will also be explained in this unit.

You may be knowing that the physiological changes that take place in the woman's body during pregnancy will explain many of the phenomena that are regarded as signs and symptoms of pregnancy. The changes are not confined to the reproductive organs; every tissue and organ react to the stimulus of pregnancy, and as a result the metabolic, chemical and endocrine balance of the body is altered. A number of strong emotional and psychological changes also take place during pregnancy. The changes afford a strong basis for prenatal care and for a safe motherhood practice in the community. All these aspects are explained in this unit.

8.1 Objectives

In this unit you will learn about the care of a woman during pregnancy, labour and postpartum period in order to practice safe motherhood.

After you have completed this unit you should be able to:

- Describe maternal physiology during pregnancy, labour and puerperium
- List and describe the methods of data collection and assessment in healthy pregnant woman
- Advise on the role of food during pregnancy
- Undertake physical and psychological care during pregnancy
- List and describe the methods of diagnosis of presentation and position Describe the process of maternal and foetal monitoring during labour Describe post-natal assessment and care.

8.2 Physiological Changes During Pregnancy

You must be knowing that profound physiological changes take place in the maternal body during pregnancy, involving all body systems. A, number of strong emotional and psychological changes also take place during

pregnancy. Pregnancy is divided into three trimesters. First trimester is from the conception to 12th week of pregnancy. Second trimester is after 12th week of pregnancy to 28th week. Third trimester is after 28th week of pregnancy till term. We will discuss these physiological changes occurring during pregnancy in the following subsections.

8.2.1 Changes in the Body Weight, Reproductive Organs and Breast

The changes in reproductive organs and breast are given below.

i) Changes in Body Weight

An average weight gain during pregnancy is 11-12 kg. There is slight gain during the first trimester, rapid increase during the second trimester and a slightly slower increase during the third trimester.

ii) Changes in Reproductive Organs

- a) **Uterus:** Maximum changes occur in the uterus. At the end of full term gestation the uterus is 30-35 cm long, 20 to 25 cm wide and 22 cm deep. It weighs about 1000 gm. The uterine muscle wall greatly enlarges. The uterus increases in its size, shape and position, as the fetus develops within the uterus.

Blood supply increases from 20 to 40 times. Ligaments of uterus become hypertrophic and elongated. Cervix also undergoes radical changes. Softening of the cervix takes place due to increased vascularity, oedema and hypertrophy and hyperplasia of the cervical glands. The tenacious mucus secreted by the cervical glands close the cervix which is known as operculum. This is a defence mechanism to protect the growing foetus from infection.

- b) **Ovaries and fallopian tubes** show changes in their position during pregnancy. Ovulation does not occur during pregnancy.
- c) **Vaginal mucous-** increase in thickness and hypertrophy of the muscle take place. Vaginal secretion increases; pH varies from 3.5 to 6.0.
- d) **Changes in vulva** include oedema and increased vascularity; vulva vericosity is common during pregnancy. The perineum shows changes similar to those of the vagina.

iii) Changes in Breasts

Marked changes take place in the breast during pregnancy. These changes are:

- Enlargement of breasts
- Increased vascularity
- Feeling of tenderness, tingling and heaviness
- Nipple and surrounding area become large and more pigmented
- The glands of montgomery's enlarge. By the end of second trimester colostrum secreted into the ducts.

8.2.2 Changes in the Endocrine Glands

Hormonal production is increased throughout pregnancy. Placenta serves as an endocrine organ. The placental hormones are:

- a) Human Chorionic Gonadotropin (HCG), a glyco protein, is secreted (throughout pregnancy) by syncytiotrophoblast of placenta. HCG appears in maternal plas on 8th day after fertilization, reaches a peak level between 60-70 days and then (the level) declines after 20th week till term. It disappears from blood and urine within 7-10 days after delivery.
- b) Human Placental Lactogen (HPL), is secreted (throughout pregnancy) by syncytiotrophoblast. It has growth hormone like and prolactin like activity in the mother.
- c) Human Chorionic Thyrotrophin (HCT) is in fact HCG.
- d) Steroid hormones are:
 - i) Progesterone is synthesised (throughout pregnancy) by the syncytiotrophoblast from maternal cholesterol. Placenta produces 250 mg progesterone per day. crosses over to maternal and foetal circulation. Pregnanediol is a metabolic end product produced in liver and is excreted in maternal urine. Proges maintains pregnancy by its relaxing effect on uterus and causes mammary growth.
 - ii) Oestrogens: Placental Syncytiotrophoblast synthesise Oestrone and Oes Oestriol. All major oestrogens can be detected in maternal blood and urine. Biosynthesis of ostriol

involves living foetus and viable placenta. Oestradi principally causes uterine growth and increases its vascularity.

8.2.3 Changes in the Cardiovascular and Respiratory Systems

The increase in total blood volume during pregnancy averages 30 to 40 percent, but range is wide and varies in different individuals; there is an increase in plasma and erythrocytes; leucocytes count also rises.

Cardiac output increases 20 to 25 per cent above non-pregnant levels in the first trimester of pregnancy and thereafter it continues to rise slowly to approximately 35 cent above non-pregnant levels. The rise is maintained up to the end of pregnancy.

Heart rate slightly increases. Pulse rate increases by 15 beats per minute. Changes in blood pressure during pregnancy are more marked in the diastolic than in the systolic blood pressure. Systemic vascular resistance during pregnancy decreases. There is regional increase in blood flow. The blood supply to uterus, skin, kidneys, breasts and alimentary canal increases.

Venous pressure in legs shows marked increase. High venous pressure in the legs stagnation of blood lead to oedema of the feet and legs which are common in pregnancy, and to increased incidence of varicosities.

We have highlighted the important changes in the cardiovascular system. Now we turn our attention to the changes in the respiratory system.

Changes in Respiratory System

Respiratory adjustments occur in pregnancy to provide for both maternal and foetal needs. The foetus obtains oxygen and eliminates carbon dioxide through the mother.

Maternal oxygen requirements also rise in response to the increase in tissues of uterus and breasts and due to increased metabolic activity. It has been estimated that in pregnant women there is rise of 15 per cent or approximately 30 cc of oxygen per minute above nonpregnant women. A large part of the increment is consumed by the foetus and placenta.

8.2.4 Changes in the Gastro-intestinal and Urinary Systems

Renal function is greatly altered in pregnancy. Kidneys increase slightly in size. Kinking of the ureters result in dilation of the ureters and pelvis of the kidney. Stagnation of urine due to dilatation of the urinary tract also may be a factor in frequent urinary tract infections. Renal plasma flow and glomerular

filtration rate are markedly increased. Renal function of women in late pregnancy is considerably altered by position. Supine and upright positions bring reduction in renal flow. Excretion of sodium and water is increased at night. Glycosuria in pregnancy may sometime occur due to poor renal threshold. Proteinuria is an important sign of renal disease and is commonly present in pre-eclampsia.

Changes in Gastro-intestinal Tract

Nausea and vomiting are very common disturbances in early pregnancy, occurring in about 50 percent pregnant mothers. Heartburn is caused by frequent regurgitations of acidic gastric contents into the esophagus. Constipation appears due to bowel relaxation. Digestion and absorption of foods seems to be quite efficient in pregnancy.

8.2.5 Changes in the Skin and Musculoskeletal System

Changes in Skin

- Striae gravidarum (tiny scars) on the abdomen, thighs and breasts, develop, it may be due to the effect of hormones of pregnancy.
- Nipples and areolar areas of breasts become dark brown or even black.
- Linea alba, a white line between the rectus muscles become pigmented and is known as linea nigra.
- Mask like pigmentation around the eyes and nose and cheek bones occurs. These are termed chloasma (or the mask of pregnancy).
- Dark circles around the eyes are common.

The changes in musculoskeletal system

Due to the effect of oestrogen and relaxin changes in the skeletal system are: softening of the pelvic cartilages, mobility of pelvic joints and relaxation of ligaments.

There is also increase of the normal lordosis due to the shift of center of gravity as the uterus grows. The pregnant woman may have a waddling gait.

Exercise 1

Describe in 5-6 lines the following.

- i) Breast changes during pregnancy.

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ii) Weight gain distribution in pregnancy.
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iii) Metabolic changes
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iv) Oedema in pregnancy
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8.3 Signs and Symptoms of Pregnancy

Your first task as a health care provider is to confirm the pregnancy. This is done by identifying the signs and symptoms of pregnancy which are given below. Signs and symptoms are classified as presumptive signs, probable signs, and positive signs.

Presumptive Signs and Symptoms

Presumptive signs and symptoms are observed by the mother. These are as follows:

- Cessation of menstruation (Amenorrhoea)
- Changes in the breasts
- Nausea and vomiting (morning sickness)
- Frequent micturation
- Skin changes
- Quickening

- Fatigue

Probable Signs: These are discovered by the health worker along with the history observation of the mother. They are:

- i) Enlargement of the abdomen and assessment of the number of weeks of pregnancy by palpation of abdomen.
- ii) **Pregnancy tests** - The urine of a pregnant woman contains HCG (Hormone Chorionic Gonadotrophin), one of the placental hormones, in fairly large concentration by the fifteenth day of pregnancy. More recently immunological pregnancy tests, dependent upon antigen-antiserum reaction, have replaced the biological tests. These tests are based on the reaction of human urinary gonadotrophin (HCG) to antiserum. The tests are easy to use clinically and are highly reliable, also the test material is readily available commercially.

Positive Signs: There are three positive signs of pregnancy. These are:

- Hearing foetal heart sound
- Active movements of the foetus
- X-ray and ultrasound evidence

Estimating the Probable Date of Delivery (EPD) or Expected Date of Delivery (EDD)

Now after knowing the signs and symptoms, you need to estimate the probable date of delivery. The exact duration of pregnancy can be ascertained. The duration of pregnancy is generally 280 days or 40 weeks or ten lunar months. The approximate date of delivery may be estimated by adding seven days to the first day of the last menstrual period and counting forward nine calendar months.

Other methods are:

- i) By measuring the height of uterus with tape measure in centimeters
- ii) By palpating the uterus
- iii) Estimating the duration of pregnancy by counting forward 22-24 weeks from the day on which the expectant mother first feels foetal movement
- iv) Dates when pregnancy tests are positive in relation to last menstrual period
- v) When foetal heart is first heard by an ordinary foetoscope.

8.4 Maternal Care During Pregnancy

The antepartum (antenatal) period extends from conception until the onset of labour. Pregnancy is a normal biological event. But it is an unusual one in the life of a woman and as such requires special attention for promotion of her health and that of her foetus: For the promotion of maternal and foetal health, the pregnant woman has several needs. To initiate these needs maternal care during pregnancy is given below.

8.4.1 Initiating Antepartum Care

As soon as a woman suspects herself to be pregnant, she should make an appointment with the clinic/health workers. The health worker should also identify pregnant woman during routine home visiting.

The first antepartum. contact should be primarily one of the assessment for both the woman and health professionals. The main purpose of the antepartum contact is to determine the physiological and psychological responses of the woman to pregnancy by means of thorough assessment. Three methods of data collection for assessment are explained below: i) the health history, ii) the physical examination and iii) laboratory screening procedures. Further assessment of high risk factors and mother-foetal physiological status are also discussed in this subsection.

i) The Health History

Taking the health history is the most important method of data collection. The history has to be recorded under the following headings:

a) Menstrual history

- Age of menarche
- Regularity, interval, and duration of flow
- Dysmenorrhoea or other complications
- Date of first day of, last menstrual period

b) Obstetrical history

- Past pregnancy
- Date
- Courses of pregnancy labour and postpartum period

- Sex, name, birth weight and gestational age of infant
- Present health of the child

Present pregnancy

- Planned vs Unplanned
- Subjective signs and symptoms

c) Medical History

- Family
- Personal

d) Social history

- Education of woman and her husband
- Occupation of the couple
- Marital and sexual history
- General health habits, regarding rest and sleep, nutrition, elimination and recreation

ii) The Physical Examination

- General Examination - Weight, height; blood pressure, temperature, pulse, respiration etc.
- Obstetrical examination - Examination of breasts, abdominal palpation vaginal examination (if necessary)

iii) Laboratory Screening Procedure

The following laboratory screening tests are done during pregnancy, depending on individual needs of the woman:

- Haematocrit haemoglobin
- White blood cell count and differential white cell count
- Blood grouping
- Antibody screening
- Urine analysis
- Serological examination
- Cervical smear
- Papanicolaou smear
- Blood sugar examination

Assessment of Perinatal Risk or High Risk Factors

After completing the history, physical examination and laboratory examination, are analysed to determine risk factors.

Factors of "high risk" pregnancy

- Age-under 15 or above 30
- Multigravida
- Short statured primi (140 cm and below)
- Mal-presentation, multiple pregnancies
- Anaemia (Hb 50 per cent and below)
- Pre-eclampsia and eclampsia,
- Antepartum haemorrhage
- Previous still births, Intra-uterine deaths, Instrumental delivery, Caesarian section
- Prolonged pregnancy (14 days + after expected date of delivery)
- Twins, hydramnios
- Pregnancy associated with general disease, viz. cardiovascular disease, diabetes, kidney disease, etc.

Assessment of mother-foetal physiological status: Monitoring of the physical/physiological changes of pregnancy and the growth and development of the foetus is achieved by a series of visits by the mother to the clinic at intervals, throughout gestation. A typical schedule for these visits is as follows:

- Once a month for the first 30 weeks
- Every two weeks until the 36th week
- Every week until the onset of labour

Organising an Antepartum Visit

- Determine the purpose of visit
- Renew the present plan of care
- Collect subjective data
- Collect objective data i.e., to check weight, blood pressure, urine testing and haemoglobin testing
- Obtain necessary assessment
- Modify plan of care based on obtained informations
- Give appropriate teaching/counselling i.e. on diet, rest, exercises, etc.

Exercise 2

- i) List antepartum health needs of the mother.
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- ii) State whatever true or false
- a) Changes in breasts are presumptive sign of pregnancy T/F
- b) Enlargement of abdomen is a probable sign of pregnancy T/F
- c) Quickening is a positive sign of pregnancy T/F
- iii) List five factors of 'High Risk' pregnancy.
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8.4.2 Nutritional Care during Pregnancy and Lactation

The human embryo and foetus can obtain nutrient only from mother through the placenta. If mother is undernourished, adequate growth nutrients may not be available and intrauterine growth retardation may occur. Both science and folklore have recognised the important relationship between food and pregnancy. It is necessary to obtain dietary history along with health history of antepartum mother.

Factors affecting food intake are.

- Daily activity
- Cultural, religious and family food, customs
- Socio-economic status
- Psychological factors
- Pregnancy symptoms

Optimum maternal nutrition and adequate daily food intake are essential during pregnancy.

The nutritional requirement of non pregnant, pregnant and lactating mother are given in 2.1.

- Calories
- Minerals
- Protein
- Vitamins
- Fat
- Water
- Carbohydrate

These are necessary for utilization of energy and synthesis of metabolite-enzymes, hormones etc.

Table 2.1: Daily Nutritional Requirements of Mothers

Nutrients	Non Pregnant	Late Pregnant	Lactating
Calories	2200	2200 + 300 (2500)	2200 + 700(2900)
Protein	50 gm (1 gm per kg body wt.)	50 gm + 10 = 60 gm 10 = 60 gm	50 gm + 20 = 70 gm 20-70 gm
Fat	50 gm (1 gm per kg body wt.)	50 gm	60 gm
Carbohydrate	395 gm	395 + 65 = 460 gm	395 + 155 = 550 gm
Iron	20 mg	40 mg	30 mg
Calcium	500 mg	1 gm	1 grn
Vitamin A	3000 kg	3000 mg	4600 mg.
Vitamin B	1.1 kg	1.3 mg	1.5 mg
Folic acid	100 kg	150-300 kg	150 mg
Vitamin B ₁₂	0.1 kg	1.5 kg	1.5 mg
Vitamin C	50 kg	50 kg	80 mg
Vitamin D	200 kg	200 kg	200 mg

During late pregnancy, energy requirement will increase due to demands of foetus, placenta, uterus and breasts. Additional daily energy requirement of about 20% becomes necessary during second half of pregnancy amounting to 300 calories. Energy requirement of moderately active non pregnant adult woman is about 40 cal/kg body weight. Energy requirement increases throughout pregnancy. During lactation, for the production of milk additional 700 calories are required.

Intake of protein is essentially necessary to build tissue protein and is not utilised for energy purpose. One half of protein must be given as protein of high biological value. The daily protein requirement of a non-pregnant woman is 1 mg per kg. body weight. For a woman whose weight is 50 kg., the protein requirement is 50 gms. Protein requirement of a pregnant woman is 50 gms. plus 10 gms i.e. 60 gms. During lactation, protein requirement increases to 20 [gm.in](#) addition to normal requirement. i.e 70 gm.

Minerals, and sodium chloride requirements during pregnancy is 5-10 gm. It is taken as common salt and also is present in water, milk and all ordinary articles of diet. During pregnancy, overloading of salt over 10 gm causes oedema and raises blood pressure. Daily water requirement is 2.5 litres, since 1 ml is needed for every caloric food intake, 6-8 glasses of water is needed daily.

Mineral requirement during pregnancy and lactation

Iron and calcium requirement increase during pregnancy and lactation. Iron requirement in pregnancy is 40 mg compared to 20 mg in non pregnant woman and 30 mg in lactation. Similarly, calcium requirement increases to 1 gm in pregnancy and lactation as compared to 500 mg in non pregnant woman. All animal foods e.g. meat, liver, egg; vegetables e.g. peas, lentils, green leaves and fruits are rich sources of iron. Milk, egg, cheese and green vegetables are the chief sources of calcium.

Other trace elements necessary for metabolic processes are zinc, copper, magnesium.

Vitamin requirement during pregnancy and lactation

Daily intake of most of the vitamins need to be enhanced during pregnancy. Water soluble B vitamins, particularly foliate and vitamin B₁₂ are important. Folate is necessary for DNA synthesis in growing tissue and red cell formation. Vit B₁₂ is necessary for haemopoiesis, storage and secretion of milk.

Adequate amounts of milk, fruits and vegetables can supply all necessary vitamins and folic acid. Rich source are fresh green leafy vegetables, liver and kidney. Lesser amounts are present in fish, cereals and muscle meat.

Vitamin B₁₂ is rich in animal food, liver, and muscle meat. It is in lesser amount in fish, egg, cheese and milk. Fruits particularly lemon and amla are rich (Vitamin C) sources. Other sources include tomato, sprouted gram and leafy vegetables.

Vitamin A: Animal Source - Codliver oil, milk butter, egg, fish, vegetables such as carrots, spinach, green leaves and yellow fruits like mango, papaya, banana.

Vitamin D: Codliver oil, butter, milk, egg.

Other B complex Vitamin: Cereal, pulses, green vegetables, egg yolk.

Exercise 3

Describe the role of the following nutrients in the diet of pregnant women.

a) Protein

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b) Iron

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c) Vitamin C

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Activity

- 1) Prepare a sample meal plan for a pregnant woman who belongs to the poor socioeconomic circle and calculate its food value.

8.4.3 Management of General Health during Pregnancy

Pregnancy is a time of rapid and dramatic physical changes which makes the woman feel, as well as look, more feminine and attractive.

An increased interest in health awareness is to be created. Advice on the following aspects should be given to all pregnant women in general and particularly to primigravida.

- **Grooming and personal hygiene:** a daily bath or shower is ideal
- **Clothing:** Pregnant mother should be advised to wear loose and attractive cloths.
- **Footwear:** Shoes with 4-5 cm heel having a broad base should be worn. Narrow high heels cause fatigue in maintaining good posture.
- **Care of breasts and nipples:** An uplifting brassier should be worn. The brassier should not be tight to depress the nipples.
- **Exercise and recreation:** Outdoor exercise is ideal and pregnant women need to be encouraged to continue with such outdoor recreation as they have been accustomed to, so long as it does not cause jolting. Games should not be strenuous. As good brisk walk is excellent. House-work brings many, but not all muscles into play, so exercises have been devised to keep the muscles to be used during labour in good trim and the pelvic joint flexible. The pregnant women should not lift heavy weights, as this may predispose to abortion in susceptible cases. The woman should not climb to reach high shelves, because of the likelihood of over balancing and her tendency to faint.
- **Sexuality:** In woman who have a history of abortion, coitus should be prohibited during the early months of pregnancy.
- **Teeth:** Soft bristle tooth brush should be used to clean teeth as there may be greater tendency for gums to bleed.
- **Use of drugs during pregnancy:** It is generally believed that most drugs cross the placenta. Drugs taken during pregnancy exert their effect in many ways. Women should be advised not to take any medication without the prescription of a doctor.
- **Smoking:** Smoking during pregnancy is associated with a significant increase in low birth weight baby. It is a good health teaching practice to encourage women to stop or at least cut down smoking.
- **Fresh air and sunshine:** The pregnant woman should spend two hours a day in the fresh air, if possible away from busy streets and preferably walking or sitting in the garden or park.
- **Safe work environment:** Woman should not work around ionizing radiation or chemical hazards.
- **Travel:** During the first three months the jarring and the excitement may induce abortion in susceptible women. Industries should consider reassignment of work for the pregnant woman.
- **Preparation for infant:** A room, or area with-in a room is designated as the "baby care unit" and a crib or bassinet is installed. If there are other children in the family these preparations can be one way of helping them realise that an infant is coming and allows them to participate in the fun of anticipation. Some parents, because of their cultural background, may consider it bad to purchase baby clothe prior to birth of the baby. In these cases the relatives or neighbour

usually have old baby cloths ready. About three weeks before her due date, the woman should organise her belonging that she plans to take to hospital. Arrangement should be made for the care of older children.

Common Discomforts during Pregnancy

Many minor discomforts may be present during pregnancy. They are not serious and require home remedial measure. When any symptom is severe or persists longer, medical intervention is indicated. These discomforts are listed below:

- i) Gastro-intestinal symptoms are nausea, vomiting, heart-burn, flatulence and constipation
- ii) Pressure symptoms are edema, varicosities, hemorrhoids, muscle cramps and dyspnea
- iii) Back-ache, pulling pain in lower abdomen
- iv) Fatigue
- v) Insomnia
- vi) Vaginal Discharge
- vii) Itching

8.5 Psychosocial Adaptation of the Child Bearing

You have seen that all changes in a mother's body during pregnancy are due to the effects of specific hormones. The woman's psychological state is also affected. Pregnancy is viewed as a period of crisis by many people although it is a biological normal event. Pregnancy is a period of adaptation and reorganisation. The mother has to find a new coping mechanism according to her own style as well as the culture in which she lives. The goals which should be achieved by the woman are termed as developmental tasks.

These tasks are:

- Acceptance of pregnancy
- Acceptance of child
- Seeking safe motherhood during pregnancy, labour and delivery
- Adaptation to mother role

Effect of pregnancy on family

Pregnancy results in significant family change. Each family is affected in a slightly different way.

These changes are:

- Increased number of relationship
- Preparation for new roles as parents
- Change in the social network of couples
- Sexual relations
- Time schedule is changed
- Financial implications - means increase in expenditure.

As siblings are affected by pregnancy, they should be included in the preparation to receive the newborn as a member of the family.

Pregnancy also affects grandparents. It provides to many a sense of achievement. Grandparents want to offer help and advice to their children. Sometimes their help and advice may not be well received, as the young couples have their own ideas and values. They should be involved in preparation to receive the newborn and their advice should be considered.

Exercise 4

- i) [Explain in](#) 25 words what advice would you give to primipara on Exercise.

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- ii) Explain (in 50 words) psychological reactions of woman to pregnancy.

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8.6 Maternal Care During Labour

You have learnt about the physiological changes that occur during pregnancy and maternal care during pregnancy. Now let us discuss physiology of labour and care of mother during labour and the care of new born.

8.6.1 Physiology of Labour

There are three stages of labour primarily. These are:

- The First stage - the stage of dilation of cervix
- The Second stage - the stage of expulsion of foetus
- The Third stage - the stage of separation and expulsion of the placenta and membranes

Recently a fourth stage is described by some authors to include the first hour after the end of 3rd stage in terms of safe motherhood to observe the mother for any Post Partum Haemorrhage.

Premonitory signs of labour

- Lightening or sinking of uterus takes place about two or three weeks before term
- Cervical changes: Cervix is being drawn up and merged into lower uterine segment
- Appearance of false pain: These are erratic and irregular pains causing uterus to contract and relax.
- Frequency of micturition: Due to pressure of foetal head on the bladder.

Signs of true labour and the first stage of labour

- Uterine contractions at regular intervals
- Show a blood stained mucoid discharge from cervix.

Characteristics of uterine contraction and retraction

- Intermittent
- Involuntary
- Progressive increase in intensity
- Painful
- Fundal dominance
- Polarity - harmony between upper and lower uterine segments.

Changes that are brought about by the uterine contractions

- engagement of head
- descent of head
- dilatation of internal OS

- Formation of the bag of waters
- Formation of upper and lower uterine segment
- Formation of retraction ring
- Effacement of cervix
- Dilation of external OS
- Rupture of membranes or "bag of waters"
- Expulsion of "waters" or amniotic fluid.

Mechanism of second stage of labour

During this stage of labour the mother is encouraged and guided by you to bear down i.e. to push down the baby with each strong uterine contraction and relax in between the contractions.

A series of passive movements made by the foetus in the birth canal during this stage are:

- descent continues
- flexion of the head
- internal rotation of the head
- crowning of the head
- extension of the head
- restitution of the head
- internal rotation of the shoulder followed by
- external rotation of the head
- expulsion of trunk
- expulsion of the whole body.

Third stage of labour

The third stage of labour include, the stages of separation and stage of complete expulsion of the placenta and membranes.

Mechanism of separation: There are two ways of separation of placenta. These are given below:

- i) Central separation (Schultze method)
- ii) Marginal separation (Matthews Duncan method)

Separation of membranes is facilitated by uterine contractions and weight of the placenta.

Placenta is expelled by maternal efforts or by manipulative efforts if normal expulsion fails.

Bleeding is controlled due to the compression of the contracting muscle fibers of the uterus on innumerable open sinuses. After sometime thrombosis formulates and plug the open sinuses.

8.6.2 Management of Labour

The stress of uterine contractions poses a potential threat to foetus and mother.

Your responsibility is to observe foetus and the mother during labour. You need to keep a close watch once the progress of labour and wait patiently with the mother who is labouring. You need to encourage, reassure and care for the mother in labour.

Methods of monitoring foetus:

Observation of mother during labour

The mother should be observed for the following:

- i) Check temperature, pulse and blood pressure
- ii) Assess progress of labour
 - Observe uterine contractions
 - Do abdominal palpation to determine progress of labour
 - Vaginal examination may be done only if absolutely necessary under strict aseptic technique.
- iii) Observe signs of approach or onset of second stage of labour
 - Rupture of the membrane
 - Increase in "Show"
 - Pressure on rectum
 - Involuntary bearing down
 - Bulging of the perineum.

Auscultation of the foetal heart rate - the foetal heart is the best guide to assess the condition of the foetus. The heart beat should be carefully counted at the beginning of labour, so that the average rate for this particular foetus is known. The normal rate ranges from 120 to 140 beats per minute. The normal rhythm is that of a double beat, with a short first sound and a long second sound. Rate, volume and rhythm should be noted.

The foetal heart is auscultated for 30 seconds after a uterine contraction. Towards the end of first stage, when contractions are long, strong and frequent, the interference with the placental circulation causes a slight increase or decrease in the foetal heart rate, but this usually disappears towards the end of contraction or within few seconds after the contraction has ceased.

The foetal heart should always be checked when the membranes rupture and particularly when there is a badly fitting presenting part or in case the cord has prolapsed. During monitoring of foetal heart, you must observe for signs of foetal distress as given below.

Signs of foetal distress are:

- Irregular foetal heart rate
- Excessive foetal movements
- Meconium stained liquor

Preparation and care for safe delivery

The delivery room: The delivery room is to be considered like an operation theatre. Aseptic technique is to be observed. If delivery is to take place in patient's home, attention should be paid towards the cleanliness of the room.

Prevention of Infection: The woman in labour is very susceptible to infection. No one with infection of any kind should attend to the woman in labour. Frequent hand washing should be practiced.

Equipment: Equipment must be available for adequate care of the mother and newborn. During antenatal contacts, the mother is advised to keep certain things ready at home. In hospital situation the equipment of delivery room should be checked daily.

When the baby has given a good after birth cry (i.e. first breath) use a new razor blade to cut the cord between two ties to separate the baby from the mother. Wrap the baby to keep it warm and put-baby to suckle. This helps in the separation of placenta. Examine the placenta carefully to see that every part is intact.

In developing countries, most of the deliveries take place at home. High risk and complicated cases are referred to the hospital for safe delivery. Traditional Birth Attendants must be adequately trained to conduct normal deliveries under safe environment for both mother and child.

Exercise 5

- i) Which is the best method of foetal monitoring?

.....
.....
.....

- ii) Name two ways of separation of placenta.

a)
b)

8.7 Maternal Care During Postpartum

The puerperium is the interval from the end of labour until the return of the maternal physiology to its pre-pregnant state. Approximately six weeks is the time. This time is also termed as postpartum period.

8.7.1 Physiology of Puerperium

During the first week mother's body undergoes a number of rapid changes. These changes are:

- a) **Involution of generative organs:** The process by which the generative organs return to their pregravid state is known as 'Involution.' The main changes occur in the uterine muscle and decidua but the ligaments also return to the condition they were prior to pregnancy. The stretched vagina, pelvic floor and perineum regain their tone, but in some instances a degree of laxity persists.
- b) **Involution of the uterus:** On the completion of labour, the uterus measures 15 x 12 x 7.5 cms. and weighs 900 gm. At the end of puerperium it almost returns to its pregravid size of 7.5 x 5 x 2.5 cms and weighs 60 gins. The marked reduction in size is most rapid during the first week. The uterus loses half of its bulk during that time. This is brought about by autolysis of the muscle fibers and ischaemia of the uterus. The factor producing autolysis is an uterine hormone or an enzyme which is not known, but some of the protoplasm in the fiber is broken down, absorbed into the blood stream and excreted by the kidneys. The contraction and retraction of the uterine muscle fibers compress the blood vessels and reduce the uterine blood supply.

Reduction in the size of the uterus. At the completion of labour the fundus is 5 cm below the umbilicus or 12 cm above the symphysis pubis. Twenty four hours later it rises to the level of the umbilicus. One week after labour, the fundus is 7.5 cm above the symphysis pubis. Twelve days after labour the fundus is not usually palpable.

The following list gives the comparative findings:

	Weight of uterus	Diameter of placental site	Cervix soft, flabby
End of labour	900 g	12.5 cm	2 cm
End of one week	450 g	7.5 cm	1 cm
End of two weeks	200 g	5.0 cm	1 cm
End of six weeks	80 g	2.5 cm	A slit

The remains of spongy layers of the decidua, to which the placenta and membranes are attached are shed; the basal or unaltered layer regenerates a new endometrium. At the end of eight weeks the placental site is healed.

- c) **The Lochia:** Lochia is the term given to the discharge from the uterus during puerperium. It has an alkaline reaction. The amount of lochia varies in different women. The odour is unpleasant. The types of lochia are:

Lochia rubra (red), 1-4 days. For the first three days lochia consists mainly of blood. Shreds of decidua, pigments of chorion amniotic fluid lanugo, vernix caseosa and meconium may also be present.

Lochia Serosa (Pink), 5-9 days. The discharge is paler and brownish in colour containing less blood and more serum as well as leucocytes and organisms.

Lochia albs (white), 10-15 days. The discharge is creamy greenish colour and contains leucocytes, cervical mucus and debris from the healing process in the uterus and vagina.

- d) **Lactation is initiated**

The pituitary growth hormone has lactogenic properties and in conjunction with estrogens and progesterone induces alveolar and duct growth besides stimulating localised milk secretion. During pregnancy breasts do not secrete milk. Only colostrum is present

from 16 weeks onwards. Estrogen level is high in pregnancy which keeps the anterior pituitary lactogenic hormone in check. Estrogens are produced by the placenta, as well as the ovary, and when the placenta is expelled, the level falls and lactotrophin from the anterior pituitary initiates the production of milk and maintains lactation. The act of suckling also stimulates the production and the flow of milk, probably by some neuro-hormonal reflex mechanism which activates the anterior pituitary to produce lactotrophin and the posterior lobe to produce oxytocin. Since colostrum is very essential for the protection of the new born, and to initiate lactation, it is advised to put the baby to breast for sucking immediately after birth. The emptying of the breasts by sucking stimulates the glands to produce more milk. The ejection of milk is influenced by oxytocin.

General clinical aspects

The fall in oestrogens and progesterone brings about several other physiological changes.

- **During pregnancy normal blood volume is considerably increased:** Progesterone acts upon smooth muscle fibers reducing their excitability and increasing their vascularity. This affects the ureters and the pelvis of the kidneys, gut, the abdominal wall, the ligaments of uterus, the muscle fibers in the walls of the veins, the perineum, the vagina and the vulva.
- **The pelvic floor:** The fall in circulating progesterone allows its effects upon the smooth muscle fibres of the pelvic floor: perineum, vagina and bowel to be reversed. This process aids in the recovery of normal muscle tone in these areas and in the ligaments of the uterus. This is a gradual process which is aided by early ambulation of the mother, by postnatal exercise, and by the avoidance of constipation. Progesterone also increases the vascularity of the vagina and vulva during pregnancy and delivery of the baby frequently causes some degree of bruising and edema in these tissues and perineum. The excess of fluid in these tissues is usually reabsorbed by the 3rd and 4th day of the puerperium. Bowel remains constipated for some days.
- **Bladder, urethra and ureters:** The pelvis of the kidneys and ureters have also been affected by progesterone leading to dilatation and stasis of urine. The effect of progesterone diminishes after delivery of placenta but many women remain prone to urinary tract infection during the first week of puerperium. During labour the bladder is displaced into the abdomen, stretching the urethra to a considerable

degree and this frequently leads to bruising of the urethra and loss of muscle tone in the bladder. The bruising of the urethra makes micturition painful and the bladder may easily become distended. Retention of urine may occur. The situation is prevented by encouraging the mother to void frequently.

- **The cardio-vascular system:** The withdrawal of oestrogen allows a diuresis to take place, rapidly reducing its plasma volume to normal proportions.
- **The kidneys:** The renal action is increased in the early part of the puerperium because of reduction of blood volume and the excretion of the waste products of autolysis. The peak of the activity occurs within the first seven days of the puerperium.
- **Pulse:** Pulse tends to be slower, about 60-70 per minute, probably the women is resting completely after the exertion of-labour.
- **Temperature:** Temperature may be slightly elevated during the first 24 hours. But thereafter should remain within normal limits.

8.7.2 Assessment and Management during Postpartum Period

The purpose of the physical assessment is to gather data about involutional changes, and the need for nursing care and health teaching. The mother should be requested to empty her bladder prior to physical assessment. The physical assessment includes the following:

- i) **General observation:** Throughout the examination observe posture of woman in bed, facial expression etc.
- ii) **Observe vital signs:** Temperature may rise slightly to 38° C shortly after a long labour. The pulse rate may be (60-70 per minute) slow during the early puerperium.
- iii) **Breasts:** Breasts become engorged due to the initiation of lactation. Early breast feeding prevents engorgement of breasts.
- iv) **The abdomen:** Due to prolonged distention of abdominal muscles, the abdomen becomes soft and flabby. Muscle tone can be regained by doing suitable exercises.
- v) **Uterus:** Remarkable retrogressive changes take place in the uterus during the puerperium. After delivery the uterus is the size of an infant's head. Then it decreases rapidly. At the end of 6-13 weeks it descends into the pelvic cavity.

The decidua which remains in the uterus forms two layers within one or two days. The outer layer sheds off in the lochia i.e. discharge from the uterus.

- Lochia rubra (red) Remains 1 to 4 days
 - Lochia serosa (pink) Remains 5 to 9 days
 - Lochia alba (white) 10 to 15 days
- vi) After pains are caused by contraction and retraction of uterus, nursing her infant. Cervix, vagina and perineum regain their tone during puerperium.
- vii) **Bladder:** Immediately after delivery the bladder is edematous and hyperemic having increased capacity with a decreased sensitivity to pressure. Bladder distension can be avoided by encouraging the woman to void.
- viii) **Blood:** During the first postpartum week blood volume reduces. Blood coagulation factor increases, the woman is susceptible to develop thrombophelbitis.

Additional aspects of postpartum physical care are:

- Rest and sleep
 - Nutrition and elimination
 - Bathing and grooming
- ix) Postnatal check-up after six weeks pelvic examination is done to detect any abnormalities.

8.7.3 Psychosocial Responses during Postpartum Period

- a) **Developmental tasks**
- Achieving some closure resolution of pregnancy, labour, and delivery Acceptance of infant
 - Continuing attachment of the foetus
 - Regaining psychological and physical energy
 - Learning infant care
 - Re-establishing family life and relationships to include the new infant member
- b) **Taking-in phase:** The first few days after delivery the woman is passive and dependent. She accepts every thing that is told to her.
- c) **Taking-hold phase:** During this phase the woman becomes independent and assumes the responsibility of caring for herself and her infant. The timing of this transition depends on individual women

and their experiences. Rapid mood swings may occur during this period.

- d) The growth of parenting:** Mother-child relationship is an interaction between mother and child. It is a two-sided process - mother talks to her infant causing him to turn his head and look at her. The visual contact evokes positive feeling in the mother towards her infant (bonding).

The father also begins to form an attachment to the infant during gestation. The attachment becomes stronger with the parents experiences of pregnancy. A man's adaptation to parenthood depends on his own experiences in his family and cultural expectations. Nursing care should be directed at providing opportunity for both the parents to begin parenting.

Children also need to become attached to the new member of the family. All children regardless of age, experience, some jealousy or sibling rivalry, to accept the new infant when he joins the family. During pregnancy children should be adequately prepared for acceptance. When the baby arrives children enjoy touching, watching and extending helping care to him.

8.8 Summary

Pregnancy is a physiological event in a woman's life. Profound biochemical changes occur in all the systems of the body in general and the reproductive system in particular. The uterus undergoes maximum change. Foetal outcome depends on maternal health. Hence supervision of maternal health, which includes physical as well as psychosocial aspects is important. Supervision of the mother's diet is important, as her daily requirement of all food nutrients increases during pregnancy as well as lactation.

In order to understand the process of labour, it is necessary to review the anatomy of female pelvis and its diameter. The diameter of foetal skull is important in relation to the diameter of the pelvis to anticipate normal vaginal delivery.

When a woman is nearing term, she goes in labour. Various factors are responsible for the onset of labour for example, hormonal, neuro and psychological. Uterine contractions and retractions bring about other physiological changes in all the stages of labour. She should be delivered in a safe environment by health team members.

Maternal physiological adjustments are very rapid in postpartum period. Efficient care is to be provided to her. Health talks should be given to her on topics related to care of her and her infant.

Emphasis should be given to psychological adjustment of family.

8.9 Glossary

Hypertrophied:	Increase in cell size
Hyperplasia:	Increase in number of cells
Inclination:	A slope

8.10 Keys to Exercises

Exercise 1

- a) 3-4 weeks Prickling tingling sensation
6 weeks Breasts enlarge and tense
12 week Darkening of areola
12 week Fluid can be expressed
16 weeks Colostrum can be expressed
16 weeks Secondary areola appears
- b)

Foetus.....	3.2 Kg.
Placenta.....	0.5 Kg.
Amniotic Fluid	0.9 kg
Increase in weight of uterus.....	0.9 Kg.
Increase in weight of breasts.....	0.4 Kg.
Increase in blood volume.....	1.3 Kg.
Extra Cellular Fluid.....	1.1 Kg.
Fat.....	<u>2.7 Kg.</u>
Total	<u>11.0 Kg</u>
- c) The basal metabolic rate increases during the later half of pregnancy in response to the demands of the growing foetus and maternal tissue, so the woman's energy requirements are higher.
- d) Physiological oedema-about 40 % of pregnant women have slight ankle oedema, during the last 12 weeks of pregnancy, which disappears with rest and is rarely present in the morning. Pathological oedema is present in number of conditions such as preclampsia, cardiac disease, renal disease and malnutrition. Abnormal water retention may cause a marked increase in weight.

Exercise 2

- i)
 - Physical assessment

- Assessment of foetus status
 - Adequate nutrition
 - Emotional and psychological support
 - Family support
 - Health education and advice
- ii) a) True b) True c) False
- iii) i) Bleeding in pregnancy
- ii) Hypertension
- iii) Previous history of abortions
- iv) Previous Caesarean section
- v) Cardiac disease

Exercise 3

- i) Proteins are absolutely essential because they are the only substance that build tissue, and the mother has to provide for the growth of the foetus, placenta, uterus, breasts and increased blood volume. The maintenance of normal red cell count and hemoglobin level is dependent on an adequate dietary intake of proteins.
- ii) Iron, an essential component of hemoglobin, ranks very high in importance for the pregnant woman. The foetus requires iron for the lactational period, so iron is stored inside foetus liver during the last 10 weeks of intra uterine life.
- iii) Vitamin C (ascorbic acid) is required during pregnancy for the growing foetus. It is also necessary in blood formation and the absorption of iron. Citrus fruits are a good source.

Exercise 4

- i) Morning and evening walks are a good exercise for pregnant women. Strenuous exercises should be avoided as they may lead to abortion. A woman with a previous history of abortion should take extra precautions.
- ii) First pregnancy produces certain degree of emotional turmoil in the mind of any thinking woman. Emotions, such as mother love and pride in creation, induce a feeling of tranquility and gladness, for the woman is about to enter on one of life's most enriching experiences. But these emotions may be counter-balanced by others of a disturbing nature such as fear and resentment. Not all women are well balanced or emotionally mature, and their reactions to pregnancy will depend on such factors as temperament, intelligence and education, health, age and material situation. All babies are not planned or wanted at the time of conception but a majority of married women adjust to the situation and when the baby is born welcomed.

Exercise 5

- i) Frequent auscultation of the foetal heart rate.
- ii)
 - a) The Schultze method i.e. central separation
 - b) The Matthews Duncan method i.e. marginal separation.

UNIT 9

Safe Childhood and Adolescence

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9.0 Introduction

In Unit 2 you studied about the physiology and management of pregnancy, labour and puerperium. No pregnancy is risk free. During these periods a woman has to make many physical and psychological adjustments. Antenatal care, safe delivery and proper care of the mother and her child after delivery are the important aspects of maternal and child health management. Safe motherhood is essential for family welfare. The child has to pass through various stages of growth and development. Safe childhood and adolescence are the essence of child survival and family welfare in primary health care. In this Unit you will learn about prenatal development of the foetus, care of the neonate and study the growth and development of infant and toddler. Growth and development of preschool and school age will be explained. You will be made familiar with the health problems of the child at various stages of development, and their prevention. Finally you will study the physical and intellectual development of the adolescent both male and female. We have given a brief overview of all these aspects here. You will learn in details about the growth and development NSS 511 (Paediatric Nursing).

9.1 Objectives

In this unit you will learn various developmental stages of a child in order to give the child a safe childhood and adolescence.

After going through this Unit you should be able to:

- Describe physiological status of new-born
- Advise on care of new-born
- Describe the growth and development of infant
- Explain the procedure of infant weaning
- Explain the growth and development of pre-school and school-age child and adolescent
- List the common health problems of various stages of development, and
- Advise on their prevention.

9.2 The Neonate

The neonatal period is from birth to 28 days. The neonate after birth has to make physiological adjustment to extra uterine environment. Health status of newborn depend; on pre-natal development. The pre-natal development, physiological status, assessment and common problems of neonate are briefly described in the following subsections.

3.2.1 Pre-natal Development

Development from zygote to fully mature infant is due to two process:

- i) Growth that result when cells divide and synthesize.
- ii) Differentiation by which these cells are systematically organised to form all the tissues necessary to assure an organised, coordinated individual.

The development process is as follows:

Embryogenesis: Soon after fertilization, the zygote changes into morula stage, and followed by blastocyst stage. The outside layer of blastocyst is called trophoblast. The collection of cells inside the blastocyst is called inner cell mass. Implantation occurs on the 9th day. Villous structure at the point of attachment forms the placenta and chorion. Embryonic cells form the amnion.

Foetal Growth: Foetal growth is accomplished by two processes - Hyperplasia and Hypertrophy. Most rapid linear growth takes place: during mid-foetal life. The most rapid gain in weight occurs in late foetal life.

Environmental Factors: Before birth unfavourable maternally imposed environment may produce long range health problems in the infant or child. These factors are maternal age, chemicals, infections, radiations and mechanical factors.

9.2.2 Physiological Status of Neonate

New-born period or neonatal period is the first 28 days after birth. The first 24 hours of birth are the most critical period during which respiration is initiated. Heat loss can also occur through conduction and convection and neonate has to adjust to extra uterine life.

The physiological status of new-born is given below:

Respiratory system: Respiration in new-born is abdominal. The rate is generally 30-50 breaths per minute.

Haemopoietic system: The average red blood cells count of the new-born is 5 million/ mm³. The average hemoglobin value at birth is 16-18 g/100 ml of blood. The levels of serum bilirubin from the breakdown of red blood cells rises due to immaturity of liver of new-born.

Fluid and electrolyte balance: The infant has higher ratio of extracellular fluid than the adult and higher level of total body sodium chloride and a lower level of potassium.

Thermoregulation: The major sources of body heat are heart, liver and brain. There is an additional source unique to neonate, that is brown fat. It has a greater capacity for heat production.

Gastro-intestinal system: The stomach has a capacity of 90 ml. The intestines are longer in relation to body size. Regurgitation is common due to immature cardiac sphincter. Enzymes are adequate to handle digestion. The liver is most immature.

Renal system: All the structural components are present in the renal system. But their functional deficiency exists in the kidneys.

Integumentary system: All the structures within the skin are present but many of the functions are immature. The protective function of the skin is fairly efficient.

Musculoskeletal system: Contains larger amounts of cartilage than ossified bones. The process of ossification is rapid during the first year.

Defences against infection: The infant is born with several defences against infection and is protected against major neonate diseases.

Endocrine system is adequately developed. Maternal sex hormone causes engorgement of infant breast which secretes milk during the first few days of life. Female new-born may have pseudo menstruation due to sudden drop of the level of oestrogen and progesterone.

Neurological system: At birth, the nervous system is incompletely integrated. Most of the neurological functions are primitive reflexes.

Sensory functions

- i) **Taste:** The lips and tongue are very sensitive. The sense of taste is not very well developed, but babies seem to prefer sweeter food.
- ii) **Hearing:** Loud noises cause the baby to cry, but the ability to discriminate between sounds is not developed for two or three months.
- iii) **Sight:** True vision is not present at birth, but at one month the baby looks towards bright light. The eyes do not focus properly for some weeks.

9.2.3 Assessment of the Neonate and Nursing Management

The assessment includes physical and neurological assessment as given below. We shall briefly discuss this here. You will learn more about the assessment and nursing management of new-born/neonate in detail in NSS 511 (Paediatric Nursing)

The physical assessment

- Head circumference: 33 to 35.5 cm
- Chest circumference: 30.5 to 33 cm
- Crown to rump length: 31 to 35 cm
- Head to feet length is 48 to 53 cm
- Weight 2700 to 4000 g.

Vital signs

- Temperature: 35.5°C to 37.5°C
- Pulse: 100 to 140 beats per minute
- Respiration: 30-50 breaths per minute.

General appearance

Posture: is one of flexion, a result of inutero position.

Colour: The infant becomes red when crying.

Skin: The skin is smooth and puffy. The skin is covered with vernix caseosa, lanugo is present on the skin.

Milia as tiny white papules appear on the cheeks. Several colour changes may be noted on the skin.

Head: The nurse palpates the skull for all patent sutures and fontanelle noting the size, shape, moulding and for any presence of Caput succedaneum and cephalohaematoma.

Eyes, ears and nose are examined to detect abnormalities.

Mouth: The nurse inspects the mouth and looks for cleft lip and palate.

Neck, chest, abdomen, genitalia, lower extremities and back are examined to locate congenital abnormalities especially for imperforated anus.

Neurological Assessment: Several reflexes such as sucking, gagging, resting, corneal and papillary reflexes are usually observed during physical examination. Several other reflexes are seen such as moros reflex, tonic neck and startle reflex.

Exercise 1

List the various reflexes of new-born.

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Nursing Care of the Neonate

We have discussed the physical and neurological assessment of the new-born. Now we shall talk briefly of nursing management of neonate.

The objectives/principles of care of the new-born include:

- Establishment and maintenance of air way
- Maintenance of stable body temperature
- Protection from infection
- Provision of adequate nutrition
- Promotion of infant parent attachment (child-parent bond)

Nursing care of neonate can be divided into two periods: immediate care and delayed care.

Immediate care includes the following:

Vital signs: Temperature, heartbeat and respiration should be observed after every 15 minutes immediately after birth, for the first hour; then 2 hourly for the next 5 hours and every 4 hourly until 24 hours of age. Rectal temperature is preferable to axillary temperature.

Observe colour, muscle tone and reflexes: Apgar Scoring chart may be used to evaluate the condition of the new-born for the first minute and 5 minutes after birth.

Bathing: Should be done after 24 hours after the vital signs are stabilized. Bathing time is an excellent time for observations of infant behaviour such as irritability, state of arousal, alertness and muscular activity.

Umbilical cord: The umbilical cord separates through the process of drying and usually falls off between 7-10 days. The umbilical stump is an excellent medium for bacterial growth. Therefore, it should be kept clean and dry. Instruct parents regarding proper umbilical care.

Infant nutrition: Although heredity determines the infant's growth but nutrition influences the attainment of the growth. Hence optimum nutrition during foetal life and infancy should be the goal for each child. In general, two methods of infant feeding are used: that is, breast feeding and artificial feeding. Breast milk is the best and most perfect food for infant nutrition.

Identification and registration of the neonate.

9.2.4 Common Health Problems of Neonate

The neonate can have following problems after birth.

Hyperbilirubinaemia: Hyperbilirubinaemia may occur due to physiological jaundice and Rh or ABO incompatibility.

Neonatal hypoglycaemia: This condition of low blood glucose (less than 30 mg/100 ml.) Commonly occurring during the first 48 hours of life, is a hazardous state that must be recognised and dealt with at once. Early feeding of babies has reduced the incidence of hypoglycaemia.

Hypothermia: The normal baby's temperature may fall to 35.5°C or less within one hour of birth, unless precautions are taken to avoid chilling, the new born may go into hypothermia with the temperature falling below 35.5°C.

Sepsis: Within few hours of birth, staphylococci generate colonies on the baby's skin and in the nasal passages: the umbilicus becomes infected, more readily than nostrils and skinfolds such as axilla and groin. Any person suffering from respiratory infection or diarrhea, or one who has any septic focus should not be allowed to come in contact with babies.

Eye infections: The baby's eyes may be infected during his passage through the birth canal, or later by the mother's hands. A number of cases of neonatal conjunctivitis are due to the B-Proteus and staphylococci which produces a yellow discharge. Pneumococci and streptococci are sometimes found but gonococcal infection is the most dreaded infection.

Oral thrush: Oral thrush is characterised by white patches in the mouth. The causal organism is the *Candida albicans* which is present in the vagina of some women.

Exercise 2

List the principles of nursing care of new born.

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9.3 The Infant

We have discussed the care of the new-born. Now we shall learn about the physical growth of the infant, its health promotion and health problems. Here we shall discuss the preventive and promotive aspect in the care of an infant, the growth and development aspect will be discussed in detail in course NSS 511 (Paediatric Nursing).

9.3.1 Growth and Development

The first year of life is characterized by rapid changes in body size, proportion and function. The infant increases in length dramatically during the first year. By the end of the first year the infant's increase in length is 50 per cent greater than at birth. The birth weight trebles. Physiological changes occur in all the systems of the body. Intellectual growth takes place gradually. The child starts interacting with his environment. Few teeth appear the child crawls, sits and tries to stand.

9.3.2 Health Promotion

Health promotion during first year includes the following aspects: i) nutrition guidance, ii) immunisation, iii) safety and security.

- i) Nutrition guidance: Infant nutrition and feeding habits or ways are highly individualised. Breast milk or cow's milk are excellent sources of nutrition for the infant for the first three months of life. While giving supplementary milk, teach methods to develop the habit of using cup and spoon and not to use feeding bottle. Supplementation of mineral or vitamins is dependent upon the type of formula given. After three months, milk does not meet the nutritional requirement of the infant, so solid foods should be introduced as discussed below.

- a) **Introduction of solids:** The main purpose of initiating the feeding of solid foods to the infant is to provide adequate iron; cereal is an excellent source of iron. The type of iron added to the commercial formula is better absorbed. Solid foods facilitate adequate chewing and digestion of foods in later life. Cereal is introduced first because of its high iron content. Preparing food at home is simple and inexpensive. Spoon should be used to feed the child. New foods should be introduced to small amounts and singly at intervals of 4-7 days. The introduction of the infant to solid foods is called weaning.
- b) **Weaning:** is the process of giving up one method of feeding for another. It is psychologically significant because the infant is required, to give up a major source of pleasure and gratification. There is no fixed time or weaning, but most children show signs of readiness at the age about five to six months. Over-feeding should be avoided. Obesity in infancy may predispose to obesity in later life.
- ii) **Immunisation:** Primary schedule of immunization begins during infancy and is completed during early childhood with the exception of booster doses. The discussion on childhood immunizations for diphtheria, tetanus, pertussis, polio, measles, mumps and rubella will be presented in Unit 11.
- iii) **Safety and Security:** Accidents are a major cause of death during infancy. Common accident hazards are suffocation, falls, burns, poisoning, aspiration of foreign object, road accidents and drowning etc. You must be aware of possible causes of injury and plan anticipatory preventive teaching for the parents. Teething, thumb sucking, sleep etc. are some of the concerns of parents requiring extension of guidance to them.

9.3.3 Common Health Problems

The infant's immature physiological system predisposes him/her to several potential health problems during the first year. Some of the important problems are listed as under. These problems will be explained in course NSS 511 (Paediatric Nursing).

i) Nutritional Deficiencies

- a) Iron deficiency anaemia
 - b) Protein calorie deficiencies - Kwashiorkor - Marasmus
 - c) Vitamin deficiencies like night blindness, scurvy, rickets
- ii) **Allergy** is an adverse reaction to a foreign substance or an antigen. During infancy eczema, nutritional allergies and seborrheic dermatitis can occur.
- iii) **Colic:** Colic is described as paroxysmal abdominal pain or cramping that is manifested by loud crying. It is more common in the infant under the age of three months. Causative factors may be too rapid feeding, over-eating and swallowing excessive air. Colic is considered a mild ailment but can have an intense emotional impact on a colicky infant.
- iv) **Failure to thrive** is also referred to as maternal deprivation syndrome. There is lack of physical growth due to lack of emotional and sensory stimulation from the mother.
- v) **Sudden infant death** syndrome is also referred to as crib death between the ages of 2 weeks to 1 year. The airway gets blocked at the level of vocal cords from laryngospasm. There are many theories regarding the etiology of sudden infant death. Parents should be explained that it cannot be predicted or prevented.
- vi) **Diarrhea:** Infant diarrhea is common due to unhygiene feeding habits and drinking unsafe water.
- viii) **Acute respiratory infection:** This is common where the child is unprotected from the natural elements of environment such as, cold, heat, rain, wind etc. It becomes serious if immediate care is not given.

Exercise 3

Define weaning.

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9.4 The Toddler

The "terrible twos" has been used to describe the toddler's years from 12 months to 24 months of age. It is a time of intense exploration of the environment. You must understand the dynamics of behaviour in order to help parents to deal effectively with the tasks of this age. The growth and development patterns of toddler are given below.

3.4.1 Growth and Development

The growth and development of the toddler has been explained as under:

- i) **Development Tasks:** The toddler is faced with the mastering of several important tasks. Toddler period builds on previously acquired needs and acquired completion of tasks. The toddler has the need for self esteem - the desire to feel important, in control, competent in his/her own way. The toddler's ability to control his/her environment is greatly enhanced by his/her increased motor skills and energy. The birth of a new sibling has special significance for the toddler in his/her quest for autonomy. There is development of ego which may be thought of as reason or common sense. It is evident that the child is able to tolerate delayed gratification. There is also rudimentary beginning of super ego. Within the psychosexual framework the anal zone becomes the center of child's physical, emotional and psychological activities. Pleasure comes from moving his bowels. Cleanliness of toileting should not be over-emphasised as this may make the toddler tense.
- ii) **Biological development:** Biological development and maturation of body systems is less dramatic during early childhood. Physical growth slows considerably in toddlers as compared to the infant.
- iii) **Neurological development:** By the end of the first year all the brain cells are present but they continue to increase in size. Visual ability is fairly developed by the end of the first year and undergoes refinement until the age of 6 years. The senses of hearing, smell, taste and touch become increasingly well developed.
- iv) **Musculoskeletal system:** Bone growth continues to be rapid. More than 25 ossification centres appear during the second year. Growth in height is mainly due to elongation of legs, the feet develops normal arches.

Dentition: By one year of age most children have between six and eight temporary teeth -- the upper and lower central and lateral incisors. Dental hygiene can be started when the first tooth erupts. The defense mechanism is much more efficient in the toddler than in infant.

- v) **Adaptive behaviour:** Gross and fine motor behaviour: The major gross motor skill during the toddler period is the acquisition of locomotion. Fine motor development is demonstrated in increasingly skillful manual dexterity.
- vi) **Language behaviour:** Increasing levels of comprehension develop. By the end of two years the child acquires 300 words. The child uses multi-word sentences.
- vii) **Intellectual development:** By the beginning of the second year the toddler 'thinks' and 'reasons', things out. There is deliberate trial and error experiment to produce certain results. The mental abstracts of time, space and causality begin to have meaning.

9.4.2 Promoting Optimum Development

As a health care provider, you have to teach parents how to ensure the optimum development of their child according to the following guidelines.

- i) **Developing a sense of autonomy:** Give children opportunity to assert themselves. Appropriate limit setting and discipline are essential. Discipline is a positive, necessary component of child rearing. A child's wants and needs may be restricted. Unrestricted freedom is a threat to their security and safety.
- ii) **Temper Tantrum:** Children may assert their independence by violently objecting to discipline. It is best to investigate temper tantrums and other forms of indiscipline which can occur during such as meal times, bedtime and toilet training. Sibling rivalry is a crisis for even the best prepared toddler.
- iii) **Health Promotion during the Toddler Years:** Nutritional requirement: Calorie requirement for toddler is 100 Kcal/kg; Protein 2.0 gm/kg; Fluid 125 ml/kg. Vitamins requirement remains the same as in the case of the infant. The need for minerals, iron, calcium and phosphorous is still high.

Health Hazards. You should also teach the parents about the prevention of common accidents to the toddler. These can be:

- Road accidents
- Drowning
- Bums
- Poisoning
- Aspiration and asphyxia
- Cuts and abrasions

Exercise 4

- i) List two important developmental tasks of a Toddler.

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- ii) What would you teach the parents about the prevention of common accidents to the toddler?

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9.5 The Pre-Schoolage

Pre-schoolers are emerging as creative persons. This is also a time for changes in the parent-child relationship. Growth and development, psychosocial development and play is described in the following subsections.

9.5.1 Growth and Development

- i) **Biological growth:** Children in the pre-school years grow relatively slowly, they become taller and thinner.

Weight and height: The pre-schooler gains approximately 1.8 kg per year. Growth and height occur at a fairly steady pace. Sex related differences in weight and height are insignificant in the pre-school period.

Body proportions: A pre-schooler looks like an adult because of skeletal maturation.

Dentition: Changes in dentition are few during the pre-school years. Dental carries are most common during the pre-school period.

Integumentary system: Dry skin continues to be a problem because of the minimal amount of serum production. The hair continues to become courser, darker and straighter.

Blood value: During pre-school years, fat replaces the red bone marrow of the long bones.

Respiratory system: When respiratory tract infections occur, they are localised in the upper tract. Tonsils and adenoids remain large and should not be removed.

Immune system: Adult level-immunoglobulin A (IgA) are reached during the preschool years.

Nervous system: Cerebral dominance is achieved. Co-ordination and the ability to voluntarily control movements is increased significantly.

Sensory development: The development of auditory structures is complete by the end of pre-school years. The other senses of taste, smell and touch continue to develop. In addition, children experience pleasurable feelings associated with touching their bodies.

- ii) **Cognitive Development:** Mental powers develop rapidly between 3-6 years. At the beginning of pre-school, they remain in the pre-conceptual phase. They devote a great deal of time to imitation and symbolic play. During this period children are very rigid in their demands. They have great difficulty in disentangling an object from its background, a problem that has been termed field dependency. From the age of 4 years children are in the stage of mental development which is described as intuitive phase. Children use numerous concepts. Children's attention span, . level of interest and ability to communicate and interact with the environment to facilitate rapid acquisition of concepts and knowledge, increases. Pre-school children become involved in the formation of new concepts. They tend to define objects according to their use, e.g., a bed to sleep. Perception of time and space is fairly good in the pre-school child. Reasoning and generalisation in their own thinking is also developed.

Memory is influenced by the levels of perceiving and conceptualizing, modes of attending and capacity for extracting meaning from the situation. The memory of pre-school children can be improved through the intervention of parents, teachers or nurses.

Language development proceeds at a fast pace during the pre-school years. At the age of two years the child has a vocabulary of about 300 words. At the age of six this has grown to 8000-14000 words. There is also a steady increase in the number of words used in a sentence.

9.5.2 Psychosocial Development and Play

Interdependency in all spheres of development is again demonstrated in the pre-school child. Intelligence and reason play a large part in the development and maturing of the capacities of the ego. With the increase of mental and physical powers, the ego is assisted in its function of testing reality through interaction with and exploration of the environment. A child's ego becomes strengthened through relationships with children and adults.

The areas of psychosocial development are described below.

- i) **Identification with parents:** Identification refers to the process whereby a pre-school child begins to behave like the parent of the same sex. Identification is facilitated by dependency on parents and by conscious awareness of parental expectations related to cultural standards of behaviour and sex role identity. Identification is also furthered by acquisition of attributes or skills currently defined masculine and feminine behaviour; children's perceptions that others regard them as possessing a particular sex role; experiencing the parents as powerful and significant nurturants who are in command of the desired goal such as power and love.
- ii) **Conscience development:** Through identification, the child may come to resemble not only what the parent is, but also what the parent wishes the child to become. Parents' standards and ideals become internalized in the child's character, so that the child is no longer as dependent on the parents for behaviour regulation. With the development of conscience or superego, older children are able to resist temptations in the absence of parents. They begin to feel guilt for their misdeeds.
- iii) The internalization of moral standards involves three different components.
 - Behavioural
 - Emotional
 - Judgmental

The child's conscience becomes modified in later stages of development, though meeting and adapting to the standards and conversions of his or her group, peers, teachers and eventually the wider community.

Development of Moral Judgment: As children begin to interact with others and acquire increasing cognitive capacity to define situations, their reasoning for moral action becomes more mature. During the pre-school and early school years, children view rules passed down by their parents as fixed and absolute. As children's experiences increase, their moral judgements progress toward more internal and subjective values.

- iv) **Socialization and Social relationships:** During the pre-school period, children identify with their own particular culture and adopt its value, belief and norms. Family structure, educational institutions and child rearing practices vary among societies. The culture in which children grow up determines both the content and the methods of socialization of its members.

During pre-school period parents continue to act as the major agents of socialization of children.

In school, children can learn to become more independent and to express feelings with greater freedom because relationships to other adults are less emotionally charged than the relationship with parents. In a group, children's potentials for socialisation can unfold, and the teacher can help them to turn to playmates for release of affectionate feelings. When children succeed in making friends with other children in the group, disappointment over family relationships becomes more tolerable.

For many children, a pre-school experience provides the first opportunity to interact with children from different socioeconomic, cultural, ethnic and religious backgrounds.

Optimum health is also vital to children beginning a new experience. Health problems have a direct bearing on the child's capacity for adjustment and ability to handle this new experience constructively.

Adjustment to pre-school experience is usually gradual. Children have different method of coping with the unfamiliar situation. Some children plunge into new situation aggressively and others are passive at first and need to survey the situation from a distance before entering into group activity.

- v) Development of sex role: As the child begins to behave like the parent of the same sex, he or she begins to experience some of the emotions as the parent. For example, while cuddling a doll the girl may feel warmth, happiness, and pride the emotions her mother felt while caring for her. The boy may experience pride when he learns to throw a ball like his father and receives praise for his accomplishment.

Gender role of sex typing is important to most parents in the socialization of their children. From the time of birth they may have given differential treatment to their child according to sex, so that the child learns, throughout early childhood that particular behaviours and mannerisms are expected of sex role identity in a particular culture.

Older sibling and peers also influence the child's sex role training, and can act as models. For instance, boys with older sisters are more likely to exhibit greater feminine characteristics whereas the reverse is true for girls with brothers.

- vi) Development of body image: When children begin to distinguish themselves as separate persons, they begin to form a mental image of themselves and their bodies. They also begin to recognise and respond to parental pride or disappointment in their appearance and abilities.

Vision plays a part in the developing body image. When first viewing themselves in a mirror, babies may shriek with distress. Later, however, they are able to recognise the image as the self and to incorporate the external image into the concept of the body. If parents register disapproval of exploration of body parts during care taking activities, a child may develop long lasting disgust. Natural curiosity about the body may be transformed into guilt and anxiety.

At this age, children develop an image of their bodies as attractive or unattractive, and normal or 'different' as a reflection of the opinions of others particularly those of parents. We discussed about psychosocial development now we come to the next part i.e. play as given below.

Play is the principal business of early childhood. Play provides an outlet for their needs for self-expression. In dramatic play, children practice before one another the roles they may play as parents.

Purposes of play

- Play develops creativity in children.
- Children develop cognitive map of the environment with patterns of time and space.
- Play relieves tension, stress and painful experiences.
- Through play children learn social interaction.

Enhancing play activities

In the home, neighbourhood and in pre-school, adults should be sensitive to children's needs for play. Play area should be checked for hazards. The play equipment should be checked frequently to prevent accidents. Children should be dressed appropriately for play. Parents interference should be kept to a minimum. They should not be left unattended. Play articles should be selected according to the physical and mental development of each child. They should be colourful and harmless.

9.6 The Schoolage Child

The period of life from age 6-12 years (school age) has been given a series of labels. This age is also called the "gang age" as the child gives more importance to peers during this period. This is also the stage of industry and complexes. Between 6-12 years the child achieves intellectual development and mastery of concrete operations. Let us discuss the physical and mental development of the school age child.

9.6.1 Growth and Development

During the school years the child shows progressively slower growth in height and a rapid growth in weight. General growth is slow until the growth spurt just before puberty. Muscular co-ordination improves steadily. Posture is good. The lymphatic tissues reach its maximum growth. During this period there is eruption of permanent teeth. The temperature, pulse and respiration approach the adult norms.

9.6.2 Mental and Psychosocial Development

In school the child has an opportunity to widen his social contacts as he develops his mental abilities.

Let us first talk of mental development and then we shall discuss psychosocial aspects of development.

Mental Development

During school age the child gives up, to a large extent, his earlier pre-operational egocentricity. He is able to function at a higher level in terms of his mental abilities. Therefore he is able to learn in school.

The school age child is able to arrange things or concrete objects according to their size and relationship to other things. The child is able to classify objects in a more complex manner. He can solve problems because he can manipulate symbols. As regards the concept of time, the child not only thinks about the present but of the past and future. The child's ability to speak and play becomes socialized and cooperative during school age.

Psychosocial Development

Sense of industry: Between the ages of six and twelve years the child develops a sense of industry and a desire to engage in tasks in the real world. The child enjoys doing socially useful tasks for others which will yield a sense of worth. He learns how to cooperate with others. The kind of school a child attends is important to his developing a sense of industry.

Relation with family, siblings and friends: More time is spent with other children but the family still provides security and a place to relax. Children of large families find adjusting to peers and sharing with the group easier than an only child. The school child's jealousy of younger and older siblings increases as he/she attempts to keep ahead of a younger child and in pace with an older one. Scholastic ability is a principal cause of sibling jealousy among school children, particularly in a child who is mentally inferior. School children often prefer to be with their friends rather than their siblings.

Body image: The body image of school children is constantly changing because they are changing physically, emotionally and socially. Modesty appears at about 9 years of age and at 10 years investigation of their own sexual organs begins. The pubescent years bring rapid changes in body image.

Gang or groups: They form close friendships and ultimately form a group with other children. It may be a secret society or an antisocial gang. Girls also form their own groups and discuss their problems.

Towards the end of the school period children learn to compete, compromise and cooperate.

Parents should understand and accept the activities of their children. Children still need the continued love, interest and support of both parents.

Psycho-sexual development: Between 8 and 11 years, children begin to perceive sex roles in a near adult fashion. Boys and girls (as they approach puberty) should be informed about the reproductive cycle and their respective role. Both male and female sexual changes should be discussed by parents.

Spiritual development: During these years children are learning the specifics of their religion that will later develop into religious philosophy.

Play and work: Today school age children are increasingly interested in the type of play and work usually associated with those of the opposite sex i.e. the girls may be interested in participating in team sports traditionally reserved for boys. Boys may be interested in learning to bake and cook. Play serves as a learning tool for children and their play changes with development needs. Children participate in more organised sports.

9.6.3 Health Promotion

The health of the school child is influenced by the health supervision received from the family physician, nurse practitioner, the dentist, health instructions given by parents, teachers, school and school nurse, the home and school environment. As a health care provider you have to play the role of school health nurse as given below.

The Role of School Health Nurse Practitioner

The role of school health nurse practitioner or school health nurse is changing from being child centred to being family centred. Health fairs present the concepts (if health and well-being to school children. Hospital tours. can also be arranged by the school health nurse to familiarise the children with a hospital and prepare them for possible hospitalisation. The school health nurse should give health education in the' following areas.

Areas of Health Education

Nutrition: School children usually eat well and have fewer food fads than pre-school children. Eating problems relate more to the time of eating. Milk and fruits are preferable to candy and cookies. As a school health nurse you have to ensure that the diet of the child should contain all the nutrients in proper adequate proportion and advise the child and parents on a balanced diet to prevent nutritional deficiency.

Eating habits: Meal time should be pleasant. There should be resting period in the day, but some parents do not keep it so because of over emphasis on manners. The child's eating habits improve as he grows older. A friendly atmosphere and enjoyment of the meal are the best aids to appetite. Your responsibility as a school health nurse is to ensure and advise the child and parents regarding healthy eating habits such as washing hands before and after eating and eating in clean surroundings.

Dental problems: Dental health is of particular importance during this stage of development. Ideally, children should receive regular preventive dental care and supervision in daily hygiene from the time the teeth begin to erupt. Inadequate dental care results in dental caries, malocclusion and trauma. These conditions have harmful long range effects on children's health. The most effective means of preventing dental problems is to provide information to the child and parents regarding brushing of teeth and washing of mouth in both early morning and after taking food.

Sleep and rest: The amount of sleep and rest required during childhood is a highly individual matter and unique to every child. During school age children usually sleep 11-12 hours.

Exercise and activity: Exercise is essential for developmental progress in a number of areas such as the following muscle development and tone, refinement of balance and co-ordination, gaining strength and endurance, and stimulating body functions and metabolic processes. Children need ample space to run, jump, skip and climb and safe equipment to use inside and outside the home or school. Most children need little encouragement to engage in physical activity. They have so much energy that they seldom know when to stop.

Sex education: Evidence, indicates that many children experience some form of sex play during or prior to preadolescence as a response to normal curiosity; not from love or sexual urge. Children are experimentalists by nature, and this play is incidental and transitory. You, as a school health nurse, can provide information on human sexuality to both parents and children.

Prevention of accidents: As in all other age groups, the most common cause of serious accident, injury and death in school age children is motor vehicle accidents - either as pedestrians or passengers. Physically active, school age children are highly susceptible to cuts and abrasions, fractures, strains and sprains. The most effective means of prevention is education of the child and family regarding hazards of risk taking and improper use of equipment.

Exercise 5

- i) When does the child begin to perceive sex roles?
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- ii) What advice should you give to the child during the period of psycho-sexual development?
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9.7 The Adolescent

Achieving independence from the family is an important goal of adolescence. The time period extends from 10-12 years to 18 years. This period is also called the teenager.

The adolescent period has three stages i.e.

Prepubescent or pre-puberty period which refers to the period of rapid physical growth when secondary sex characteristics appear.

Puberty: the age at which girls begin to menstruate and the boys to produce spermatozoa.

Adolescence begins when the secondary sex characteristics appear and when somatic growth is completed. The individual now is psychologically mature, capable of becoming a contributory member of society.

Let us discuss the growth and development of puberty first and then talk of adolescence.

9.7.1 Physical Growth

Puberty is a period of rapid physical change and personality growth. Girls begin their pre-adolescent growth spurt at about 10 years of age and boys at 12 years of age.

The physical characteristics of puberty are given below.

- **Weight and height:** Rate of growth in height tends to decrease each year from birth but with the onset of puberty there is a rapid increase, or spurt, and the child becomes tall. Gain in weight is proportionately greater than gain in height during early adolescence.
- **Body proportion:** The skeletal system grows faster than its supporting muscles. This tends to cause clumsiness, poor posture, and lack of co-ordination. The extremities, hands, and feet grow out of proportion to the rest of the body and cause more co-ordination problems.
- **Dentition:** The number of permanent teeth increase.
- **Physiological development:** It is believed that due to changes in hypothalamus with resultant neurohormonal and pituitary gland, stimulation development of secondary sex characteristics occurs.
- **Physical changes in boys include in order of appearance** - increase in size of genitalia; swelling of the breast, growth of pubic, axillary, facial and chest hair; voice changes; and production of spermatozoa. Boys grow rapidly in shoulder breadth from about the age of 13 years. Boys can become disturbed by nocturnal emissions and the loss of seminal fluid during sleep. If they have not been told that this is normal they may regard it as a disease or as a punishment because of masturbation or thinking too much about sex. They may also believe, it is devitalising.

Nocturnal emission is due to the activities of glands, and occasional release of spermatic fluid during sleep should cause no concern.

- **Physical changes in girls in order of appearance** - include increase in the transverse diameter of the pelvis; development of the breasts; change in the vaginal secretions; and growth of pubic and axillary-hair. Menstruation begins. Average age of menarche (time of first menstruation) is 12.5 to 12.8 years.

A girl's hips begin to broaden from about the age of 12 years. Because of lack of adequate information, girls may have misconceptions about menstruation. Children should be well oriented to the anatomic and functional differences between the sexes. Girls should have clear understanding about ovulation, fertilization, pregnancy and birth.

Menstruation is a normal physiological phenomenon, so women need not curb their normal activities during it.

- **Integumentary system:** The sebaceous glands of the face, back and chest become more active. If the pores are too small, sebaceous material cannot escape. It collects beneath the skin and produces pimples or acne; perspiration is increased. Vasomotor activity produces blushing.

Cardiovascular and respiratory system: Heart and lungs grow more slowly than the rest of the body. The supply of oxygen may be inadequate, causing the pubescent to feel constantly tired.

So far we have discussed the physical characteristics of puberty. Now we shall talk of adolescence.

Adolescence

After the pubescent years growth slows and the changes in the body proportion occurs more gradually. The stages of puberty and adolescence are on a continuum. Stress and anxiety may occur with these physical, emotional, social and intellectual changes in the young maturing person.

Usually by 15 to 16 years secondary sex characteristics have developed fully, and adolescents are capable of reproduction. At the end of adolescence, young persons appear physically like adults. The head is approximately one eighth of body length.

9.7.2 Psychosocial and Emotional Development

i) **Puberty:** Children become increasingly more adaptable, approaching their peer group and problem situations at home and at school, with greater confidence. Parents become aware that during pubescence the hostility that previously existed between boys and girls gradually disappears.

Adolescence - the sense of identity and the sense of intimacy:

Adolescence is a period of stress for young people and their parents. Adolescents must know who they are and must modify their conscious thought of their adult role in life. Adolescents today are faced with many pressures; rapid rate of social change, the threat of nuclear war, the increase in speed of travel and technological progress and access to mind-altering drugs, pose problems.

Although sense of identify is difficult to achieve, young persons must gain it, in order to be saved from emotional turmoil. After developing a sense of identity during early adolescence, they should be able to develop a sense of intimacy between themselves with persons of both sexes.

If individuals have weak egos, and are uncertain of self, they will not be able to form close ties of friendship or love with other people. Close relations between boys and girls begin during pubescence; these are not intimate relations and serve only as settings for discussion, on what they think and feel. During late adolescence these relations serve another purpose. While a healthy adolescent is establishing a sense of intimacy, a struggle with sexual feelings, may be experienced. As a result peers become very important.

Achievement of independence from parents

Adolescent-parent separation is part of the natural course of the life cycle. The adolescent may also adopt the alternative styles of dress, philosophic view points, and goals of the peer group. The rules of the house set by parents are no longer acceptable to the adolescent, they begin to internalize the qualities of their parents, if they are perceived as valuable. These values may be constructive or destructive.

Emotional-Social needs

Adolescence is characterised by mood swings and extremes in behaviour. Friendships are important to adolescents. Groups of friends are important during early adolescence, but with maturity older adolescents pick and choose their friends. Peers influence greatly the adolescent's sense of identity.

Due to rapid body growth, there are changes in body image. To integrate these changing body image into their self concepts, adolescents spend a great deal of time in body hygiene, grooming, and select clothing. Some individuals achieve emotional maturity during the later stages of adolescence whereas others may achieve it during adulthood.

Psycho-sexual Development

Masturbation: Masturbation is a central concern in early adolescence, especially in boys. Girls may indulge in it to a lesser degree. Adolescents should be informed that masturbation is a normal response to increased sexual development.

Factors influencing decisions about sexual behaviour:

Value and ethics: Value and ethics come from family, religion and peers and society.

Intellectual or Cognitive Development: Formal operational stage (11-15 years). Children progress from concrete to formal operations during early adolescence. Adolescents can make use of assumptions while thinking, formulating hypotheses,, and constructing theories. They can use hypothetical deductive reasoning. They may reject the authority if they are not satisfied with the rationale and logic.

School - School subjects become more complex. Adolescents experience a period of rapid increase in vocabulary and language development.

Mental growth is not correlated with increase in size. Adolescents may face some difficulties in adjustment to school. They may spend more time in extra curricular activities. Adolescents' academic abilities and interest vary greatly. Besides academic preparation for adult life, high school offers adolescents an opportunity for extra-curricular activities to satisfy their needs for security, recognition and success. Parents should continue to take interest in the school life of the adolescent.

9.7.3 Health Promotions and Anticipatory Guidance

The adolescent girls and boys should be advised on the following general points.

- i) **Physical examination**
 - Personal hygiene
 - Nutrition
 - Exercise and sports
 - Dental health
 - Accident prevention
 - Prevention of addictive behaviour
 - Sex education

- ii) **Health concerns of girls**
 - Menstruation
 - Pre-menstrual syndrome
 - Dysmenorrhoea
 - Amenorrhoea
 - Breast size and shape

iii) Health concern of boys

- Size of genitalia
- Gynecomastia
- Muscle development
- Acne
- Growth of secondary sex characters.

Exercise 6**i) Explain psychosocial development of late adolescence.**

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9.8 Summary

Childhood and adolescent years are important for the family and the community. We have seen that growth and development start right from the time of conception. The health of foetus depends on maternal environment. The neonate period is most critical. The newborn has to make physical adjustments to service. During the first year of life growth is very rapid. In addition to this other developmental changes begin. Toddlers are more difficult to manage. They need to be prevented from accidents. During pre-school and school age, the child is exposed to different kind of environment. Infections are common among these children. Physical examination of these children is to be carried out by the school health nurse. Adolescents are unique. Teachers and parents should understand their needs and problems.

9.9 Glossary

Adolescence	:	Thirteen to eighteen years age
Development	:	Mental growth
Infant	:	First year of life
Neonatal period	:	First four weeks of life
Neonate	:	New born
Physical	:	Physical growth
Prenatal	:	Before birth
Pre-school	:	Three to five years of age
School age	:	Six to twelve years of age
Toddler	:	One to three year of age

9.10 Keys to Exercises

Exercise 1

Sucking reflex

Gaging reflex

Resting reflex

Corneal reflex

Papillary reflex

Moros reflex

Tonic neck reflex

Startle reflex

Exercise 2

- i) Establishment and maintenance of air way
- ii) Maintenance of stable body temperature
- iii) Protection from infection
- iv) Provision of adequate nutrition
- iv) Promotion of infant-parent attachment

Exercise 3

Weaning is the process of introduction of solids and liquids in addition to breast milk.

Exercise 4

- i) Need for self esteem and Need for autonomy
- ii) Road accidents; drowning; burns; poisoning, aspiration; asphyxin and cuts and abrasions

Exercise 5

- i) Child begins to perceive sex roles in a near adult fashion between 8 and 11 years.
- ii) Boys and girls including their parents should be informed on human sexuality and reproductive cycle.

Exercise 6

- i) During late adolescence, individual must consolidate their identity and evaluate interests, ideals, aspirations, strengths and limitations in order to become secure and prepared for future role in society. Some adolescents come to this phase of growth with clearly defined vocational goals.

An adolescent evaluate their abilities, personality and potentials, so also do they think about marriage and wonder if they will find a partner.. They reflect on the degree of self reliance they have attained and search for a philosophy that will give them direction for their life and sustain their struggle for maturity.

UNIT 10

Care of Girl Child and Woman

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10.0 Introduction

In Unit 3 you have learnt about the growth and development of a child at various stages of development. The foetus must grow healthily from the time of conception till it reaches full term. Studies have shown maternal and foetal outcomes are correlated. Maximum growth occurs during the first year of life. Toddlers are difficult to control. During preschool age parents, teachers and peers play an important role in socialisation of a child. Adolescence is the period when children want to achieve independence from the family; this is an important goal of adolescence. Sexual awareness develops among boys and girls. During this stage, special attention should be given to the girl child because she is the mother of tomorrow and has to perform a variety of roles.

This unit focuses on the care of girl child and the adult woman. We will discuss the problems faced by girl like neglect in nutrition, medical care and status problems. You will also be explained about the possible solutions to these problems. She has to face problems like dowry deaths, destitution, discrimination at home and outside. Let us begin with status of women as given below.

10.1 Objectives

After going through this Unit you should be able to:

- Identify the major problems confronting the girl child and adult woman
- Explain the socio-cultural attitude and negative bias against the girl child and woman
- List and describe the factors leading to high morbidity and mortality of female child and women
- State and describe the ways and means by which you act as a crusader in the task of changing the attitude of the community.

10.2 Status of Women

The institution of marriage implies that the woman can, fulfil her role for procreation as a mother, legally with the approval of the community. However, her role as a wife had greater importance than her role as a mother.

As the education of women increased, she herself is able to break the chains of the traditional concepts of our society and face the world equally with men. She is now working in all walks of life. There is no opportunity left for the improvement due to sex. Yet, women must remember that her primary role, on this planet, is to bear and rear children (as a mother).

The educational status is also very poor. During the decade 1981-1991, illiteracy rate improved from 43.5% to 52.5% but the gap between male and female has not narrowed. Although enrollment of girls at primary level has increased but the distressing fact is that 74 per cent of girls in the age group 6-14 quit school and lapse into illiteracy and reach adolescent and womanhood illiteracy.

10.3 Major Problems Confronting the Girl Child and Adult Girl

The female child confronts many problems due to sex bias. Most of the time the female [child is](#) not as welcomed as the male, especially if it happens to be a second or third daughter, as the girl child is viewed as an economic burden and social responsibility. She is unwanted and her arrival is not considered an occasion for joy; and discrimination begins immediately after birth. The female child lives with neglect. Needs of the girl child are ignored. She is deprived of good food and medical care. Female foeticide and infanticide is practiced in many parts of world in one form or the other. As she grows she had to face discrimination in all other spheres of life. There is a strong need to bring about attitudinal changes among parents, families and among the

girls themselves, to improve the self image and self perception of the girl child.

Killing of female child - unborn or born - is well known. Thus, thousands of unborn foetuses are being destroyed before birth by the misuse of present technology like ultrasound. The unwanted girl and preferences for the male child, having both neglect the nutritional status of girl child, nutritional care and health care are described in the following subsections.

10.3.1 The Unwanted Girl and Preference for Male Child

The birth interval between preceding girl child is shorter than preceding male child birth. This means that if the girl child is born, parents will plan next pregnancy soon with the hope of having a son, which clearly indicates more closely spaced birth after the birth of a female child.

All of us are familiar with similar scenes that take place in our hospitals, clinics and health centers. 'Son preference' and sex bias are the unwritten laws of our society which are unconsciously imbibed and unquestioningly practiced. The structured, systematic and institutionalised (family, society, law etc.) violence against the girl child is accepted norm to be practised i.e. such practices become the unchanging part of the life style in our society so that even women feel guilty if they do not practice such a code of conduct. Thousands of unborn foetuses are destroyed before birth by the misuse of present technology - ultrasound. In order to provide care to female child and adult female, it is important to understand the major problems confronting this group.

Prenatal sex determination test followed by quick abortion eliminates thousands of female foetus before they can become daughters. Those girls who survive till birth, are denied the equal access to food, health care, education and employment.

10.3.2 Living with Neglect

From the day a female child is born, she is viewed as a burden and a liability. Parents usually think about the expenses on her with no hopes of any return. The father has to collect a sizable dowry for her. The grow unwanted, unwelcome, surrounded by indifference.

10.3.3 The Nutritional Status of the Girl Child

A girl is likely to be breast fed less often and for a shorter period than a boy. The desire for a son after a daughter's birth may prompt a mother to

discontinue breast feeding, so she may ovulate and conceive quickly. Under the age of five, girls suffer from malnutrition more often than the boys.

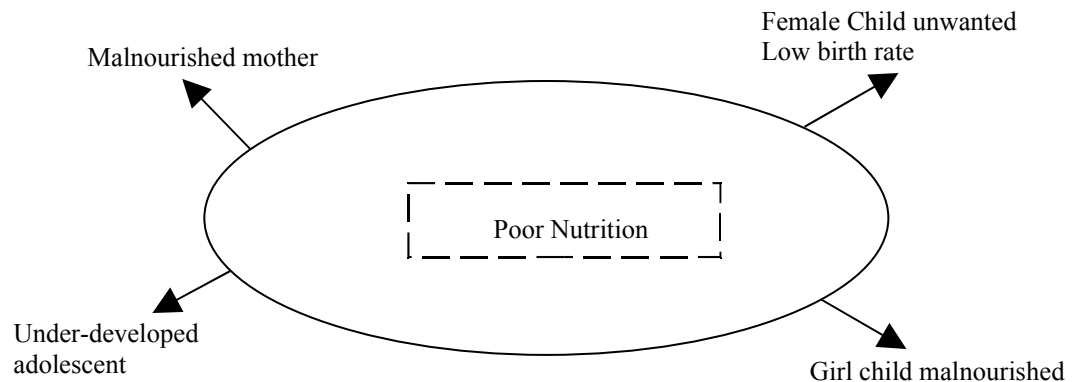


Fig. 4.1: Nutritional Depletion Cycle

Fig. 4.1 indicates that poor nutrition of the mother results in maternal malnutrition. And if she gives birth to a female child who is of low birth weight and an unwanted child, she grows up as a malnourished child and falls prey to many diseases due to poor health. Further, she grows up as a malnourished adolescent. Early marriage brings the girl motherhood, and other added responsibilities at an early age. Thus the undernourished girl falls a prey to a cycle of malnutrition. This vicious cycle needs to be broken by woman who is the mother of a girl child. The strength to break this vicious cycle comes only through education of women.

10.3.4 Health Care and Medical Care

More boys than girls are brought in for treatment in the hospitals. Girls are brought to hospitals when illness has become critical. Little medical care and too late care results in low survival rate of girls. Inequality in medical care of boys and girls continues throughout life.

Hospital admissions show that the percentage of girls admitted for treatment is half that of boys. A girl child is born to endure pain, neglect and insult. Value of self sacrifice and self denial have to be inculcated in girls if they have to become good mothers later on.

Several studies have confirmed that breast feeding is more frequent and for a longer period for the male infant than the females. Female children on the whole are weaned off the breast more quickly to promote an early pregnancy in anticipation of a subsequent male child. Several studies have shown that

girl children were fed qualitatively poorer food compared with boys. This was reflected in higher malnutrition rates and higher incidence of morbidity in girls.

Exercise 1

- i) Describe the health status of the female child in Nigeria

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- ii) Describe the educational status of women in Nigeria

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10.4 Solutions to the Problems Faced by Adolescent and Adult Women

The present problems of the female children and women may be solved through a holistic approach and by taking bold steps in improving their health and socio-economic status. The society has to create an environment congenial to finding a solution to the problems of the girl child and deprived adolescent girls, in which education can play a very significant role. The possible [solution to](#) these problems in terms of the tasks and action and programmes and policies of health of female child are described below.

10.4.1 The Task and Action

There is a need to create awareness and find solution to problems of the girl child and adult women. The following actions are required to achieve this

- i) **Empowerment through education:** Research shows when women are empowered through education or employment, the returns to their health and that of their children are far reaching. Therefore all formal and nonformal channels of contact with women and girls need to be utilised for educational purposes.
- ii) **Effecting attitudinal change:** Health care awareness could be improved through better information networks, focusing on simple

messages on issues like better nutritional habits, importance of personal hygiene and sanitation etc.

- iii) **Improve nutrition at the formative and reproductive stages:** To improve the nutrition status of adult women, most measures would need to be started before a girl reach puberty. Specific strategies need to be evolved to improve girls nutritional intakes e.g. providing special meals at school etc. For adult women, specially pregnant and lactating, special nutrient supplement should be accessible.
- iv) **Organising committees for women:** An effective strategy is to help women in organising themselves into local groups in order that they may be able to share information on common health concerns and needs.
- v) **Access to health care:** Improving health care for women involve
 - Improving physical facilities
 - Facilities should be within reachable distance
 - Their quality of health care should be acceptable
 - Facilities should be affordable.
- vi) **Health providers:** The status of women health providers must be enhanced in the eyes of the community. They must be able to have an effective rapport with women to convince them of the necessity of prenatal and postnatal care.
- vii) **Family Planning Services:** Family planning programme in Nigeria will improve the health and life changes of women and children in the region. It will reduce unwanted pregnancies which result in illicit abortions.
- viii) **Family and community** need to be educated about the necessity of utilizing MCH facilities in high risk pregnancy cases.

Exercise 2

- i) What strategies would you suggest to improve the status of women in Nigeria? (Explain in 100 words)

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10.5 Summary

The health and development status of the female child is a serious concern. Mortality, morbidity and nutritional status continue to show wide differentials between male and female children. Unfavourable feeding patterns right from birth and poor health care, nutrition nurture and attention to the female child, has resulted in relatively poorer chances of survival, education and skill development in female children. This leads to the vicious cycle of low self and social image. Child marriage and early pregnancy, family responsibility, sexual molestation at home and the workplace, add to their risk. Keeping in view some of the above factors affecting health of the female child in Nigeria, the Federal Government of Nigeria has introduced several legislations and programmes.

10.6 Glossary

- Girl child** : Female foetus in womb upto childhood
- Adolescent** : it is an intermediary period between childhood and adulthood ranging from 11-18 years.

10.7 Keys to Exercises

Exercise 1

- i) a) Girls are neglected and ignored in health care, nutrition and immunisation. They get poor food, insufficient nutrition and inadequate medical care. The mortality rate is higher for the girl child due to systematic and deliberate discrimination right from birth. Now even prior to birth, female foetuses are being discriminated. Female infanticide is practised in many parts of the country.

- b) Studies show that the girl child is breast fed less frequently and for a shorter period than boys. More so when a mother wants to conceive early because of her desire for a son.
 - c) As a practice, specially in the rural areas, the girls are given home remedies and not taken to hospitals or Primary Health Centres.
- ii) The educational status is also very poor. During the decade 1981-1991, illiteracy rate improved from 43.5% to 52.5% but the gap between male and female has not narrowed. Although enrollment-of girls at primary level has increased but the distressing fact is that 74 per cent of girls in the age group 6-14 quit school and lapse into illiteracy and reach adolescent and womanhood illiteracy.

Exercise 2

- i) There should be universal education. Woman should realise themselves as constructive, independent individuals and not just helpless dependents on their parents and husbands
- Health status of the female child should be improved. Sex discrimination with regard to nutritional support should be removed.
 - It is essential that economic status of the population is improved and poverty is eliminated. Formal education will help women in getting employment. Once the women are employed and earning, they will have a say in the day to day family affairs and decisions.
 - There should be a ban on child labour.
 - The minimum age at marriage has to be raised to 20 years but this will involve change in the attitude of people towards the girl child.

MODULE 3**UNIT 11****Immunization Programme****Table of Contents**

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11.1 Introduction

In Unit 4 you have learnt about the status of female child and adult woman. As you know the female is neglected right from birth onwards to womanhood. She is deprived of the basic necessities of life such as nutritious food, medical care facilities in health and sickness and educational facilities. As she grows she has to face problems such as child marriage, sexual abuse, sexual assaults, molestation and possible dowry death. Ways and means have been suggested to improve the status of the girl child and the adult woman.

In this unit we will discuss universal immunization in relation to maternal and child health care. To refresh your knowledge, you will revise and review your knowledge of immunity, immunization and the expanded programme of immunization (EPI); the universal immunization programme and

immunization schedule. You will also revise the mode and site of vaccination and contraindications. At the end you will be explained about 'Cold Chain' as a method of preserving and transporting vaccines, to maintain their potency.

11.1 Objectives

After going through this Unit you should be able to:

- Define the terms immunity, immunization and vaccine
- List the diseases against which vaccines are available
- Describe Universal Immunization Programme and expanded programme of Immunization
- Explain the immunization schedule
- Name the mode and sites of administration of vaccines
- Describe 'Cold Chain': a system of storage of vaccines during transportation from manufacturer to village.

11.2 Definition Of Terms

The definitions of various terms are given below.

Immunity: A person is said to be immune when he/she possesses specific protective antibodies or cellular immunity as a result of previous infection or immunization. As a result he is protected against the particular infections for which he has developed antibodies.

Immunity is of two types:

- i) **Active Immunity:** It is the immunity which an individual develops as a result of infection or by specific immunization and is usually associated with the presence of antibodies or cells having a specific action on the microorganisms of particular infectious disease or its toxins.

Active immunity may be acquired in three ways:

- Following a clinical infection e.g. chickenpox, measles, rubella...
- Following sub-clinical infection e.g. Polio and Diphtheria;
- Following immunization with an antigen which may be killed vaccine, a live attenuated vaccine, or toxoid, e.g. Tetanus toxoid; BCG.

- ii) **Passive Immunity:** Occurs when antibodies produced in one body (human or animal) are transferred to another to induce protection against disease. In other words, the body does not produce its own antibodies but depends upon ready made antibodies.

Passive immunity may be induced in the following ways:

- By administration of an antibody containing preparation (immunoglobulin or antiserum)
- By transfer of maternal antibodies across the placenta Human milk also contains protective antibodies (IgA)

Passive immunization is useful for individuals who cannot for antibodies or for the normal host who takes time to develop antibodies following active immunization.

Immunization: Means to render a person immune to a particular infectious disease.

Vaccine: Vaccine is an immunobiological substance designated to produce specific protection against a given disease. Vaccine stimulates- the production of protective antibody and other immune mechanisms. Certain organisms e.g. Diphtheria, tetanus produce exotoxins which are detected and used for preparation of vaccines. These vaccines are called toxoids.

The vaccines are of two types: Live vaccine and killed vaccine.

Live Vaccine: Live vaccine is prepared from live organisms e.g. BCG, Measles, Oral Polio.

Killed Vaccine: Organisms killed by heat or chemicals, when injected into the body stimulate active immunity, e.g. Cholera Vaccine. Killed vaccines usually require a primary series of 2-3 doses of vaccine to produce an adequate antibody response and in most cases, booster injections are required.

Exercise 1

- i) Define Immunity.

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ii) List the types of Immunity.

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iii) Describe how passive immunity differs from active immunity.

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11.3 Expanded Programme Of Immunization And Universal Immunization Programme

In May 1974, the WHO officially launched a global immunization programme known as Expanded Programme of Immunization (EPI) to protect, by the year 2000, all children of the world against six infectious diseases namely - diphtheria, whooping cough, tetanus, polio, tuberculosis and measles. EPI was launched in Nigeria in 1981.

The programme is now called National Programme on Immunization (NPI). The immunization available in Nigeria against 7 communicable diseases are listed below:

- Tuberculosis
- Diphtheria
- Pertussis (Whooping cough)
- Tetanus
- Poliomyelitis
- Measles
- Typhoid

11.3.1 National Immunization Schedule

The national immunization schedule is given in Table 5.1.

Table 5.1: National Immunization Schedule (Revised)

Beneficiaries	Age	Vaccine	No. of Doses	Route of Administration
Infants	6 weeks	DPT	3	Intramuscular
	to 9 months	Polio	3	Oral
	9 to 12 months	BCG	1 *	Intra-dermal
		Measles		Subcutaneous
Children	16 to 24 months	DPT	1 **	Intramuscular
		Polio	1 **	Oral
	5 to 6 years	DT	1 @	Intramuscular
	10 years	Typhoid	2	Subcutaneous
	16 years	Tetaus toxoid	1 @	Intramuscular
		Typhoid	1 @	Subcutaneous
		Tetanus toxoid	1 @	Intramuscular
Pregnant Women	16 to 36 weeks			

* ***For institutional deliveries, BCG should be given at birth***

** ***Booster dose***

@ ***2 doses, if not vaccinated previously.***

Note: i) Interval between 2 doses should not be less than one month.
 ii) Minor coughs, colds and mild fever are not a contraindications to vaccination.

11.3.2 WHO-EPI Schedule

Table 5.2 represents the WHO-NPI immunization schedule. The WHO-NPI Global Advisory Committee has strongly recommended BCG and polio to be given at birth or at first contact in countries where tuberculosis and polio have not been controlled. In all countries routine immunization with DPT and oral polio can be safely and effectively initiated at 6 weeks of age. The Immunization Schedule may be altered to suit the local needs of individuals and groups. If second or third dose of immunization is delayed, the immunization schedule must be started all over again.

Table 5.2: WHO-EPI Immunisation Schedule (when early protection is a must)

Age	Vaccine
at Birth	BCG, Oral Polio
6 Weeks	DPT, Oral Polio
10 Weeks	DPT, Oral Polio
14 Weeks	DPT, Oral Polio
9 Weeks	Measles.

Immunization is frequently postponed if children are ill or malnourished. This is not acceptable in the light of present knowledge. In fact, it is particularly important to immunize children suffering from malnutrition. Low grade fever, mild respiratory infections or diarrhea should not be considered as contraindications to immunization. These are children who are most in need of immunization.

11.3.3 Immunization - Passive and Combined

Three types of preparations are used for inducing passive immunity:

- a) Normal Human Immunoglobulin
- b) Specific (Hyperimmune) human immunoglobulin
- c) Antisera or antitoxin

Passive immunization provides short-term immunity when exposure to infection has just occurred or is imminent within the next few days. The duration of immunity induced is short and variable (1-6 weeks). Undesirable reaction may occur, especially if antisera is of non-human origin. Passive immunization has limited value in the mass control of disease.

Combined, passive and active immunization: In some diseases (e.g. rabies) combined passive and active immunization is undertaken according to the current recommendations: Immunoglobulin should not be given within three weeks, before, or until two weeks after administration of live or inactivated attenuated vaccine. However, there are exceptions to this rule, as for example, the simultaneous administration of hepatitis B vaccine and hepatitis B immunoglobulin.

11.4 Administration of Vaccines

We shall now discuss the mode and sites of administration of vaccines and procedure of administration.

11.4.1 Routes and Sites of Administration of Vaccines

Routes and sites of administration of vaccines are given in Table 5.3 below. These are:

- Oral route (by mouth) e.g. Oral Polio vaccine
- Intradermal (into the upper layer of the skin) e.g. BCG Vaccine
- Intramuscular (into muscle) e.g. DPT Vaccine
- Subcutaneous (under the skin) e.g. IT for mother and measles vaccines

Table 5.3: Routes and sites of administration of vaccines

Vaccine	Dosage	Method of Administration	Site of Administration
DPT DPT TT BCG	0.5 ml 0.01 ml	Intramuscular Intradermal (infant) 0.5 ml (others)	Buttock, arm or thigh Right upper arm
Polio	0.5 ml	Oral	Mouth
Typhoid	0.15 ml 5-16 years	Subcutaneous	Arm or Thigh
Measles	0.5 ml	Subcutaneous	Arm or Thigh

All vaccines must be stored at temperature below 8°C

Sites used for administering vaccines.

Intramuscular injections (DPT, DT, Tetanus, Toxoid, Typhoid)

- The upper arm, two to three fingers below the point on shoulder on the outer aspect. Be careful to avoid the radial nerve which runs along the inner aspect of the arm.
- The buttocks can be divided into four imaginary lines and the injection is given in the upper outer part. Be careful to avoid sciatic nerve injury.
- The front of the thigh = This site does not have large nerves and is easily accessible. It is commonly used in children. Discomfort of the injection can be minimized by slight flexion of the thigh and knee before injection.

Intradermal injection (BCG Vaccination)

- Use outer portion of the left upper arm for BCG vaccination.

Care and Storage of Vaccine

- All vaccines must be stored at a temperature below 8°C
- Protected from sunlight
- Prevented from contact with antiseptic solution such as spirit or savlon.

Preparation of vaccines for administration: The vaccines that you will be using to administer immunizations to children and pregnant women are available either in liquid or in powder form. It is important that both forms are kept sterile during preparation, reconstitution and administration.

Exercise 2

- i) Fill in the blanks (write full form)

EPI isand

UIP is

- ii) The dose of

a) DPT

b) DT

c) Polio

d) Tetanus Toxoid

- iii) The route of following vaccines is:

a) BCG

b) DPT

c) Tetanus Toxoid

d) Measles

e) Polio

11.4.2 Procedure of Administration

Following points should be kept in mind while administering vaccination:

- i) Selection of site
It should be done by:
 - Inspecting the size of the muscles
 - Ascertaining that the site is free from bruises or any sore areas
 - Avoiding an area that has any scratches, cuts or skin disease
 - Reviewing that the area selected is anatomically correct
- ii) It is necessary to restrain children while administering immunization. This can be done by a parent or other adult so that accidents such as the needle breaking during injection can be avoided.
- iii) Health teaching is important for gaining the confidence of parents.
- iv) The vaccine must be properly stored and any vaccine that has not, been kept properly or is left over must be discarded.
- v) Proper technique is necessary for ensuring good results.

We hope you have understood and refreshed your knowledge regarding the precautions to be taken during vaccination. Let us discuss procedures for administering different types of vaccines. We will begin with BCG vaccination first.

BCG Vaccination: In order to protect an individual from tuberculosis BCG vaccine must be administered before the child is exposed to the disease. All children (3 months to 4 years) should be given vaccination.

Storing and transporting the vaccine

- BCG vaccine available in India is a freeze dried vaccine which must be stored at 4° to 8°C.
- Carry the vaccine in thermos or vaccine carrier packed with ice when transporting it to any distance.
- Light rapidly destroys BCG vaccine. The vaccine should be protected against light throughout during storage, as well as during transport and use in the field.

Reconstituting BCG vaccine. The procedure is as follows:

- Examine the ampoules and discard them if there are colour changes; the powder appears to be wet if ampoule is broken; and the date of expiry is over.
- Wash your hands, break the ampoule, fix 20 gauge needle into 5 ml syringe. Withdraw the required amount. of diluent from the ampoule and gently inject 1 ml of the diluent along the walls of the ampoule containing the dry powder.
- Mix the vaccine by gentle rolling of the ampoule between the palms until all the powder is dissolved.
- Technique for intradermal administration of BCG. An intradermal injection is given in the uppermost or superficial layer of the skin. A special size needle (26 gauge,. 1 cm) and a special tubercle syringe with markings are used. 0.5 ml is injected into the superficial layer of the skin of the left upper arm. An elevation (or weal) of the skin should form at the site of the vaccination.

What to expect after BCG vaccination

The scar formation: The process of scar formation is as follows:

- i) The BCG weal or raised spot in the skin is usually reabsorbed and is not visible after 30 minutes.
- ii) After three to four weeks, there is redness and swelling and a lump appears 3-8 mm in diameter.
- iii) By 6-8 weeks, the area increases to 6-8 mm in diameter. Crusting or pus may be present. Deep abscess formation always indicates that injection was given incorrectly - either into the subcutaneous tissues or intramuscularly. By 12 weeks, there should be a well healed scar at the site of vaccination.

DPT, DT, Diphtheria and Tetanus Toxoid

The vaccines used for immunizing persons against diphtheria, pertussis and tetanus are available either in a combined form i.e. as DPT or DT, or as a single vaccine which protects against diphtheria or tetanus.

Every opportunity should be taken to protect children under two years of age against diphtheria, pertussis and tetanus. It is also important to immunize as many pregnant women as possible against tetanus.

- **Dosage of vaccine.** For full protection children under 2 years of age should receive three doses of DPT at intervals of four to eight weeks followed by a booster dose of DPT at 1½ years to two years of age and a second booster DT on entry to school or soon after.
- Pregnant women need to have two doses of tetanus toxoid with an interval of not less than four weeks between each dose. The second dose should be administered two to four weeks before the expected date of delivery in order to protect the infant at birth against tetanus.

Procedure for administering DPT, DT, Diphtheria and Tetanus Toxoid

DPT, DT and TT are given intramuscular using 2 ml to 5 ml syringe. The size of the needles varies:

1.5 cm (for children) 23 gauge needle

3.5 cm (for adult) 22 gauge needle

3.5 cm (for withdrawing vaccine from vials) 20 to 21 gauge needle

The dose that is usually prescribed is given below:

- DPT 0.5 ml for infants and children from three months upto two years
- DT 0.5 ml for children from 5-6 years
- TT 0.5 ml for pregnant women and school children

Reactions to DPT, DT and Tetanus Toxoid

- a) Expected symptoms and treatment
 - Slight fever – give ASP Tablets 1/4th Tab. to the infant and 1-2 tab to pregnant mother.
 - Sore arm – give Hot Wet Compress
 - Irritability for a day or two
- b) Unexpected symptoms and treatment
 - Discolouration or bruising of injection site. Hot wet packs should be applied
 - High fever, abscess formation, convulsions: Refer to Primary Health Centre if any one of these complications arise.

Polio Vaccination (oral vaccine)

In India, polio vaccine is usually administered along with DPT and BCG. For polio vaccine careful attention should be given to the maintenance of the right temperature. Polio vaccine that is used in India is a live vaccine. Vaccine carriers, thermos flasks, are made available for keeping it below 8°C

to ensure that vaccine retains its potency. Vaccine comes in a container with an attached medicine dropper. If there is no dropper a clean syringe will be needed for measuring the dose to be given. The dose should be given according to the manufacturer's instructions.

Measles Vaccination

Measles is the most common of all eruptive fevers in childhood. It seriously affects the health and growth of the child. However, this disease can be prevented by administering measles vaccine to the child. The age group between 9 months to 12 months is ideal for immunization with this vaccine, but it can be administered up to 2 years of age.

- i) Storing and transporting the vaccine
 - Measles vaccine is a freeze dried vaccine
 - While transporting the vaccine should be kept at a temperature below 8°C
 - At the place of vaccination, the vaccine should be kept in a vaccine carrier or thermos flask at a temperature below 8°C:
- ii) Reconstituting measles vaccine. A diluent is supplied along with the freeze dried vaccine. With sterile syringe, withdraw amount of diluent from one vial and inject into a vial of freeze dried vaccine. Mix it well. Be sure that diluent is also kept cold, i.e. below 8°C, once the vaccine is reconstituted. The dose of the vaccine administered subsequently is 0.5 ml.
- iii) Reaction to measles vaccination. There may be slight fever, sore arm and irritability for a day or two. In addition, there may be some rash resembling mini measles which, usually, soon subsides.

Treatment: Apply hot wet compress on the sore arm. Give ASP 1/4th tablet for fever. Apply calamine lotion for rash.

Typhoid Vaccination

The eligible groups in the community for typhoid vaccine in an endemic area are, in order of priority, school age children 5,10 and 16 years. However during an epidemic, all persons in the community should receive the vaccine. The vaccine should be stored in the refrigerator at 2° to 8°C. If refrigerator is not available, keep the vaccine in a thermos flask in a cool place.

Administering typhoid vaccine

Typhoid vaccine is available at present in 20 ml dose vials. For full protection an individual need to receive 2 doses of the vaccine at an interval of one to two months. Annual revaccination is necessary for persons living in endemic area.

The site for administering the vaccine should be either the outer aspect of the upper arm about midway between shoulder and elbow or the outer aspect of the thigh. After the injection the following reactions may occur:

- Soreness and swelling of the site
- Fever
- Headache

These symptoms may last about two to three days. The person is asked to take ASP tablets to reduce pain and fever and apply warm compress to the area.

Exercise 3

i) What important points will you emphasize while giving health education to mothers regarding the following vaccinations?

a) BCG Vaccination

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b) DPT Vaccination

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ii) Encircle the most appropriate answer from among the four alternatives. Measles vaccine should be given at the age of

- a) 9 months
- b) 10 months
- c) 11 months
- d) 9-12 months

- iii) Which of the following immunization is not given during 1st year
 - a) DPT
 - b) Polio
 - c) BCG
 - d) DT

- iv) Oral Polio vaccine (Sabin)
 - a) can be kept frozen for years
 - b) can any stay in an ordinary refrigerator
 - c) Neither a nor b
 - d) Both a and b

- v) List the common reactions after the following vaccinations.
 - a) DPT
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 - b) BCG
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11.5 Cold Chain

We shall talk of preservation of vaccines by maintaining cold chain. "Cold Chain" is a system of storage and transport of vaccines at low temperature from the manufacturer to the actual vaccination site. The cold chain system is necessary because vaccine failure may occur due to failure to store and transport vaccines under strict temperature controls. Among the vaccines, polio is the most sensitive to heat requiring storage at minus 20 degree Centigrade (20°C).

The Cold Chain Equipment consists of cold box, vaccine carrier, cold packs, thermocole boxes, and thermos flasks. Let us discuss them one by one.

Cold Box: It is meant to transport large quantities of vaccine by vehicle to out-reach sites. Cold boxes are specially constructed boxes with thick sides, bottom and top, filled with insulation material. It can keep vaccines cold up to one week with no power supply at all.

Before using cold box make sure that:

- It is clean,
- There are no cracks, and
- The lid closes tightly and has locks.

Cold boxes are suitable for keeping the vaccine cold during transportation and for storing vaccines for short periods. When the vaccines are packed in a cold box, there should be ice or cold packs at the sides and on top of the vaccines. A vaccine vial should never be in contact with the cold packs or ice. Place vaccines in a cardboard box or place a piece of cardboard between vaccine and the cold packs or ice.

If the cold packs have started melting and the temperature is getting close to + 8°C, immediately replace them with fresh frozen ice packs or ice.

Cold boxes should be opened only when necessary. Also stick a sheet of paper on the outside of the cold box on which write as to where to get ice or cold pack for replacement.

Vaccine Carrier: Vaccine carrier are used for carrying small quantities of vaccines to the subcentres/villages, if necessary. They are light and can be carried easily by a health worker. The vaccine carriers are made of insulation material which prevents the warm air }from getting in and can keep the vaccines cold for about 2 days at ambient temperature, from 32° to 43°C if the packs are fully frozen and the lid is shut tightly. There are four ice packs which must be fitted to the sides.

Before using a vaccine carrier, make sure that:

- It is clean
- There are no cracks
- The ice packs are fully frozen
- The lid shuts tightly.

Cold Packs: Cold packs (ice packs) are used for lining the walls of the cold boxes and vaccine carriers to keep them cold. They are flat plastic bottles filled with water, some cold packs have sealed tops while others can be opened. Cold packs are filled 3/4th with plain water. Salt should not be added to the water as it lowers the , temperature below zero degree centigrade, which is not recommended for DPT, DT, TT and typhoid vaccines. Cold packs are frozen before use. This can be done by keeping them at least six hours in a deep freezer or in the freezing compartment of the refrigerator overnight.

Thermocele Boxes: Thermocele boxes are available in the country in a variety of shapes and sizes. When packed with ice they can keep vaccines cold for about 6 to 8 hours.

Thermocele boxes are cheap and light but are not durable and can be used only for one day's supply of vaccine. When a thermocele box is packed, the ice should be on the top of the vaccine vials, but not in direct contact. Pack the ice in a polythene bag to keep it from settling to the bottom and also to prevent the vials getting wet as the ice melts.

Thermos Flasks: A thermos flask can be used to carry a small amount of vaccine for the day's use only. But it must contain ice to keep the vaccines cold. If the volume of ice is at least half the volume of vaccines, it should last for a day. A flask should be opened only when necessary to remove the vaccines, or to add more ice.

When a flask is packed, the ice should be on top of the vaccine vials, but never in direct contact with the vials of vaccines. Place a sheet of plastic between the vaccine vials and the ice. Don't drop vaccines or ice into the flask as the glass liner of the flask breaks easily. Some may have special shaped cold packs to fit over the vaccines. If the flask does not have this, pack the ice in a plastic bag to keep ice from settling to the bottom of the flask or coming in contact with the vaccine vials.

Keep the whole range of vaccines required for the day's vaccination in one flask, so that only one flask is opened at one time.

Thermos flasks are very fragile and a knock or fall may easily break the glassliner. The vaccines will become warm in a broken flask, so get more ice if it is possible and keep the vaccines cold. Do not throw away broken flasks. The glassliner can be replaced.

11.6 Health Education

Health education is an important aspect of the expanded programme on immunization. As community involvement in the programme is essential, help of the community leaders must be sought to encourage pregnant women to obtain health services and to encourage new mothers to bring their children for immunization. All questions of the mothers and the public must be answered patiently and courteously. In villages, advance sessions on health education must be arranged. People must know which diseases can be prevented by immunization. The importance of completion of the dosage schedule must be emphasized e.g. at least 3 doses of DPT are needed to build up protection in infants and children. Later, booster doses are needed; one

injection is not enough to protect infants and young children against diphtheria, whooping cough and tetanus. All pregnant women need to get tetanus toxoid during pregnancy in order to protect the baby at birth.

Children need a booster dose when they are ready to enter school since there will be more exposure to infection and they should be protected.

Instead of conducting a separate campaign for informing the community about the value of immunization, it would be more practical and effective to incorporate this topic with educational activities pertaining to the promotion of maternal and child health; or family planning as a part of family welfare. The overall orientation sessions that we conduct for the community leaders and influential individuals regarding other health services should also include the subject of immunization. Health workers should educate the teachers about the value of immunization. They should also be educated regarding the need for administering tetanus toxoid to pregnant women.

Exercise 4

Explain the following Cold Chain Equipment.

a) Vaccine Carrier

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b) Cold Boxes

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11.7 Summary

You have seen in this Unit that one effective way of controlling the spread of infection is to strengthen the host defenses. This may be accomplished by active immunization which is one of the most powerful and cost effective weapons of modern medicine. There are some infectious diseases whose control is solely based on active immunization e.g., polio, tetanus, diphtheria and measles. Vaccination against these diseases is given as a routine during infancy and early childhood with periodic boosters to maintain adequate

levels of immunity. Immunization is a mass means of protecting the greatest number of people. It augments "herd immunity" making it difficult for the infection to spread. Immunization has to be planned according to the needs of the situation. Every country has its own immunization schedule. If each vaccine were to be given separately, a minimum of at least 14 visits would be needed to the immunizing clinic. For transporting a vaccine from the manufacturer to village or a place where vaccination is to be administered, the required storage temperature must be maintained throughout. For this cold chain equipment such as cold box, vaccine carriers, thermos etc. must be used.

Education regarding the importance of vaccination should be given to the community along with other health education topics.

11.8 Glossary

Detoxication	:	The process of neutralizing toxic substances
Host	:	A man or other living animal, including birds and anthropods, affording under natural conditions, lodgement to an infectious agent
Immunity	:	Protection against a disease, either by natural means or by inoculation
Toxin	:	Any poisonous nitrogenous compound, usually referring to that produced by bacteria

11.9 Keys to Exercises

Exercise 1

- i) When antigens are introduced into the body by infection with a disease or through immunization, the body responds by manufacturing antibodies to protect itself against them. An individual becomes immune or develops immunity when his body has a sufficiently high level of antibodies against a specific disease or infection. Such an individual has developed a kind of resistance to the disease.
- ii)
 - a) **Active Immunity**
 - Humoral Immunity
 - Cellular Immunity
 - Combination of the above

- b) Passive Immunity
- Normal human Ig
 - Specific human Ig
 - Animal antitoxin or antisera

Another classification

- Natural immunity
- Acquired immunity

- iii) Active Immunity is the immunity which an individual develops as a result of infection or by specific immunization. Active immunity may be acquired in three ways:
- Following clinical infection e.g. chickenpox, rubella and measles
 - Following subclinical or inapparent infection e.g., polio, diphtheria
 - Following immunization with an antigen which may be killed vaccine or live attenuated vaccine or toxoid

Passive Immunity - When antibodies produced in body are transferred to another to induce protection against disease.

Passive immunity may be induced:

- By administration of antibody containing preparation
- By transfer of maternal antibodies across the placenta. Human milk also contains protective antibodies.

Exercise 2

- i) Expanded Programme of Immunization and Universal Immunization Programme
- ii)
- a) DPT 0.5 ml
 - b) DT 0.5 ml
 - c) Polio drops as per manufacturer's instructions
 - d) Tetanus Toxoid 0.5 ml
- iii)
- a) BCG Intradermal
 - b) DPT - Intramuscular
 - c) Tetanus - Toxoid Intramuscular
 - d) Measles - Subcutaneous
 - e) Polio - Oral

Exercise 3

- i) a) BCG Vaccination is a simple, safe procedure which consists in injecting vaccine into the skin
- Within three months of the vaccination, there will be a scar showing that the individual is protected against tuberculosis.
 - BCG vaccination can be given to all children upto 4 years of age
 - BCG vaccination can be taken at the subcentres or at other convenient places e.g. hospitals, clinics.
- b) Infant and young children are vulnerable to diphtheria, whooping cough and tetanus, and many die each year from the effects of such infections.
- At least three doses are needed to build up protection in infants and young children. Later booster doses are needed.
 - Immunizations are available at health centres, subcentres and hospitals.
 - After fever, soreness of the site and irritability for a day or two.

These symptoms are expected reactions and should not be a cause for worry or for not taking the second and third dose.

- ii) a
- iii) b
- iv) c
- v) a) * Slight fever
* Sore arm
* Irritability
- b) * Redness
* Swelling
* Crusting or pus by six to eight weeks

Exercise 4

Vaccine carriers are used for carrying small quantities of vaccines to the subcentre/villages, if necessary. They are light and can be carried easily by a health worker. The vaccine carriers are made of insulated material that prevent the warm air from getting in and can keep the vaccine cold for about two days. There are four ice

packs which must be fitted to the sides. Before using a vaccine carrier make sure that:

- it is clean
 - there are no cracks
 - the ice packs are fully frozen
 - the lid shuts tightly
- b) Cold boxes are specially constructed boxes with thick sides, bottom and top fitted with insulated material that keeps warm air from getting into the vaccines and cold packs. Cold boxes available in India can keep the vaccines cold for three to five days depending on the insulation material. Cold boxes should be opened only when necessary. Cold boxes are suitable for keeping the vaccine cold during transportation.

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UNIT 12

School Health Programme

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12.0 Introduction

In Unit 9 you have studied the growth and development of infants, toddlers, preschool and school age children and adolescents. You have also learnt the care of children at various stages of development. You have become familiar with the common problems of these children. In Unit 11 we explained the immunization programme and immunization schedule for all the age groups including school going children, to refresh your knowledge. As these children enter the school age it becomes essential to provide them health services in the school. This unit will focus on school health services and school health programme. The components of school health programme will be described, emphasis will also be laid on aspects of health education by the community health nurse as well as by the teachers.

What is your role as a community health nurse in school health services? This will be discussed in detail to update your knowledge which you can apply as a school health nurse.

12.1 Objectives

After going through this Unit you should be able to:

- Define "school health nursing"
- Explain various components of school health nursing
- List and identify the common health problems among school children
- Describe outline the role of Community Health Nurse in School Health Services
- Undertake school health programmes
- Organise formal and informal training for school health nursing.

12.2 School Health Programme

The school health programme is a continuation of the infant and preschool programme. In Nigeria, about 1/4th of the total population are children between 5 to 14 years. This vulnerable group needs special care for health. So it is essential to provide health services in the school for school children. The School Health Committee set up by the Federal Government of Nigeria had recommended that school health services should be an integral part of general health services. In rural areas School Health Services are an important function of the Primary Health Center. Let us see, what is meant by school health programme. A school health programme refers to the initiation, maintenance and improvement of the health of school children and school personnel. It includes learning health education and offering health services during school hours.

It is a comprehensive care of the health and well being of children throughout the years of schooling.

12.3 Components of School Health Programme

Main components of school health programme are:

Health examination
Prevention of infection
First aid and sick room-care
Nutrition and drinking water supply
Health Education
Mental Health
Environmental Sanitation.

Let us describe each of the above components.

12.3.1 Health Examination

Health examination consists of periodic medical examination and observation of the students by the class teacher. The School Health Committee (1960) submitted its report in 1961 and recommended medical examination of children at the time of entry to the school and after every 4 years. The initial examination should be thorough and should include a careful history and physical examination of the child with tests of vision hearing and speech. School is also responsible for the early detection of refractory errors, treatment of squint and treatment of eye infection such as trachoma. The teachers should help the medical team through daily inspection of children in the morning. The class teacher should also detect changes in the child's appearance and behaviour and report to the health team. For this purpose the teacher should be adequately trained during teacher training courses and in-service training courses. Medical examination should be followed by appropriate treatment and care.

Examination of each child will cover the following:

Physical growth: height, weight, chest expansion

Eyes:

- test the acuity of vision
- examine the defects eg. squint
- examine for disease eg. Vitamin deficiency i.e. Xerophthalmia, keratomalacia etc. trachoma and conjunctivitis
- Examine for anaemia

Teeth: Look for dental caries, bleeding gums, pyorrhoea etc.

Throat: Look for enlarged tonsils

Ears: Test for hearing, look for ear discharge

Chest: Auscultate heart and lungs. This is usually done by medical officer.

Abdomen: Palpate for enlargement of liver or spleen. Look for enlarged lymph nodes and tenderness. Look for undescended testes.

Limbs: Look for signs of Rickets; defects such as Kyphosis, clubfoot; observe gait

Skin and Hair: Look for red or hypopigmented patches with loss of sensation; look for ulcers, boils, ringworms and scabies; look for presence of lice and examine texture of hair.

12.3.2 Prevention of Common Infections

Common infections like scabies, otitis media, skin infections (boils, carbuncles), cough, common cold etc. should be prevented among school children. The medical officer, after detection of an infectious disease, may advise rest to the child, to stay at home for some days, so that spread of infection to other children can be prevented. Also a well planned immunization programme should be drawn up against the common communicable diseases.

12.3.3 First Aid Care

At least one school teacher in each school should be trained for First Aid, so that she can provide emergency care to pupils if they become sick or injured in school premises. Common emergencies which may occur in schools are:

- Accidents while playing
- Medical emergencies like gastroenteritis, colic, epileptic fits, fainting etc. First Aid Box should always be kept ready. First Aid Box should be created in each school.

12.3.4 Nutrition

The diet of the school children is most important. The diet should include all the nutrients in proper proportions. Studies conducted on children in India have revealed that dietary disorders are widely prevalent among school children. The programmes implemented to improve the nutrition of school children are given below:

Nutritional Programmes

- **Mid-day school meal:** It is recommended that the school meal should provide at least 1/3 of total calories and about half of the daily protein requirement of the child. The school health committee (1961) recommended that at least one nourishing meal should be given to children daily. Those who can afford, can bring their lunch packets from home. Otherwise the school should have some arrangement for providing mid-day meal through its own canteen.
- **Applied Nutrition Programme:** UNICEF is assisting in the implementation of applied nutrition programme in the form of implements, seeds, manure and water supply where land is available. The facilities provided by the UNICEF should be utilised in developing school gardens.

- **Specific Nutrients:** Specific nutrients are necessary for the prevention of some nutritional deficiency disorders: goiter, anaemia, night blindness. Protein malnutrition can be prevented by giving some specific nutrients.

12.3.5 Health Education

The most important element of the school health programme is health education. The goal of health education is to bring about desirable changes in health knowledge, in attitudes and in practice. Health education in school should cover the following areas. Health education in a school is a function of school teachers. The health officer or health worker may be furnished health teaching material. Teacher should keep a cumulative health record of each student.

- **Personal hygiene:** The need for hygiene of the skin, hair, teeth and clothing should be impressed upon students, teachers etc. Attention to good posture is also important.
- **Dental health:** Dental problem especially dental caries and periodontal disorders are the two common dental diseases in India. Children should be taught about dental hygiene, technique of brushing teeth and avoid eating sticky substances like toffees etc. Dental examination once a year is a must.
- **Healthful school environment:** A healthy school environment is necessary for the best emotional, social and personal health of the pupils. The school building, site and equipment with which the child grows and develops are all important. The school should be away from busy localities. Nursery and secondary schools should be single storeyed. Furniture should suit the age group of children. The colour of classrooms should be white. Adequate light, water supply, eating facilities and lavatories should be provided.
- **Education of handicapped children:** Ultimate goal is to assist the handicapped child and his family so that the child will be able to reach his maximum potential to lead as normal a life as possible.

12.3.6 Mental Health

The mental health of a child affects the physical health and learning process. Juvenile delinquency, maladjustment and drug addiction are becoming problems among school children. The school teacher has both a positive and

promotive role to play. He should help the children to attain mental health so that they may develop into mature, responsible and well adjusted adults.

No distinction should be made between race, religion or caste; between the rich or poor; between dull or cleverer students. There should be a well organised guidance and counselling programme in the school. Guidance may be provided to children with behaviour problems. There is also a need for vocational guidance to children who are entering into careers.

Exercise 1

- i) List any four activities of the school health nurse.
 - a)
 - b)
 - c)
 - d)
- ii) List two behaviour problems among school children.
 - a)
 - b)
- iii) Describe the responsibilities of the teacher in the school health programme.
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- iv) Describe a healthy school environment.
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12.4 Role of the Community Health Nurse in School Health Programme

School health is an important part of community health. In the previous units of this block, we have learnt that the crucial factor that will influence the development of our country in all aspects is education of its future citizens i.e. our present children. The older concept of school health services as that of medical examination of school children for early detection of abnormalities and correction is replaced by modern concepts. According to modern concepts, school health service is an economical and powerful means

of raising community health, consequently the future generations of, this great country. School health service has a broader concept of giving comprehensive health care throughout the school years.

In well established schools, a Public Health Nurse is appointed on the staff of the school. She attends all meetings concerning the welfare of the students. There is also a health office where the students health records are maintained and the visiting medical officer can check students' health, make referrals to various specialized centers for correction, and follow-up.

Where the school has boarding facilities there is an infirmary attached to the health office where sick students can be cared for by the school health nurse. The facilities in such schools depend on the resources available. In India, we have some excellent school health service programme where the public health nurse works with great satisfaction.

However, where education is a state subject and the schools are run by government resources only the school health services are in a dismal condition. The state has a cell for school health services in its Ministry of Education. Through this, a token service is done due to shortage of resources and facilities. These are obvious when you observe the school children carrying such heavy loads of books in school bags, a lunch box and water bottle. The load is getting heavier every year for the same age groups of students. All these loads of books are in the name of educational development. Has any teacher or Principal of the school thought about the effect of these loads on the very young developing spine of the child? Basic amenities of clean drinking water supply and toilet facilities are absolutely insufficient and unhygienic. School years are formative years. We need to give our children good health through sports, dramatics, and other extra-curricular activities. It would be useful for you to visit various schools in your community and observe the health facilities the school children have from the school administration.

12.4.1 Objectives of School Health Service

The objectives of the programme of a school health service are as follows:

- i) the promotion of positive health
- ii) the prevention of diseases,
- iii) the early diagnosis; treatment and follow-up of defects
- iv) the creation of health awareness in children
- v) the provision of positive and healthful environment

12.4.2 Ways of Achieving the Objectives

What could the Public Health Nurse do to achieve all these objectives. You have learnt various components of school health programme in this unit. Your role could be as follows:

- you need to KNOW the school children in general and those who need care in particular.
- you need to liaison with the class teacher of those students who are in a vulnerable situation.
- you need to liaison with PARENTS of those children who need special care.
- You need to go out along with a teacher and SUPERVISE randomly those students at lunch break to see how and what they are eating and give advice on nutrition.
- you need to supervise with a senior teacher the toilets of students at various times, and drinking water facilities.
- periodically specially during epidemic times you need to discuss with teacher the early signs and symptoms of that disease so that the class teacher can supervise and observe the signs of disease.
- you can participate in educational classes on nutrition, hygiene and sex education.

We can go on listing the role to be played by you in school health services - you must take initiative to follow-up the health of the school child in as many ways as possible within the cultural pattern of the child in that community.

Exercise 2

What is the role of a Community Health Nurse in School Health Programme?

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12.5 Summary

Every school should have a well organised school health programme. It may be advisable for health worker to choose one or two schools near the health center. Nurses are in a good position towards improving school health programme and towards helping to protect children from infection and other physical and social conditions that influence growth and development.

Teacher participation is essential in every school health programme, since health of the children is one of the primary objectives of education. The teacher has to be prepared to take a leading role in health education and in solving physical and mental problems of school children.

12.6 Keys to Exercises

Exercise 1

- i)
 - a) Health examination
 - b) First aid care
 - c) Nutrition
 - d) Health education
- ii)
 - a) Juvenile Delinquency
 - b) Maladjustment
- iii) Responsibilities of the teachers for child health are most important, particularly in rural areas, where medical facilities are so limited. The teacher is a key person in the community and the success of most of the activities concerning the school health programme depend on him/her cooperation. Specific functions may include, daily inspection of children and reporting for communicable diseases, general observation of hygiene, developing and surprising a safe environment, knowing each child and his particular needs, keeping the health record and recording significant facts about each child. Other responsibilities are referring children for medical care as needed; weighing of children and measuring their height to note development.
- iv) School environment refers to all influences in the school or school area which may affect in either a good or bad way the physical, mental or emotional welfare of the entire school.

Exercise 2

The community health nurse must be familiar with the prevailing environmental hygiene standard, observe conditions and discuss with the parent and teacher. The following aspects of school environment to be noted:

- General sanitation
- Hand washing
- Toilet facilities
- Safe drinking water
- Safe school building
- Adequate seating and lighting arrangement.

Study Centre and their Codes

S.No.	Centre Code	Study Centre Address
1	0101	Railway Degree College Secunderabad-500 017
2	0401	Gauhati University Guwahati-7810104
3.	0506	St. Xaviers College Ranchi-834 001
4.	2201	D.A.V. College Jalandhar-144 008, Punjab
5.	0901	L.D.College of Arts Navarangpura, Ahmedabad-380009
6	1301	BES College of Education Jayanagar, Bangalore-560 050
7.	1401	Institute of Management in Govt. Vikas Bhawan, Trivandrum -695 003
8.	1402	IMG Regional Centre, Civil station Campus, Kakkanad, Cochin-682 065
9.	1406	CMS College, Kottayam-686001
10.	1502	Rani Durgawati University Jabalpur-482 001
11.	1506	Holkar Science college, Indore-452 001
12	1601	K.J. Somaiya Comprehensive College of Education. Training & Research Vidyanagar, Vidya Vihar Ghatkopar East, Bombay-400 077
13.	1602	Symbiosis International Cultural Centre Senapati Bapat Road, Pruiia-411 004

14	0711	Gargi College Sirifort Road New Delhi-10004,)
15.	2301	University Of Rajasthan College Campus Jaipur-302004
16.	2501	DDGD Vaishnov College 445-EVR Periyar High Road, Arambakkam Madras-600106
17.	2706	PPN College 96 /12 M. G Marg, Kanpar-208 Oil
18.	2703	Allahbad Degree Collegel5, Kydganj, Allahabad-211 003
19.	2810	Maulana Azad College 8RA, Kidwai Road, C alcutta-700013