

# **NURSING**

**HIGHER SECONDARY - FIRST YEAR**

**VOLUME - I**

**Untouchability is a sin  
Untouchability is a crime  
Untouchability is inhuman**



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#### **CHAIRPERSON**

**Dr. Sumathi Kumarswami**  
Former Deputy Director of Medical Education (Nursing) &  
Executive member Indian Nursing Council – New Delhi &  
Vice President , State Nurses and Mid-wives Council, Tamilnadu  
Principal - Madras Medical College, Chennai.

#### **REVIEWERS**

**Mrs. C. Vijayalakshmi**  
Headmistress & DEO South – I/C  
Presidency Girls Higher Secondary  
School, Egmore, Chennai-600 008.

**Dr. K. Rajalakshmi**  
Principal  
Appolo College of Nursing  
Chennai.

#### **AUTHORS**

**Mrs. Harrysingh**  
Nursing Teacher  
Mary Club Wala Jadhav Girls  
Higher Secondary School  
Egmore , Chennai-600 008.

**Mrs . R. Premalatha  
Viswanathan**  
Presidency Girls Higher Secondary  
School Egmore,  
Chennai- 600 008.

**Mrs. Noornisha**  
College of Nursing  
Madras Medical College  
Chennai – 600 003.

**Mr. V. Ramachandiran**  
Management Consultant &  
Educational Trainer  
Vinayaka Missions Academy  
Chennai - 600 028.

**Mrs. V. Kumari**  
Institute of Obstetrics and  
Gynaecology and Hospital  
For Women and Children  
Egmore, Chennai - 600 010.

**Mrs. Menaka**  
Institute of Obstetrics and  
Gynaecology and Hospital  
For Women and Children  
Egmore, Chennai-600 010.

**Prof. Udayakumar**  
A.J. College of Nursing  
Chennai.

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## PREFACE

The Development of this Text Book ‘Nursing’ resulted from the combined efforts of many talented professionals, committed to excellence. Special recognition and due acknowledgement is hereby made to The Director of School Education, and The Joint Director of School Education, Chennai.

Every effort has been made to present clinical examples with more **practical orientation** than theoretical outlook. **The values and skills** needed by the students in this era of dramatic changes in health care delivery system, role of nursing in different settings namely **Hospitals, Defence Junior Red Cross, Blue Cross, Community Health Centres, Industries, Educational and Research Institutions**, throughout the world, are made greater emphasis.

A wealth of **self awareness and self development activities** are included to help the students to build their critical thinking skills and evaluate their own point of view. Every attempt is made to include basic information for the student who is unfamiliar with nursing.

This Text Book is the **first of its kind** in the milestone of Higher Secondary Education of Tamil Nadu, for it being placed as one of the optional subjects for Eleventh standard.

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# 1. NURSING – ORIGIN, DEVELOPMENT AND GLOBAL PERCEPTION

## 1.1 INTRODUCTION

The history of nursing spans from the history of human kind. For as long as there has been life, there has been the need to provide care and comfort to those suffering from illness and injury.

From the dawn of civilization, evidence prevails to support the premise that nurturing has been essential to the preservation of life. Survival of the human race, therefore, is in inextricably intertwined with the development of nursing.

Nursing has been called the oldest of the arts and the youngest of the profession. The word **nurse** evolved from the **Latin** word **nutritious**, which means nourishing.

The roots of medicine and nursing are intertwining and found in mythology, ancient eastern and western cultures and religion.

Nursing is defined by various authors at various times. Hansderson says “nursing is primarily assisting the individuals (sick or well) in the performances of those activities, contributing or its recovery (or to a peaceful death) that he would perform unaided, if he had the necessary strength, will or knowledge.

The unique contribution of nursing is to help the individual to be independent or such assistance as soon as possible.

The International Council Of Nurses defines“ Nursing is to assist the individual, sick or well in the performance of those activities contributing to health or to its recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge. And to do this in such a way as to help in gain independence as rapidly as possible.



Nursing, besides being a honourable profession, is one of the oldest arts and an essential modern occupation. Nursing is one of the greatest of humanitarian services and all people whether ill or well, rich or poor, literate or illiterate, young or old, at work or at play, in or out of hospital, are in some way or other, directly or indirectly closely associated with it.

Nursing has its own body of knowledge scientifically based and humanitarianism that promises expanded benefits to people and society. It assists the individual or family to achieve their potential for self-direction for health.

Nursing is not only an applied science, it is also an art, which provides skillful care for the sick in appropriate relationship with the patient, family, physician and with others who have related responsibilities.

It is concerned equally with the prevention of illness and the conservation of health. Skillful nursing care embraces the whole person, body, mind and soul, his physical, mental, social and spiritual well-being (**holistic approach**).

In its broadest sense, nursing covers not only the care of the sick, the aged, the helpless and the handicapped, but also cares for the promotion of health and prevention of illness.

The arts of nursing had its birth in the earliest home where a mother cared for the well being of the rest members of the family. It is this mother care that through the ages developed into a skilled art and a well-organized science.

It will be interesting to know and understand the vast changes that nursing has passed through, in order to meet the needs of a changing civilization.

A study of the development of nursing will throw light on some of the problems of the past, how they have been solved and how nursing has progressed rapidly despite various hindrances.

The paternal and maternal instinct in a human being is the main source of the nursing impulse, and is found in the hearts of

people of all ages. A mother's care for her sick child always found expression in such acts to alleviate pain and help the child to get better.

In a society, the noblest forms of humanitarianism are showing mercy, love and kindness to those in physical or mental distress. When this impulse or motive is re-enforced by religious philosophies and beliefs, it inspires people to live a life of service and of self-sacrifice for the sake of others.

Along with this spirit, special training and experience has made nursing an ideal and useful profession.

## **1.2 Pre-Historic Nursing**

Myths, songs and other findings of the archaeologists throw some light on prehistoric man's care for this sick. In the pre-historic era, it was believed that illness was caused by evil spirits within the body.

In order to get rid of the evil spirit, the body had to be ill-treated. This was done by starving, beating, and administering nauseous medicines, beating of drums, magic rites and ceremonies and by causing sudden fright. Sometimes holes were made in the affected parts of the body to allow the evil spirit to escape.

Besides this, there were also many other ways of treating illness. Primitive man's skill in fighting disease has given us many medical and surgical treatments such as massage fomentations, trephining, bone setting, hot and cold baths, etc. The doctor cum nurse in such cases was the medicine man or the witch doctor or the priest physician.

## **1.3 Nursing in Early Civilizations**

### **EGYPT**

The Egyptians thought medicine to be of divine origin. One of the world's oldest medical records, dating back to 1600 B.C. comes from Egypt. Sources of medical history, description of

diseases and their treatment, surgery and drugs used are found in the "Hieroglyphic writings" on papyrus from the temples of ancient Egypt and from the Pyramids.

Temple took the places of hospitals and the doctor cum nurse was the priest. It is probable that high-ranking women who become the priestesses in the temples played the role of nurses. Mothers and daughters nursed the sick at home.

An outstanding priest physician was **Imhotep**. Because of his great love and kindness to his patients and of his success in healing, he was elevated to the rank of a deity.

Embalming and bandaging of mummies led to the study of anatomy of the body and the study of various herbs and drugs in preservation of the same. The Egyptians recognised about 250 diseases and discovered suitable drugs and surgery for their treatment.

The sacred books were strictly followed by the priest-physicians. He was taken to task, if he deviated from the teaching of these books and if his patient dies.

Even though Egypt had made much progress in medicine and nursing, it soon declined for no dissection was permitted and also no experiments in medicines were to be made. This together with the advent of the Romans led to its decline.

## **GREECE**

Medicine was closely connected with religion in Greece as in India. According to Greek mythology, Apollo the Sun God was their **God of healing**. **Asclepius, the son of Apollo, was the Greek God of medicine.**

The Greeks prayed to Apollo and Asclepius, and the goddess of health, **Hygiea** the daughter of Apollo for magical cures for their illnesses. Temples, where people came to worship were also places for the treatment of the sick and the priest-physician was in charge of them.

These temples were situated in a healthy location, in a

cheerful and charming country-side with plenty of fresh air.

In Greece, the emphasis was a positive health, in beauty and perfection - not sickness and misery. The young of Athens were taught to give their bodies exquisite care.

It was in Greece that personal hygiene developed to a degree never previously or subsequently approached. Much emphasis was given to personal cleanliness, exercise and dietetics rather than to matters of environmental sanitation.

**Hippocrates**, 100 BC known as "**Father of Scientific Medicine**" had a medical foundation to start with. He found that health and prevention of disease depends on certain laws of nature. He also established an **Ethical code of conduct** for all who practiced medicine.

Parts of his code are being used by medical students today and it forms the base of the 'Nightingale's pledge'. He separated medicine from religion for the first time in the history. With the spreading of Greek 's influence in other countries, the Greeks introduced establishments that may be considered as modern city hospitals.

They also established scientific methods of diagnosis and systematic methods of recording.

## **ROME**

The Romans are best known for advances in public health. Rome had proper sanitation, drainage and sewage system, public baths and a type of public dispensary.

The Roman noble women cared for the sick. With the advent of Christianity, deacons and deaconesses performed the duties of nurses. **Galen**, a Greek physician who lived in Rome about 100 BC, performed numerous experiments on animals to learn about anatomy and disease.

## **HEBREWS**

The writings of Hebrews in the Old Testament speak about laws and principles of sanitation in accordance with modern bacteriology. They mention about selection of food, sanitation,

segregation of the sick, disinfection and midwifery.

## CHINA

The Chinese were well advanced in medicine and surgery. They had good knowledge of internal organs and knew about the circulation of the blood. They practiced dissection. They also practiced vaccination and physiotherapy. Liver for anaemia, seaweed for thyroid were administered.

The sick were prayed for in halls of healing. Intestinal infection was prevented by drinking of tea. Much importance was given to cleanliness and hygiene.

## INDIA

In India, we had the **Ayurvedic system of medicine**, which can be traced back to about 3000 B.C. Ayurveda stressed on hygiene, prevention of sickness, inoculation against small pox, sanitation, lavatories, good ventilation, kitchen, construction of hospitals, cultivation of medicinal plants and suitable building for housing animals.

**Atreya** was the first great physician and teacher of Ayurveda. He lived about 800 B.C. During 700-600 B.C **Sushruta** and **Charaka** started practice of surgery and medicine. **Sushruta Samhita** is written by the great surgeon Sushruta, who says "the physician, the patient, the drugs and the nurse are four feet of 'Padas' of the medicine, upon which the cure depends".

He then explains how cash may be a true 'Pada' (Foot). The nurse is a pada when he is kindhearted, strong, trustworthy and mindful of the physician's orders.

The nurse is one who attends the patient; is cool headed and pleasant in his demeanour; does not speak ill of any body; is strong and attentive to the requirements of the sick and strictly follows the instructions of the physicians.

The great physician **Charaka** has written the **Charaka Samhita** in which he explains details of the manner in which drugs should be prepared or compounded for administration.

According to him, resourcefulness, devotedness to the

patient waited upon, and purity of mind and body are the qualification of the attending nurse. The Charaka Samhita states that attendants on the sick should have good behaviour and should be distinguish for purity and cleanliness of habits.

Nursing treatments prescribed are baths, enema to evacuate the bowels, emetics to produce vomiting, vaginal and urethral infusion (introducing a fluid under pressure), venesection (reducing of blood volume by opening the vein), gargles, massages, rubbing or pressing the limbs etc.

A nurse is expected to assist the patient to walk or move about. She/He must know how to make clean beds. She should be skilled in compounding drugs and ever willing to do any work that her profession demands of her.

700-600 B.C - **Thiruvalluvar** in his songs speaks highly of medicine. He describes medical care as consisting of patients, doctors and nurses.

264 B.C - **King Ashoka** made a great stride in the care of the sick, both human beings and animals. He not only founded a large number of hospitals for the sick but also made provision for the education and training of women for that purpose.

Monastery Universities were founded and became famous for their medical schools. The ethical standards of conduct demanded from those who attended upon the sick were of an exceptionally high order.

The nursing of patients seems to have been devoted primarily to men, a great deal of unrewarded work. The qualities expected of nursing attendants were good behaviour, purity, cleverness, at kindness and skill.

## 1.4 Early Christian Era

Nursing in Pre-Christian times, religious beliefs had great bearing on the attitude towards the sick and the mode of caring for the sick and the suffering.

Christianity believed that one should render services of love

to humanity without any reward. It was equal to one's sincere love of God. This principle was absorbed in nursing and helped to improve the status of a nurse. Some of examples of such women are as follows:

### **Phoebe**

She was the first deaconesses. She was intelligent and educated and the best nurse who could care for the sick in their homes. She can be compared to a modern public health nurse.

### **Fabiola**

She was a young, beautiful and attractive woman. She was the daughter of a great Roman Noble. She converted her palace into a hospital and it was the first Christian hospital in Rome. She collected the poor and sick from the streets and cared for them herself, in her place.

### **Paula**

Paula was a friend of Fabiola. She devoted herself for the services of the sick. She built a hospital for strangers, pilgrims, and travellers and for the sick. She constructed a monastery in Bethlehem. They gave good nursing care for the sick.

### **Marcella**

Marcella was a wealthy woman. Since women of high rank had much freedom in Rome, she was able to lead a group of such women and induce them in works of charity.

**During the Middle Ages**, monks and nuns devoted their life to the care and services of the poor and sick. The monasteries became the places of education, medical care and nursing. The following monks and the nuns devoted their life and services for the poor and the sick.

St. Dominic (1170-1221),

St. Francis of Assisi 1182 -1226.

St. Elizabeth of Hungary 1207 –1231

St. Catherine Sienna 1347 – 1380

The women who assisted in the work of clergy in the church

were known as deaconesses. They were matured women, who did teaching, preaching and caring for the sick at the home.

New thoughts and new ideas were introduced in the early Christian era. Even though many religious were fatalistic in their outlook on illness and looked upon it as a punishment or a necessary evil, Christianity introduced a new aspect on the subject, thus transforming nursing to a higher level and raising it to a professional standing.

This new aspect that of "altruism" was the highest motive given to mankind. It taught that one's sincere love for God and a desire to be like Him, would be the chief motive for one's selfless and sacrificial service to mankind without any hope of a reward.

This inspired many godly men and women to step forward in the service of the sick, the suffering and the needy. They opened their homes to the sick and in need. Such homes were called "**Diakonia**". During the time of the persecution of the Christians, people turned to the Bishop of the Church for help.

This necessitated the building of homes cum hospitals where the strangers, the orphans, the aged, the sick and the lepers were cared for.

These homes cum hospitals were known as **Xenodochia**. One such outstanding hospital was founded at Caesarea by St. Basil in 370 A.D.

The Christian church preserved records and from that time till today we have a continuous record of the history of nursing.

Many rich and noble women launched out in groups and organizations in the service of the sick and the ailing and used their wealth for this cause. Monasteries came into being and became a heaven for those who needed help and care. Two notable names of people belonging to this era are worth mentioning.

Celsus, a Greek, studied anatomy and knew how to do surgical operations for cataracts and hernias.

Galen practiced dissection on animals and studied the anatomy and physiology of the heart and circulation, the respiratory



and the nervous system. His writings together with his translations of Hippocrates were considered to be the chief medical authority by the Arabs.

## **MIDDLE AGES**

Monks and nuns dedicated to the cause of human suffering worked as doctors and nurses. They were skilled in the use of home remedies. They got scientific knowledge in the care of the sick from the books in the monasteries. They did the groundwork for the development of universities.

In the later middle ages, many social problems presented themselves with the disintegration of the protective units like monasteries, guilds and feudalism and resulting in redistribution of population.

Late in the 12<sup>th</sup> and 13<sup>th</sup> centuries nursing become differentiated from medicine and surgery. Medicine went into a period of advancement while nursing declined. At such time may noteworthy men and women came out to serve the sick.

During the medieval period plague and pestilence were thought to be due to supernatural rather than natural causes. Religious expeditions like the crusades led to founding of secular as well as military hospitals.

Quarantine was instituted to check spreading of epidemics like plague. Social problems were solved to a great extent. The needs of abandoned children were met in hospital, leading to the founding of creches. People had an indifferent attitude towards sanitation and hygiene.

**The Dark Ages** was marked by superstition, mysticism, persecution of free thinkers and religious wares. Use of talisman and incantations for healing the sick become quite common.

## **THE DAWN OF MODERN NURSING.**

From the late 1700s through 1853, the manner in which the sick were cared, remain essentially unchanged. In Europe the dawn of nursing was underway.

The Deaconess Institute of Kaiserswerth, Germany was

established in 1836 by Pastor Theodor Fliedner, to train the Deaconesses to care for the sick and the provision of social services. Graduates of the Kaiserswerth program spread their influence through out the world.

### **Florence Nightingale**

Every one who had studied about Miss Florence Nightingale, knows of her devotion to the services to the poor and the sick and is also aware of what she did for humanity and to raise the status of nursing profession.

Florence Nightingale was born in a wealthy English family, on 12<sup>th</sup> May 1820. As she grew off, she became interested in people and in politics. She had great desire to become a nurse though her parents were not keen on her becoming one.

1. She was dissatisfied with the dealt routine lifestyle of the upper class women of their days. She had an active mind and an interest in her surroundings beyond household and socials events.
2. She had received a classical education equal to that of men of her day. This education provided her with an understanding of the circumstances of the world in which she lived.
3. She became aware of the inadequate care being provided in hospitals, when she accompanied her mother on visits to the ill. What Nightingale saw in the hospitals intrigued her and made her want to become more involved.

In 1846, in spite of the concerns of parents and friends Nightingale became to visit and care for the sick in her community. In addition, she visited hospitals in England and throughout Europe. Out of her experiences she recognised that nurses required knowledge, training and discipline, if they were to be effective.

Nightingale learned about the school at Kaisersworth and in 1850, she was admitted to the training program. The three years of training she received were rigorous but helped her clarify what was lacking in the current training of English nurses. After her training, in 1853 she was appointed as Superintendent of the Institution for the Care of the Sick Gentlewomen in London.

She had an opportunity to give her best service to the wounded soldiers in the Crimean War in 1854. Florence Nightingale and her nurses attended thousands of wounded and dying soldiers.

Every night Florence Nightingale walked about with a lamp in her hand to help the suffering soldiers. At this time she helped them to write letters to their families and last messages for those who were dying. She was rightly known as “The Lady with the Lamp”.

Nightingale and a small band of untrained nurses went to the British hospitals at Scutari in Turkey. She found the patients were laid on the floor in bloody uniforms. Equipments and facilities were not present adequately. With great compassion, she set about the task of organizing and cleaning the hospital and provided care to the wounded soldiers.

Through her efforts and the help of others, Nightingale introduced numerous improvements in the military hospital. Her efforts were largely responsible for traumatic reductions (42 % to 2%) in the wartime death rate of British Soldiers.



**Fig 1.1 Florence Nightingale in Crimean War**

She also founded the first training school for nurses (St. Thomas Hospital, London, 1860).

Throughout the publication of countless articles and papers, she shared her ideas about nursing and nursing education. Miss Nightingale was the first to mention **Holism** (treating the whole patient) in nursing and the first who stated that a unique body of knowledge is required to practice professional nursing.

After the war, she worked to bring about better health conditions in the British army. Nightingale almost single-handedly tried to change health care in England. Nightingale was the founder of modern nursing education. She established the Army Medical School at the Fort Pitt. Despite her ill health she worked for the development of nursing services without taking sufficient rest.

Florence founded a training school for nurses in 1860 at St. Thomas Hospital London. The funds, which were raised by the British people for her service in the Crimean War, were used for this

training school. She was very much interested in improving the conditions of the army in India also. She planned a complete public health program, which was practiced in all hospitals and in the fields of nursing. She died peacefully in her sleep at the age of 90 (13<sup>th</sup> May 1910 )

In recognition of her meritorious help to mankind she was offered the Order of Merit in 1907. She was the first lady recipient for such an honour.

### **The Florence Nightingale Pledge:**

The modified Hippocratic Oath arranged by Mrs. Lystra E. Gretter and her committee for the Farrand Training School for Nurses, Detroit is called the Florence Nightingale Pledge as a token of esteem for the **Founder of Modern Nursing**.

The pledge is taken by all the nurses who have completed the training program before entering to their practice.



**Fig.1.2 Lady with the lamp**

### The Nurses Pledge:

I solemnly pledge myself before God  
and in the presence of this assembly  
to pass my life in purity and to  
practice my profession faithfully.

I will abstain from what ever is  
deleterious and mischievous and  
will not take or knowingly administer  
any harmful drug. I will do all in my  
power to maintain and elevate the  
standard of my profession and will  
hold the confidence in all personal  
matters committed to my keeping  
and all family affairs coming to my  
knowledge in the practice of my calling.

With loyalty, I will endeavor to aid the  
physician in his work and devote myself  
to the welfare of those committed to my care.

### **The renaissance or revival of learning in Europe.**

This was an age of discovery, invention, development, expansion and reorganization in all spheres of human life. It is said that in this period in Europe "The dignity of man began to be emphasized and the search for scientific truth was at least advocated."

Curiosity about the natural world paved the way for rebirth of science. There was great advancement in the science of health, science of chemistry, anatomy and great improvement in surgery. Many eminent people's discoveries and inventions led science to make great strides of progress in its various fields. Some of them were:

Antony Van Leuwenhock	..	Improvement on microscope.
William Harvey	..	Circulation of blood
Daniel Tuke	..	Treatment of enzyme people
Oliver Wendell Homes	..	Anatomy
Edward Jenner	..	Vaccination against small pox
Louis Pasteur	..	Science of Bacteriology
Edwin Chadwick		Sanitation - hygiene - sanitary laws. Organised Public Health Department and modern nursing.
Galsiele Fallopian	..	Studies and description of the minute organs of the body, including the Fallopian tubes, which bears his name.
William Rathhone	..	Introduced visiting nursing.
Florence Nightingale	..	School of Nursing in 1860.

This age also emphasized on provision of pure water supply, proper disposal of refuse and adhering to sanitary laws. Boards of Health were set up for supervisory purposes.

## **NURSING IN INDIA**

The ancient records of India indicate the principles and practices of nursing. They are so clear, intelligent and scientific, that many of them might fit into any of the modern textbook.

The nurses were usually young men, and only in special cases, women were taken for conducting childbirth. The progress of nursing in India was obstructed by the low state of women, the caste system, illiteracy and political unrest.

Military nursing was the earliest type of nursing. In 1664 the East India Company started a hospital for soldiers in a house at Fort

St.George, Madras. The first sisters were sent from St.Thomas Hospital, London to this military hospital. In 1797 a Lying - in - Hospital (maternity) for the poor of Madras was built with the help of subscriptions by Dr.John Underwood. In 1854 the Government sanctioned a training school for midwives in Madras.

Florence Nightingale was the first woman to have great influence over nursing in India and had a close knowledge of Indian conditions, especially army. She was interested in the nursing service for the civilian population, though her first interest was the welfare of the army in India.

In 1865, Miss Florence Nightingale drew up some detailed "Suggestions on a system of nursing for hospitals in India". Graduates were sent out from the Nightingale School of Nurses at St.Thomas Hospital, England to start similar schools in our country.

St Stephens Hospital at Delhi was the first one to begin training the Indian girls as nurses in 1867. In 1871, the first School of Nursing was started in Government General Hospital, Madras with 6 months Diploma Midwives program with four mid-wife students. Four lady Superintendents and four trained nurses from England were posted to Madras.

Between 1890 and 1900, many schools, under either missions or government, were started in various parts of India. In the yearly twentieth century, National Nursing Associations were started.

In 1897, Dr.B.C.Roy did great work in raising the standards of nursing and that of male and female nurses.

In 1908, the trained nurses association of India was formed as it was felt to uphold the dignity and the honour of nursing profession.

In 1918, training schools were started for health visitors and dais, at Delhi and Karachi. Two English nurses Miss Griffin and Miss Graham were appointed to give training to and to supervise the nurses.

In 1926, Madras State formed the first registration council



to provide basic standards in education and training. The first four year basic Bachelor Degree program were established in 1946 at the college of nursing in Delhi and Vellore.

With the assistance from the Rockefeller Foundations, seven health centers were set up between 1931 - 1939 in the cities of Delhi, Madras, Bangalore, Lucknow, Trivandrum, Pune and Calcutta.

In 1947, after the independence, the community development programme and the expansion of hospital service created a large demand for nurses, auxiliary nurse midwives, health visitors, midwives, nursing tutors and nursing administrators.

The Indian Nursing Council was passed by our ordinance on December 31<sup>st</sup> 1947. The council was constituted in 1949.

In 1956, Miss Adrenwala was appointed as the Nursing Advisor to Government of India. The development of Nursing in India was greatly influenced by the Christian missionaries, World War, British rule and by the International agencies such as W.H.O. UNICEF, Red Cross, UNSAID etc.

The first master's degree course, a two-year postgraduate program was begun in 1960 at the College of Nursing, Delhi.

In 1963, the School of Nursing in Trivandrum, instituted the first two years post certificate Bachelor Degree program.

The associations such as International Council of Nurses, the nurses auxiliary of the CMA of India, T.N.A.I. Indian Nursing council and State level Registration Council are closely connected with promotion and the upliftment of the nursing profession.

### **Nursing in Tamilnadu**

- Ø In 1664 the East India Company started the first hospital at St. George, Madras.
- Ø In 1797 a Lying-in-hospital for the poor of Madras was started.
- Ø In 1854, the government sanctioned a Training School for running mid-wives course in Madras.

## Training School

The first mid-wives School was started at the government hospital in 1871.

The formal schools of nursing was started for conducting diploma in general nursing and mid-wifery programmes for a duration of 3 ½ years in Madras and in other parts of Tamilnadu.

Schools of nursing offering diploma program increased slowly (there were **9 schools of nursing** and **4 mid-wifery** schools till 2001) conducted by government of Tamilnadu.

The number of schools conducted by government of Tamilnadu is now increased to 17 in 2003 and now the government executed to start one school of nursing in every district hospitals. The numbers of private schools have also increased.

Multipurpose health worker schools are also functioning in many places in Tamilnadu conducted by government and private bodies.

## College of Nursing

A teachers training program running for a duration of one year was functioning in government hospital. In 1967 an integrated 2-½ years Bachelor Science degree nursing program attached to Madras Medical College (for trained nurses) commenced replacing the then existing diploma program.

In 1980, diploma in community nursing program was started.

In 1983, Bachelor of Science Nursing, 4-year program was started in College of Nursing, attached to Madras Medical College.

In 1995, Master of Science (Nursing) program was started in the College of Nursing, attached to Madras Medical College.

In 2001, a post of Principal for the College of Nursing was sanctioned and started functioning. **Dr. Sumathi**

**Kumarswamy** was appointed as the **first Principal**.

Many candidates have completed Doctoral degree in nursing.

In 2003, a College of Nursing at Madurai started functioning by the government.

### **Services**

The cadre strength of nursing increased slowly and many categories in nursing services prompted up.

In 1962, a post of Assistant to Director of Medical Services was created and filled at the state level.

A post of Deputy Director of Nursing at the state level was created in 1986, and **Dr Sumathi Kumaraswamy** was appointed as the **first Deputy Director of Medical Education in Nursing** in 1992.

### **The Development of Auxiliary Nurse Midwife Training (Rural Health Services).**

During the Second World War, there was a great demand for nursing personnel in the military hospitals as well as in the civil hospitals. So auxiliary nurses midwife services was founded in 1942. This course was simple and the duration of training period was shorter than the nursing course.

The nurses under this course were posted to do useful work under supervision in the hospital, or in the health centre and to give domiciliary care. Auxiliary nurse midwives were prepared to meet the demands of the health personnel in the community development programmes.

After the independence and in the Second Five Year Plan, it was decided to prepare six thousand auxiliary nurses and midwives. The private hospitals also were requested to co-operate with the Government to start such training institution.

The government hospitals were given facilities to train the auxiliary nurse midwife since 1955.

Today the auxiliary nurse midwife has a vital role in the health services of the rural health centers such as primary health centre, family welfare centre, Maternity and Child Health centers. They can work as a midwife and a health worker in the community. They are also given opportunity to be trained as health visitors or as nurses if they have the basic educational requirements.

The practice of the auxiliary nurse midwife in the rural center had helped to improve the health status of the people, by health teaching, domiciliary care, and regular follow-up of patients and families. Auxiliary nurse midwife in the present health care delivery system functions as a **Multipurpose Female Health Worker**.

With the present introduction of vocational courses such as nursing in the academic stream as one of the options, it is believed that it will contribute towards the basic nursing care of individuals, families and community for health and happiness. It will also be a foundation course for future diploma and degree programs in nursing.

## SCOPE OF NURSING

There was a time when professional nurses had very little choice of service because nursing was centered in the hospital and bedside nursing. Career opportunities are more varied now for a numbers of reasons. The list of opportunities available are given under:

1. **Staff Nurse** provides direct patient care to one patient or a group of patients. Assists ward management and supervision. She is directly responsible to the ward supervisor.
2. **Ward sister or Nursing Supervisor**, She is responsible to the nursing superintendent for the nursing care management of a ward or unit. Takes full charge of the ward. Assigns work to nursing and non-nursing

personnel working in the ward. Responsible for safety and comfort of patients in the ward. Provides teaching sessions if it is a teaching hospital.

3. **Department supervisor/Assistant Nursing Superintendent.** She is responsible to the nursing superintendent and deputy nursing superintendent for the nursing care and management of more than one ward or unit. Example – Surgical department. Out-patient department.
4. **Deputy nursing superintendent.** She is responsible to the nursing superintendent and assists in the nursing administration of the hospital.
5. **Nursing Superintendent** She is responsible to the medical superintendent for safe and efficient management of hospital nursing services.
6. **Director of Nursing** She is responsible for both nursing service and nursing educations within a teaching hospital.
7. **Community Health Nurse (CHN)** services rendered mainly focusing Reproductive Child Health programme.
8. **Teaching in nursing.** The functions and responsibilities of the teacher in nursing are planning, teaching and supervising the learning experiences for the students. Positions in nursing education are clinical instructor, tutor, senior tutor, lecturer, and associate professor, Reader in nursing and Professor in nursing.
9. **Industrial nurse** Industrial nurses are providing first aid, care during illness, health educations about industrial hazards and prevention of accidents.
10. **Military Nurse.** Military Nursing service became a part of the Indian Army by which means nurses became commissioned officers who are given rank from lieutenant to major general.
11. **Nursing service abroad** Attractive salaries and

promising professional opportunities, which causes a major increase for nursing service in abroad.

12. **Nursing service administrative positions.** At the state level the **Deputy Director of Nursing** at the state health directorate. The highest administrative position on a national level is the **Nursing Advisor** to the Govt. of India.

### **Nursing in India – A Global Perception.**

If we are aware of current trends it will help us plan for developments in nursing education and nursing services as well as controlling the direction in which the profession moves.

A global perception will enable nurses to rise to higher levels in their knowledge, skills and improved performance both in India and around the globe.

### **The factors influencing the trends in nursing:**

#### **1. Changes in society**

For the past five decades, five social factors have greatly influenced present trends in nursing. These are,

- Intensive efforts of government to meet the health needs of people.
- gradual improved literacy level of the people with the growing awareness of health needs.
- Advanced scientific technology
- The changing role of women and
- the continuing growth of population.

#### **2. Changes in other professions**

Trends in the nursing profession have always been closely related to those in the medical profession. Growing specialization in medical field is resulting in a trend towards increased specialization in nursing. The development of new diagnostic procedure and equipments make specialization even more necessary.

#### **3. Patients Bill of Rights**

After the development of the “Patients Bill of Rights”, **the nurses are also accountable for patients care and have legal responsibilities for the patient.**

#### **4. Developments in other discipline**

Developments in other discipline other than medicine also influence trends in nursing profession. Nursing is moving towards more specific nursing functions as other members of health team like dieticians, social workers and physiotherapists are more available and more highly specialized.

#### **5. Leadership within the profession**

Leadership within the profession also influences the trends in nursing. Nursing is moving towards professionalism due to the untiring efforts of nurses who have been dedicated to achieve the aim.

#### **6. Working and studying in abroad**

Working and studying in abroad is influenced by many factors within India and in other countries. Shortage of nurses in other countries, higher salary paid in abroad is the main causes for the working of Indian nurses in abroad.

#### **7. Greater specialization in nursing education and practice**

Greater specialization in nursing education and practice is a trend related to that in the medical profession and the growing amount of scientific knowledge available.

#### **8. Working conditions**

Working conditions for nurses are also changing. There is a gradual change towards shorter and more convenient hours of duty, better accommodations and higher salaries.

#### **9. Trends in other countries**

Trends in other country also influence the trends in the nursing profession in India. The rapid development of the degree

programme has promoted the same emphasis and development here for professional nursing.

## 10 Changing roles and functions of the nurse as perceived in the globe.

The nurses in India are also prepared and more privileged to face the changes and ready to accept the challenging roles and functions of the nurse as perceived in the globe because of the development in the education and training system. The following roles and positions perceived as in the globe are given below.

- a. **Nurse educator** works in schools of nursing, staff development departments. They provide the educational programme for student's nurses and nurses, teach clients about the self-care and home care.
- b. **Clinical nurse specialist** specializes in managing specific diseases and they function as clinicians, educators, managers, consultants and researchers.
- c. **Nurse practitioners** are certified to provide health care to clients in out-patient or community settings.
- d. **Certified nurse-midwife** are certified by the American College of Nurse-Midwives to provide independent care for women during normal pregnancy, labour and delivery.
- e. **Nurse anesthetist**, having advance training in anesthesiology, provides surgical anesthesia to the client under the supervision of an anesthesiologist during minor surgery with baccalaureate degrees or master's degree.
- f. **Nurse administrators** manage client care within the healthcare agencies in a middle level or upper level management position.
- g. **Nurse researcher** with Doctoral degree investigate nursing problem to improve care and to define and expand the scope of nursing practice.

Advancements in science increase health needs of the society and thereby expect changes in the role of nurses and thus increases



the scope for nurses.

### **Ethics in Nursing**

The Oxford dictionary defines ethics as "a science of human duty in its widest extent."

The Chambers describes it as "the science of morals, that branch of philosophy which is concerned with human character and conduct."

Webster defines it as "the morals concerned with or relating to what is right and wrong in matters of human behaviour."

A code is needed to educate and orient members of the profession to distinguish desirable from the undesirable behaviours, to regulate relationships with co-workers and clients, and to guide the public in understanding professional conduct."

A group of nurses stated, "Ethics is knowledge and attitudes that determine man's relationship to himself, to others and to the society."

Ethics is a science that endeavors to interpret the highest standards of written or unwritten principles or doctrines or morals of human duty, human character and conduct of human behaviour and human relationships in day-to-day life.

**Ethics in nursing** is a particular code of behaviours, characters, conducts and relationship unique only to the nursing personnel.

Nursing ethics is "a system of principles governing the conduct of a nurse, her relationship to the patient and his family, her associates and society at large."

As a guidelines to all those in the nursing profession, the Grand Council of the International Council of Nurses held at Sao Paulo, Brazil on July 10, 1953, adopted, viewed and revised in the year 1964.

### **Code of Ethics as applied to Nursing**

The codes of ethics are as follows:

1. The nurse provides services with respect for human dignity irrespective of social or economic status, personal attributes, or the nature of health problems
2. The fundamental responsibility of the nurse is threefold; to conserve life, to alleviate suffering and to promote health.
3. The nurse shall maintain at all time the highest standards of nursing care and of professional conduct.
4. The nurse must not only be well prepared to practice but shall maintain knowledge and skills at a consistently high level.
5. The religious beliefs of a patient shall be respected.
6. Nurses hold in confidence all personal information entrusted to them.
7. Nurses recognise not only the responsibilities but the limitations of their professional functions not to recommend or give medical treatment without medical orders except in emergencies, and report such action to a physician as soon as possible.
8. The nurse is under an obligation to carry out the physician's orders intelligently and loyally and to refuse to participate in unethical procedures.
9. The nurse assumes responsibility and accountability for individual nursing judgments and actions.
10. The nurse sustains confidence in the physician and other members of the health team; incompetence or unethical conduct of associates should be exposed but only to the proper authority.
11. The nurse safeguards the patients and the public when health care and safety are affected by the incompetent, unethical or illegal practice of any person.
12. The nurse co-operates with the health team and maintains harmonious relationships with members of other professions

and with nursing colleagues.

13. The nurse adheres to standards of personal ethics, which reflect credit upon the profession.
14. In personal conduct nurses should not knowingly disregard the accepted pattern of behaviours of the community in which they live and work.
15. The nurse participates and shares responsibility with other citizens and other health professions in promoting efforts to meet the health needs of the public - local, state, national and international.

Requests poured in from many quarters of the nursing world to review and revise this code against and representation for this purpose was made through several national councils.

In accordance with these requests the Professional Service Committee of the ICN selected a sub-committee for the revision of the code. The final revised code was submitted to the ICN Council of National Representatives in Mexico in May 1973 at the 15th Quadrennial congress.

The Sub-committee on the Code of Ethics tried to concentrate their attention on the most vital aspects of nursing and built their revised ethical code around five major headings.

### **Nurses and people**

Nurse's responsibility is to those people who require nursing care.

A person's values, customs and religious beliefs must be respected. Personal information must be held in confidence or shared only with judgments.

### **Nurses and Practice**

The nurse is responsible for giving the best care possible at all times and under all circumstances and maintaining a high standard of practice.

### **Nurses and Society**

The Code states the responsibility of the nurse for positive promotion health of the society by initiating and supporting action to meet the health and social needs

### **Nurses and co-workers**

The nurse is the member of the health team which is made up of all those who serve to meet the health needs of people. Nurses are expected to cooperate and to work well with nursing colleagues, the other members of the health team and members of other health professions.

### **Nurses and the profession**

The Code points out very clearly the role of the nurse as a leader and an active participator in professional activities by setting up and carrying out desirable standards of nursing practice and nursing education.

### **Qualities of a Professional Nurse:**

For an efficient discharging of her/his duties and for a satisfactory fulfillment of all the aims and aspirations that her/his profession stands for, the following qualities in a nurse are inevitable.

1. **Love:** with all its other attendant qualities like mercy, kindness, gentleness, patience and understanding are a must in a successful nurse. All her service for the sick and disabled are sponsored by these qualities. Without these essential characteristics the nurse becomes only a mechanical aid.
2. **Willingness and self-sacrifice:** These two qualities are complimentary to each another. Because she is willing to serve under any trying situation, a nurse sacrifices her time, comfort and even material benefits. Eg. Florence Nightingale at Scutari.
3. **Reliability:** A nurse is one who can be depended upon for a faithful discharging of her duties, the patients under her care, their families, doctors and members of the "health team" depend on her, for she is trust worthy and competent.
4. **Resourcefulness:** In critical circumstances she uses her wisdom

and knowledge and performs her duties to the best of her ability with whatever means that are at her disposal. She tackles situations with alacrity.

5. **Courage:** In times of confusion, calamity or catastrophe, the nurse manages her work with compassion and is ready to meet any problem with courage. She is cool and levelheaded and does not get agitated easily.
6. **Loyalty and honesty:** Her relationship with the patient, the doctor and her associates are marked by utmost loyalty and honesty.
7. **Observant :** A good nurse is always vigilant. She keeps a close and constant watch on the patients, their progress, their changes and reactions to treatment etc. and gives the doctor timely reports, A nurse should anticipate and meet the patients' needs.
8. **Willingness to learn:** A nurse must keep in touch with the latest discoveries and developments in medicine and treatment and must "maintain her knowledge and skill at a consistently high level".
9. **Co-operative and considerate:** A nurse learns to live in harmony with patients, doctors and other members of the health team and tries to help them in times of need.
10. **Cleanliness:** A nurse is always clean and neat personally and in her work. She must be tidy and demand high standards of cleanliness from those whom she is associated within her profession.
11. **Spirituality:** A nurse must learn to create a spiritual atmosphere for the patient and must try and help the patients to put their confidence and trust in a "Power" that is higher than any other power in the world.

### **Nursing as a Profession – A New Perspective.**

Historically, only medicine, law and the ministry were accepted as profession.

## Criteria of a profession.

Genevieve and Roy Bixler first wrote about the status of nursing as a profession in 1945. These criteria include the following.

1. **The services provided are vital to humanity and the welfare of the society.** Nursing is the service that is essential to the wellbeing of the people and to the society. Nursing promotes, maintains and restores the health of individuals, groups and communities. Assisting others to attain the highest level of wellness is the goal of nursing. Caring, meaning nurturing and helping others are the basic components of professional nursing.
2. **There is a special body of knowledge that is continually enlarged through research.** In the past, nursing was based on principles borrowed from the physical and social sciences and other disciplines. Today there is a unique body of knowledge to nursing
3. **The services involve intellectual activities.** Individual responsibilities (accountability) are a strong feature. Nursing has developed and refined its own unique approach to practice. Nursing process is a cognitive activity that requires both critical and creative thinking and serves as the basis of providing nursing care.

**Individual accountability** in nursing has become the hallmark of practice. Accountability is ‘is being answerable to some one for something one has done’ Through legal opinion and court cases, society has demonstrated that nurses are individually responsible for their actions as well as for those of personnel under their supervision.

4. **Practitioners are educated in institution of higher learning.** There are basic nursing program, baccalaureate program, masters and Doctoral program in nursing
5. **Practitioners are relatively independent and control**

**their own policies and activities. (Autonomy).**

Autonomy or control over one's practice is another controversial area for nursing. Although many nursing actions are independent, most nurses are employed in hospitals where authority resides in one's position.

- 6. Practitioners are motivated by service (altruism) and considered their work an important component of their lives.** Nurses are dedicated to the ideal of service to others, which is known as altruism
- 7. There is a Code of Ethics to guide the decisions and conduct of practitioners.** The International Council of Nurses (ICN) has established Code of Nursing Ethics through which standards of practice are established, promoted and refined.
- 8. There is an organisation (Association) that encourages and supports high standards of practice.** Nursing has a number of professional associations that were formed to promote the improvement of the profession. Foremost among these, is the TNAI (The Trained Nurses Association of India).

The purposes of TNAI are to foster high standards of nursing practice, promote professional and educational advancement of nurses and promote the welfare of the nurses.

## **Professional Organisations**

Organisations provide a means through which united efforts are made to elevate standards of nursing education and practice. It also offers a means of voicing and opinions, developing our abilities and keeping informed of new trends.

### **a) The Indian Nursing Council (INC)**

The Indian Nursing Council was authorized by the Indian Nursing Council Act of 1947. It was established in 1949 to provide uniform standards in nursing education and reciprocity in nursing registration throughout the country.

**Functions:**

1. It provides uniform standards in nursing education and reciprocity in nursing registration.
2. It has authority to prescribe curriculum for nursing education in all states.
3. It has authority to recognise programme of nursing education or to refuse recognition of a programme if it did not meet the standards required by the council.
4. It is registering the foreign nurses.
5. It also maintains the Indian Nurses Register.
6. The INC authorises State Nurses Registration Council and examining boards to issue qualifying certificates.

**b) The International Council of Nurses (ICN)**

The International Council of Nurses was founded in 1899 by Mrs. Bedford Fenwick .It is federation of non-political and self-governing national nurses association.

The ICN is the global voice of nursing.

The main purpose of the ICN is to provide the means through which the national associations can share their interests in the promotion of health and care of the sick.

**Objectives of ICN**

- 1) To promote the development of the strong national nurses association.
- 2) To assist national nurses association to improve the standards of nursing education and practice.
- 3) To assist national nurses association to improve the status of nurses within their countries.
- 4) To serve as the authoritative voice for nurses and nursing internationally.

**Activities**

- 1) The ICN has published the **Code for Nurses**
- 2) It makes the policy statement on health and social issues.
- 3) It also maintains and improves the status of nurses and



standard of nursing around the world.

- 4) The council works to improve the nursing education and practice by publishing the guidelines for National Nurses Association.

**The governing body** of the ICN is the Council of National Representatives, which is made up of the ICN honorary officers and the presidents of the national member associations.

The ICN publishes the **International Nursing Review** and the **News Letter**, which give the news of the ICN and the National Member Association.

### c). **TamilNadu Nurses and Mid-wives Council**

Every professional nurses in the nursing professions, either here or abroad must be registered with the one of the State Nurses Registration Councils. The state council functions as an official to control the standards of the nursing practice

#### **Activities**

1. It registers Nurses/Mid-wives
2. It serves as legal protections to the nurses
3. It protects the public from incompetent nursing practices or poor nursing care.
4. It accredits and inspects schools of nursing and college of nursing.
5. It prescribes the rules of conduct, take disciplinary action etc.
6. It takes united efforts to elevate the standards of nursing.
7. It works for the welfare of the members.

### d) **World Health Organization (WHO)**

The World Health Organization is a specialized agency of the United Nations. It was organized in 1948 to achieve the highest possible level of health for all people. More than 150 countries are members of WHO and help to finance the financial requirement the health care activities around the world.

The WHO is also active in nursing education and practice in a number of ways in India:

1. It has offered guidance in setting up programme of nursing education
2. It has promoted training for auxiliary nursing personnel.
3. The WHO promotes public health in many ways around the world.

#### **e) The International Red Cross Society**

The International League of Red Cross was formed in 1919 after World War I. It was closely with national societies during times of national disasters, providing expertise and conducting seminars to help these societies to improve their administrations and services.

A super global body made up of the above League and national societies is the **International Conference of Red Cross**'s activities. The body meets once in four years. It supports unity in the work of all of these originations and promotes governmental support of the Red Cross Activities

#### **f) The Indian Red Cross Society.**

The Indian Red Cross Society was established in 1920, with major aims of helping others from a neutral point. It gives relief to needy and suffering people at times of major disasters and in times of wars.

#### **Aims:**

Prevention of disease, promotion of health and care of the sick in any kind of situation.

#### **Functions**

- Gives financial aid to social welfare institutions.
- Operates blood banks through out India
- It teaches first aid

#### **g) United Nations International Children's Educational Fund (UNICEF)**

UNICEF is an agency of the United Nations. It was founded in 1946 for the purpose of helping mothers and children

in country affected by World War II. Now it offers services in all underdeveloped countries.

**UNICEF** in India has provided teaching equipments for nursing education, textbooks and visual aids for schools and colleges of nursing and training for personal to help with the health of mothers and children.

### **h) Trained Nurses Association in India (TNAI)**

The trained Nurses Association of India is a largest national professional association of nurses in India .It was established in 1922.

#### **Aims of Trained Nurses Association in India (TNAI)**

1. Upholding the dignity and honour of the nursing profession.
2. Promoting the sense of unity among all nurses
3. Enabling members to discuss together on matters relating to their profession

### **i) Student Nurses Association of India (SNA)**

The student Nurses Association organised in 1929 is associated under the jurisdiction of the TNAI, in addition to providing a means of personnel and professional development for the nursing students. It serves as a source of membership for the parent organisation. In addition the TNAI serves as the advisor for the SNA.

#### **Functions of SNA**

The functions of SNA are as follows

1. To help the student nurses learn how the professional organisations serve to uphold the dignity and the ideals of the nursing profession.
2. To furnish student nurses, in the courses of study leading to professional qualification.

### **j) Christian Medical Association of India**

The Nurse's League of the Christian Medical Association was founded in 1930.

### **The current objectives**

- To promote co-operation and encouragement among Christian nurses.
- To promote efficiency in nursing education and services.
- To secure the highest standard possible in Christian Nursing Education through the Christian Schools of Nursing and
- To consider the special work and problems of Christian nurses working.

Nursing considered to be an occupation now attains the status of profession.

### **Summary:**

- From the dawn of civilization, evidence prevails that nursing has been essential to the preservation of life.
- Survival of the human race is inextricably intertwined with the development of nursing.
- Nursing is the oldest of the arts and the youngest of the profession.
- Egypt had made much progress in medicine. Nursing and medicine was closely connected with religion in Greece and India.
- Hippocrates, ‘Father of Scientific medicine’ had a medical foundation to start with.
- The Romans were best known for advances in public health.
- India had the Ayurvedic system of medicine, which stressed on hygiene, prevention of sickness, inoculation against small pox, sanitation, lavatories good ventilation and construction of hospitals.
- Christianity believed that one should render services of love to humanity without any reward. This principle was absorbed in nursing and helped to improve the status of a nurse. Phoebe, Fabiola, Paula and Marcella devoted

themselves for the services of sick.

- During middle ages, monks and nuns dedicated themselves caring of sick.
- The Dark Age was marked by superstition, mysticism and persecutions of free thinkers.
- Florence Nightingale “The Lady with the lamp” underwent training at the school of Kaiserworth. She and her nurses attended thousands of wounded and dying solders in Crimean was in 1854.
- Florence Nightingale founded a training school for nurses in 1860 at St.Thomas Hospital London.
- In 1854 the Govt of India sanctioned a training school for midwives in Madras.
- In 1908, the trained Nurses Association of India was formed.
- In 1918, training schools were started for health visitors and dais.
- In 1926, Madras State formed the first Registration council.
- The Indian Nursing Council was constituted in 1949.
- The two-year postgraduate program was begun in 1960 at College of Nursing, New Delhi.
- The job opportunities for nurses are available in India and as well as in abroad.
- Code of Ethics in nursing governs the conduct of a nurse, her relationship to the patient and his family, her associates and society.
- A professional nurse should have kindness, gentleness, patience, willing to serve and be honest. She should be reliable, resourceful, courageous, cooperative and considerate.
- Being a growing profession, nursing is vital to humanity and has a unique knowledge that is continually enlarging.
- Nursing associations and organizations are taking united

efforts to elevate the standards of nursing education and practice.

## QUESTIONS

### Part - A

#### Fill in the blanks

1. During early civilization an outstanding priest-physician in Egypt was -----
2. In Ancient Greek -----, the Sun God was the God of healing.
3. ----- is known as “Father of Scientific Medicine”.
4. By doing experiments on animals -----, a Greek physician learnt about anatomy and disease.
5. Atreya was the first great physician and teacher of -----  
-----
6. In ancient India, the great physician Charaka wrote ----  
and -----
7. ----- was known as the “Father of Surgery” in ancient India.
8. -----, was the first deaconess who cared for the sick at their home can be compared to a modern public health nurse.
9. The ----- was marked by superstition and mysticism
10. The Florence Nightingale started the first school of

Nursing at -----, London in -----

11. ----- was the founder of Modern Nursing.
12. The Indian Nursing Council was established in -----
13. The ----- is the global voice of nursing.
14. The ICN has published the -----
15. ----- is the specialized agency of the United Nations established in 1948, to achieve the highest possible level of health by all people.

**Match the following.**

Antony Van Leuwenhock	Organised Public Health Departments
Edward Jenner	Improvement in microscope
William Harvey	Science of bacteriology
Edwin Chadwick	Vaccination against smallpox
Louis Pasteur	Circulation of blood

**Part - B**

1. What are the objectives of Indian Nursing Council?
2. What are the functions of International Council for Nurses?
3. What are the aims of the Indian Red Cross Society?

4. Write about the functions of SNA.
5. Write about the functions of UNICEF.

### **Part – C**

Write short notes on

1. Florence Nightingale.
2. WHO
3. The International Council for Nurses
4. The Indian Nursing Council
5. The Trained Nurses Association of India
6. The Code of Ethics in nursing
7. Student Nurses Association of India

### **Part - D**

1. Explain nursing in ancient civilizations.
2. Describe the progress in nursing during early Christian era.
3. Explain about the development of modern nursing.
4. Describe in detail the development of nursing in India.
5. Nursing, a profession – discuss.



## **2. INTRODUCTION TO NURSING AND HEALTH CARE DELIVERY SYSTEM IN INDIA**

Nursing is a major component of the health care delivery system and nurses make up the largest employment group within the system.

Nursing services are necessary for every patient seeking care of various types including primary, secondary, tertiary and restorative. As nursing is an important part of health care delivery system, the nurses need to understand the system to effectively deliver quality care within it.

### **Nursing:**

Nursing is the process of recognizing, understanding and meeting the health needs of any person or society and is based on a constantly changing body of scientific knowledge.

### **Nursing Process:**

It is a deliberate intellectual activity whereby the practice of nursing is approached in an orderly, systematic manner to patient care, in a dynamic, continuous method to assist the patient to achieve and maintain health.

The nursing process is an orderly systematic manner of determining the patient's problems, making plans to solve them, initiating the plan or assigning others to implement it and evaluating the extent to which the plan was effective in resolving the problems identified.

The nursing process is a systematic method for assessing health status, diagnosing health care needs, formulating a plan of care, initiating plan and evaluating the effectiveness of plan.

The nursing process consists of five interrelated phases

1. Assessment
2. Diagnosis

3. Planning
4. Implementation
5. Evaluation

**1.Assessment :-**This refers to a systematic collection of data, to assist in identifying needs and problems. Data are collected in a systematic fashion, utilizing the interview or nursing history, physical examinations, laboratory results and other resources.

**2.Diagnosis :-**Nursing diagnosis is a clinical judgment about individual family or community responses to actual and potential health problems and life processes. During this phase, the data collected during assessment are critically analysed and interpreted. Conclusions are drawn regarding the patient's needs, problems, concerns and human responses.

**3.Planning: -** Planning is a systematic approach in developing a plan of action based on a careful assessment. Strategies are developed to prevent, minimize or connect the problems identified in the nursing diagnosis.

It consists of several steps including establishing priorities, setting objectives, writing interventions, recording outcomes of nursing interventions in an organized fashion to complete the nursing care plan.

**4. Implementation:-** It refers to carry out a plan that is based on careful assessment of need. It is the initiation and completion of action necessary to achieve the outcomes or objectives.

**5. Evaluation:-** It is an ongoing process that determines the extent to which the goals care has been achieved. The nurses assess the progress of the patient, institute corrective measures if required, and revise the nursing care plan.

### **Advantages of nursing process :**

The nursing process helps the nurse and the nursing in many ways

1. Helps to create a health data base of a patient
2. Helps to identify actual or potential health problems of a patient
3. Helps to establish priorities of nursing actions for providing proper services to the patients.
4. Helps to define specific nursing actions for providing proper services to the patients
5. Helps to develop planned organized and individualised nursing care.
6. Helps to encourage for innovative nursing care.
7. Helps to provide for alternative nursing actions.
8. Helps to develop nursing autonomy and to foster nursing accountability
9. Helps to increase the effectiveness of nursing care.

### **Health:**

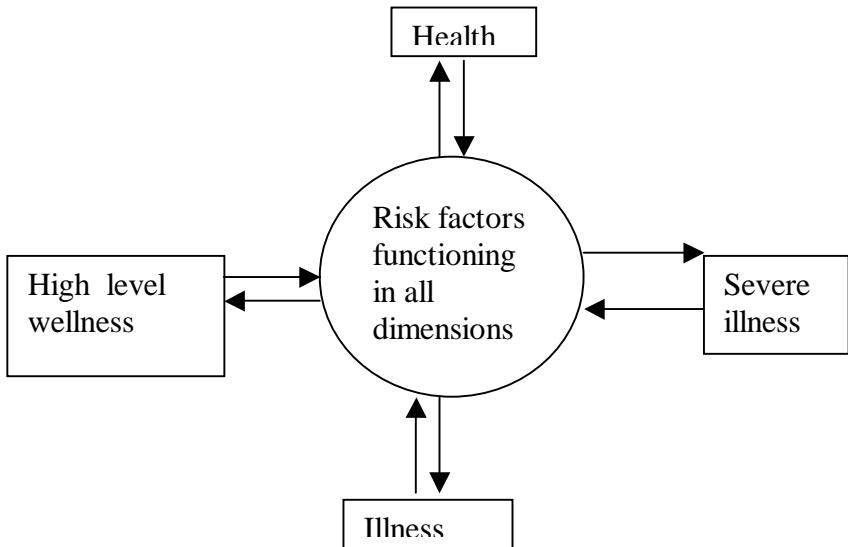
World Health Organization (WHO) defines health as a “state of completes physical, mental and social wellbeing, not merely the absence of disease or infirmity.

### **Illness:**

It is a state in which a person’s physical, emotional, intellectual, social or spiritual functioning is diminished or impaired.

### **Health – illness continuum:**

Health is a dynamic state that fluctuates as a person adapts to changes in the internal and external environments to maintain a state of wellbeing. As health and illness are relative qualities existing in varying degrees, it is more accurate to consider health and illness in terms of a scale or continuum, rather than a absolute state.



**Fig 2.1 Health – illness continuum**

### **Variables influencing health beliefs and practices :-**

#### **1. Internal variables**

- a) **Developmental stage** :- A person 's thought and behaviour patterns change throughout life.
- b) **Intellectual background**: Knowledge about body functions and illnesses, educational background and past experiences, all influence the health beliefs and practice of patients.

#### **c) Emotional and spiritual factors :**

The patient 's degree of calm or stress can influence health beliefs and practices. Spiritual beliefs also influence whether and how a patient seeks or avoids healthy behaviour.

## 2. External variables

- 1) **Family practices** – The way that patient's families use health care services, their perceptions of the seriousness of diseases and their preventative care behaviours can influence the health beliefs and practice.
- 2) **Socioeconomic factors**-Social relationships, economic level and psychosocial factors influence health beliefs and practice.
- 3) **Cultural background** –It influences beliefs, values and customs. It influences the approach to the health care system, personal health practices and nurse-patient relationship.

### Factors affecting a patient's health status:

1. Smoking
2. Nutrition
3. Alcohol use
4. Habituating drug use
5. Driving
6. Exercise
7. Sexuality and contraceptive use
8. Family relationships
9. Risk factor modification
10. Coping and adaptation.

### Impact of illness on patient and family :

#### 1) Impact of illness on patient

Short – term and minor illnesses awoke few behavioural changes in the functioning of the patient or family. Severe illness can lead to more extensive emotional and behavioral changes such as anxiety, shock, denial, anger and withdrawal.

## **2) Impact on family roles**

When an illness occurs, the role of patients and family may change. This change may be subtle and short term or drastic and long term. The patient and family require specific counseling and guidance to assist them in coping with the role changes during illness.

## **HEALTH CARE DELIVERY SYSTEM IN INDIA:**

India is a union of 28 states and 7 union territories. States are largely independent in matters relating to the delivery of health care to the people. Each state has developed its own system of health care delivery, independent of the Central Government.

The Central Government responsibility consists mainly of policy making , planning , guiding, assisting, evaluating and coordinating the work of the State Health Ministries.

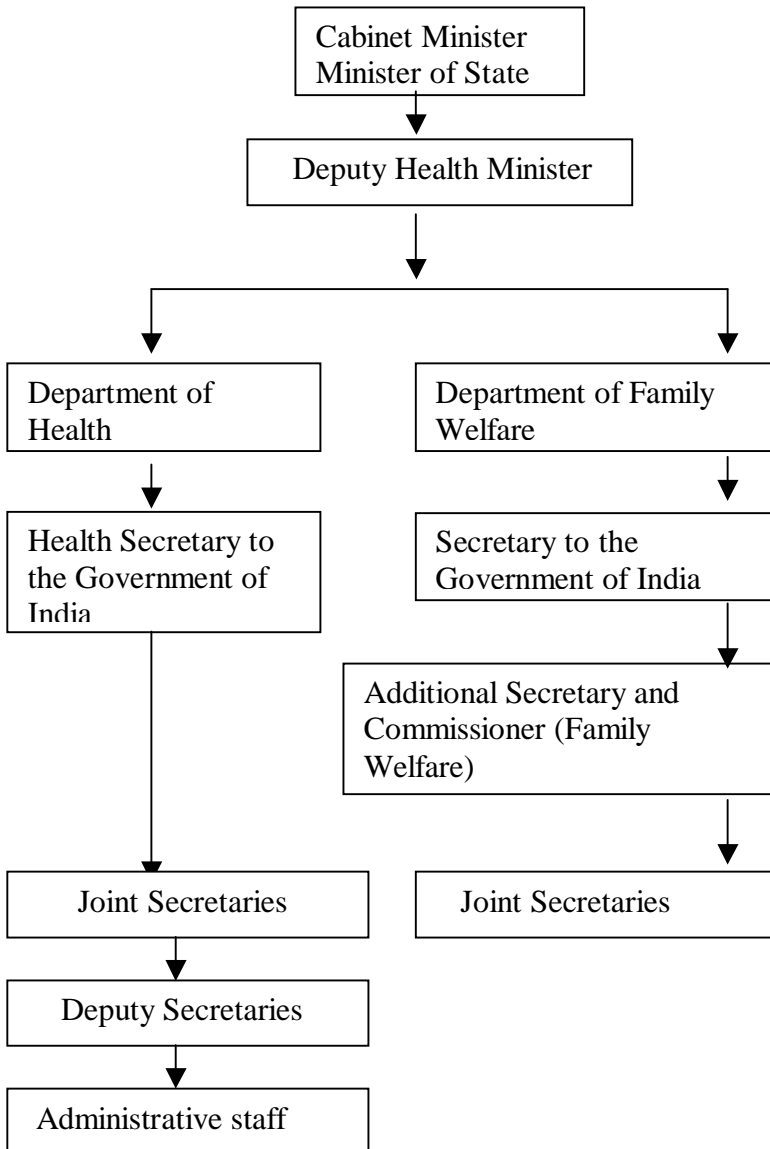
The health system in India has 3 main links

1. Central
2. State and
3. Local or peripheral

### **I. At the center**

The official “organs” of the health system at the national level consist of

1. Ministry of Health and Family Welfare
2. The Directorate General of Health Services
3. The Central Council of Health and Family Welfare

**1. Union Ministry of Health and Family Welfare.****Fig. 2.2 Organization Pattern**

**Functions:****Union list**

1. International health relations and administration of port quarantine
2. Administration of Central Institutes such as All India Institute of Hygiene and Public Health, Kolkata.
3. Promotion of research through research centers
4. Regulation and development of medical, pharmaceutical, dental and nursing professions
5. Establishment and maintenance of drug standards
6. Census and collection and publication of other statistical data
7. Immigration and emigration
8. Regulation of labour in the working of mines and oil fields
9. Coordination with states and with other ministries for promotion of health

**Concurrent list**

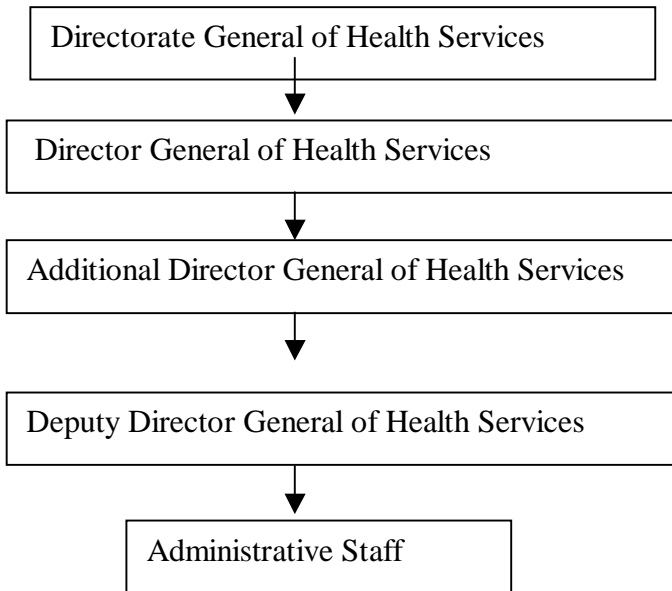
The functions listed under the concurrent list are the responsibility of both the union and state governments

1. Prevention and extension of communicable diseases
2. Prevention of adulteration of food stuffs
3. Control of drugs and poisons
4. Vital statistics
5. Labour welfare
6. Ports other than major
7. Economic and social planning
8. Population control and Family Planning



## 2. Directorate General of Health Services

**Fig. 2.3 Organization Pattern**



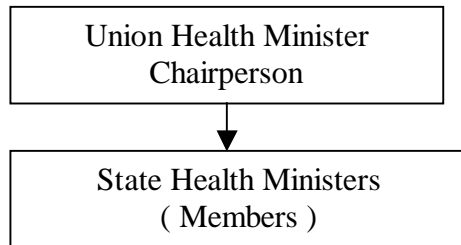
### **Functions:**

1. International health relations and quarantine of all major ports in country and international airport
2. Control of drug standards
3. Maintain medical store depots
4. Administration of post graduate training programmes
5. Administration of certain medical colleges in India
6. Conducting medical research through Indian Council of Medical Research ( ICMR )
7. Central Government Health Schemes.
8. Implementation of national health programmes

9. Preparation of health education material for creating health awareness through Central Health Education Bureau.
10. Collection, compilation, analysis, evaluation and dissemination of information through the Central Bureau of Health Intelligence
11. National Medical Library

### 3. Central Council of Health

**Fig. 2.4 Organisation Pattern**



#### Functions

1. To consider and recommend broad outlines of policy regard to matters concerning health like environment hygiene, nutrition and health education.
2. To make proposals for legislation relating to medical and public health matters.
3. To make recommendations to the Central Government regarding distribution of grants-in-aid.

#### II. At the State level

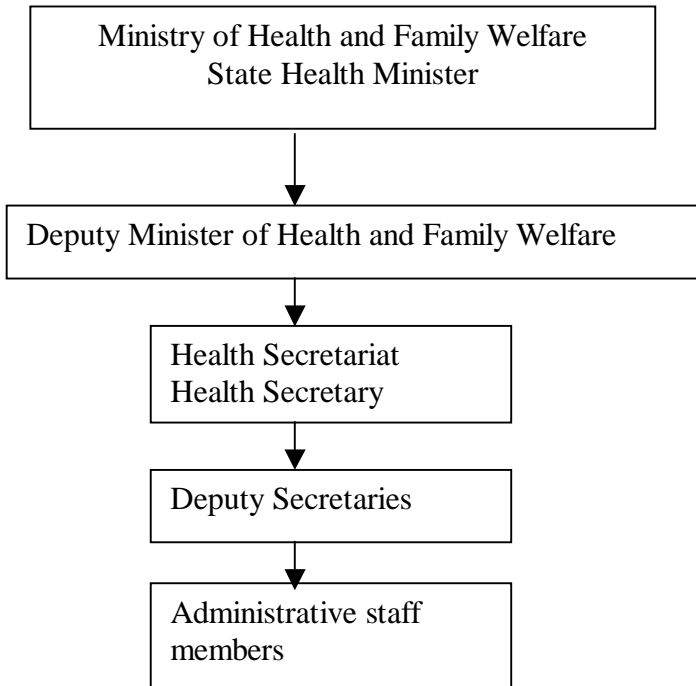
The health subjects are divided into three groups: federal, concurrent and state. The state list is the responsibility of the state, including provision of medical care, preventive health services and pilgrimage within the state.

## State health administration

At present there are 28 states in India, each state having its own health administration

### 1. State Ministry of Health

**Fig. 2.5 Organization Pattern**



### 2. State Health Directorate

Two separate major departments, medical and public health are functioning in the state

1. The Directorate of Health Services or the Director of Medical and Health Services
2. The Directorate of Health and Family Welfare

3. The Directorate of Medical Education for the management of medical colleges and hospitals.
4. The Directorate of Public Health Services

### III. At the district level

There are 593 ( year 2001 ) districts in India. Within each district, there are 6 types of administrative areas.

1. Sub –division
  2. Tehsils( Taluks )
  3. Community Development Blocks
  4. Municipalities and Corporations
  5. Villages and
  6. Panchayats
- Ø Most **district** in India are divided into two or more **subdivision**, each incharge of an Assistant Collector or Sub Collector
  - Ø Each division is again divided into **taluks**, incharge of a Thasildhar. A taluk usually comprises between 200 to 600 villages
  - Ø The **community development** block comprises approximately 100 villages and about 80000 to 1,20,000 population, in charge of a Block Development Officer.
  - Ø Finally, there are the **village panchayats**, which are institutions of rural local self-government.
  - Ø The urban areas of the district are organized into
  - Ø **Town Area Committees** (in areas with population ranging between 5,000 to 10,000)
  - Ø **Municipal Boards** (in areas with population ranging between 10,000 and 2,00,000)
  - Ø **Corporations** (with population above 2,00,000)

- Ø The Town Area Committees are like panchayats. They provide sanitary services.
- Ø The Municipal Boards are headed by Chairmen / President, elected by members.

### **The functions of Municipal Board**

- Ø Construction and maintenance of roads
- Ø Sanitation and drainage
- Ø Street lighting
- Ø Water supply
- Ø Maintenance of hospitals and dispensaries
- Ø Education and
- Ø Registration of births and deaths etc
- Ø The Corporations are headed by Mayors, elected by councillors, who are elected from different wards of the city. The executive agency includes the commissioner, the secretary, the engineer and the health officer.

The activities are similar to those of municipalities, on a much wider scale.

- Ø **Panchayat Raj** -The panchayat raj is a 3-tier structure of rural local self-government in India, linking the village to the district
  - Ø Panchayat (at the village level)
  - Ø Panchayat Samiti( at the block level)
  - Ø Zila Parishad(at the district level)

### **Panchayat (at the village level):**

- Ø The Panchayat Raj at the village level consists of
  - Ø The Gram Sabha
  - Ø The Gram Panchayat
- Ø **The Gram Sabha** considers proposals for taxation, and elects members of The Gram Panchayat.

- Ø **The Gram Panchayat** covers the civic administration including sanitation and public health and work for the social and economic development of the village.

#### **Panchayat Samiti (at the block level):**

- Ø The Panchayat Samiti execute the community development programme in the block. The Block Development Officer and his staff give technical assistance and guidance in development work.

#### **Zila Parishad (at the district level):**

- Ø The Zila Parishad is the agency of rural local self-government at the district level . Its functions and powers vary from state to state.

#### **Types of Health Care Agencies**

Health care is provided in various settings.

1. **Out patient services** -Patients who don require hospitalization can receive health care in a clinic. An out patient setting is designed to be convenient and easily accessible to the patient. Hospital Settings (To get the material) Out patient services are generally directed at primary and secondary health centers
2. **Clinics** – Clinics involve a department in a hospital where patients not requiring hospitalization, receive medical care.
3. **Institutions** – Hospitals – Hospital have been the major agency of health care system. Hospitals are classified as
  - i. Public
  - ii. Private
  - iii. Military

**A Public Hospital** are financed and operated by the government agency at the local, state or national level. Hospitals provide services at free of cost.

**Private Hospitals** are owned and operated by churches, corporations, individuals and charitable organizations. Private hospitals are operated on a for-profit-basis.

**Military Hospitals** provide medical care for the armed forces and their families.

### **Health care services.**

1. Health promotion
  - a. Prenatal classes
  - b. Nutrition counselling
  - c. Family Planning
  - d. Stress management
2. Illness prevention
  - a. Screening programs (Eg. Hypertension, breast cancer)
  - b. Immunization
  - c. Occupational health and safety measures
  - d. Mental health counseling
  - e. AIDS control program.
3. Primary care
  - a. School health units
  - b. Routine physical examination
  - c. Follow up for chronic illnesses(eg – Diabetes, Epilepsy)
4. Diagnosis
  - a. Radiological procedure ( Eg. CT scans, X ray Studies)
  - b. Physical examination
  - c. Laboratory investigations
- 5 Treatment
  1. Surgical intervention

2. Laser therapies
3. Pharmacological therapy
6. Rehabilitation
  1. Cardiovascular programs
  2. Sports medicine
  3. Mental illness program

## Summary

- Nurses make up the largest employment group in the health care delivery system of in India.
- Nursing is the process of recognizing, understanding and meeting the health needs of a person or society.
- Nursing process is a deliberate intellectual activity, whereby the practice of nursing is approached in an orderly, systematic manner to assist the patient to achieve and maintain health.
- The nursing process consists of five inter related phases such as assessment, nursing diagnosis, planning, implementation and evaluation.
- Health is a state of physical, mental and social wellbeing, not merely the absence of disease or infirmity.
- Illness is a state in which a person's physical, emotional, intellectual, social or spiritual functioning is diminished or impaired.
- Internal variables such as developmental stage, intellectual background and emotional and spiritual factors influence the health beliefs and practices of individuals.
- External variables such as family practices socioeconomic factors and cultural background also influence the health beliefs and practices of individuals.
- Smoking, nutrition, exercise, substance abuse and family relationships also affect patient's health status.



- The health care delivery system in India has three main links Central, state and local or peripheral.
- International health relations, administration of central institutes, drugs standards, vital statistics immigration and emigration are the main functions of Central Govt under union list.
- Control of communicable diseases, prevention of food adulteration, labour welfare and economic and social planning are the functions of central Govt. under the concurrent list.
- National Medical library, ICMR, central Health Education Bureau and Central Govt Health Services are under the control of Directorate General of Health Services.
- The Central Council of Health makes proposals for legislation relating to medical and public health matters. Provision of medical care, preventive health services and pilgrimage within the state are the responsibilities of the State Government.
- Sub-division, Tehsils, Community Development Blocks, Municipalities and Corporations, Villages and Panchayats are 6 administrative areas within each district.
- Sanitation, water supply, street lighting, education and registration of births and deaths are the functions of Municipal Board.
- The Panchayat Raj is a 3-tier structure of rural local – self government in India.
- The health services are covered by the public hospitals, private hospitals and military hospitals.

## QUESTIONS

### Part A

#### Choose the right answer

- 1). A systematic approach in developing a plan of action based on a careful assessment.
  - a) Nursing diagnosis
  - b) Implementation
  - c) Planning
  - d) Evaluation
- 2). National Health programmes are implemented by
  - a) State Health ministry
  - b) Central Council of Health
  - c) Directorate of Health and Family Welfare
  - d) Directorate General of Health services.
- 3). The Community Development Block covers area with population ranging about
  - a) 5,000 to 10000
  - b) 10,000 to 2,00,000
  - c) 80,000 to 1,20,000
  - d) Above 2,00,000
- 4). The corporations are headed by
  - a) Chairman
  - b) Mayor
  - c) President
  - d) None of the above.
- 5). The following agency is the rural local self-government at the district level.
  - a). The Gram Sabha
  - b). Panchayat Samiti

- c). Zila Parishad
- d). None of the above

### 6). Match the following

Municipal Board	Tahsildar
Corporation	Chairman
District	The Block Development Officer
The Community Development Block	Collector
Taluk	Mayor

### Part B

1. Define health
2. Define illness.
3. What is nursing diagnosis?
4. Define nursing process.
5. What do you mean by nursing?

### Part C

1. Enumerate the advantages of nursing process
2. What are the factors affecting a patient's health?
3. What are the functions of Central Government under the concurrent list?
4. What are the functions of municipal board?
5. Explain Health – Illness Continuum.

## **Part D**

1. Describe nursing process
2. Explain the variables influencing health beliefs and practices.
3. Give in detail the health care delivery system in India at the central level.
4. What are the functions of Directorate General of Health services?
5. Describe the organization pattern and functions of state health ministry.
6. Explain about the rural local self-government
7. What are the types of health care agencies in India?
8. List out the health care services provided by the government.

### 3. HOSPITAL AND ITS ENVIRONMENT

**Hospitals** are institutions, which are mainly designed to care for the sick, injured and the well. The later are usually admitted for physical check up and investigations which cannot be done elsewhere.

In our country most of the government hospitals offer free treatment for people with poor, socio-economic condition, which helps in the alleviations of untold misery.

The word **hospital** is derived from the word "hopes" which means a guest. This is quite true for a patient leaves his home and comes to the hospital as a guest for brief periods of stay. Even more than a guest he is worried and sick as such he needs more care and attention than a guest would receive.

In the hospital the variety of people of all ages, caste and creed with varying degrees of illness are treated. Besides the patients there are the workers like doctors, nurses, technicians, fourth class servants and other members of the health team.

It is important that the nurse understands the peculiar nature of the patient's stay in the hospital and make the physical, mental and social environment conducive to recovery.

#### **Types of hospitals**

Hospitals may be owned by private agencies, individual or government. There are general hospitals where all kinds of services are given such as medical, surgical, paediatrics, obstetrics and other kinds of special service.

Some hospitals give only one particular type of service according to sex, age and nature of illness, for example, they may be women's, children's and mental hospitals (Psychiatric Hospital).

## **The functions of the hospital**

The main aim of a hospital is patient care and comfort and the nurse has much to contribute in not only doing her functions, but also in co-ordinating the activities of the health team.

Besides the basic functions of a hospital such as care of the sick and injured, diagnosis, treatment and rehabilitative services, many undertake education of doctors, nurses, technicians etc., as an added function. Some hospitals do research work.

There are various departments in a hospital like medical, nursing, pharmacy, and dietary. Every hospital and its departments have own policies and rules, which govern their various activities.

The nurse should acquaint herself with the policies and interpret those connected with the patient's admission, treatment and discharge to the patient's relatives in a simple language.

They must be careful and get the guidance of seniors when dealing with accident patients and other patients with legal implications (medico-legal).

### **Meeting patient's needs - Nurses' responsibilities.**

#### **Assisting with domestic ward management.**

Every woman should learn the art of cleaning; everyone should be able to keep a home clean. Every nurse should know how to keep her ward clean, and this is best learned by practice.

A ward head nurse-in-charge is able to train her domestic staff and guide her nurses in ways of cleanliness because she understands methods of cleaning.

Germes live in dust and are a source of infection. Hence, some authorities state that dusting and cleaning should be done by domestic staff and not touched by the nurses. This also means that domestic staff, i.e., ward workers (class IV workers) should not do anything for the patients, e.g., carrying of crockery.

It is necessary that the ward is kept clean so that growth of germs is inhibited. A nurse should be able to keep her ward clean. However, too much domestic work is not advocated.

### 1). **Cleaning of ward**

- 1) Unnecessary articles such as crockery should be removed.
- 2) High dusting is done, for ceilings and walls.
- 3) The beds are made so that bits fall to the floor.
- 4) Beds, etc., are pulled out.
- 5) Sweeping is done

A tray is prepared for dusting and cleaning

- 1) Two dusters, one wet, one dry.
- 2) A bowl of water.
- 3) A receiver of bits.
- 4) Metal polish.
- 5) Furniture polish and dusters.
- 6) Soap in a dish.

Some method should be chosen, such as following:  
(The ward cleaning is usually supervised by the nurses).

- 1) Begin at one end, and work round.
- 2) When things are washable they should be dusted with wet and polished with dry duster.
- 3) Dust is wiped into the duster and not flicked on the floor.
- 4) Furniture surfaces are polished with furniture polish and tiled surfaces washed with soap and water.
- 5) Dusting of the lamps depends upon their height, but they must not be forgotten. Dust must be removed from windows and doors. Usually furniture is polished once a week.
- 6) The inside of the lockers are washed once a week.
- 7) The floor is washed by the class IV workers.
- 8) Gusts of wind will disturb dust. It is usual to open the windows on the opposite side from which the wind is blowing whilst dusting is in progress.

- 9) Screens must be dusted.
- 10) Oiling is done periodically. Fluff must be removed from chair legs and screen wheels.
- 11) Washbasins require to be washed with vim powder.

## 2). **Care of kitchen**

- Ø Food cupboard is cleaned daily. Each article should have a definite place.
- Ø Sinks must not be allowed to become blocked. Waste food should be placed in the rubbish bin and removed daily. The bin should be emptied and cleaned daily.
- Ø Both bucket and rubbish bin should have tightly fitting lids which should be properly replaced.
- Ø Should the sinks become blocked, simple measures may be tried to unblock it. A label should be placed on the sink with "out of use" on it.
- Ø Food must not be left exposed in the kitchen. Milk must always be kept covered.

## 3). **Care of Linen**

- Ø This must be properly stamped with the ward and hospital names so that it is not lost in the laundry or in the ward.
- Ø New articles should be washed before use.
- Ø Torn linen should be put aside for repair.
- Ø Stains should be removed at once before they become fixed.
- Ø Wet articles must not be left in the dirty linen bin.
- Ø Dirty linen should be sent to laundry promptly.
- Ø Linen is carefully sorted, on its return from the laundry and discrepancies reported.
- Ø Stock-taking must be accurate and frequent so that track is kept on lost articles.
- Ø Dirty linen is sorted and account is written when sending to laundry.



#### 4). Care of Rubber Articles

- Ø All mackintoshes and rubber articles should be washed in warm soapy water, rinsed and carbolicised with 1 in 20 carbolic lotion. Dry thoroughly in a cool place and french chalk powder is sprinkled and either rolled or hung up, never folded. Dry heat and hot sun destroy rubber. Sun causes it to blister. Turpentine will do this too.
- Ø Two rubber surfaces should not come together but must be separated. In the case of hot water bottle, the surfaces are separated by air.
- Ø Mackintoshes in the store cupboard should be examined weekly. If the air is moist, the mackintosh may become sticky.
- Ø Kinking the rubber tubing is ruinous.
- Ø Excessive steam causes rubber gloves to become hard.
- Ø Ointments spoil rubber.
- Ø Excessive boiling makes rubber limp and overstretched.
- Ø Rubber articles should be stored in the dark.

#### 5). Disinfecting the ward equipments

- Ø **Linen and bandages:** Receive into a bucket at bedside containing disinfectant lotion-carbolic lotion 1:40. Keep for 4 hours.
- Ø Pus, urine, stools, vomit and sputum are disinfected before disposal in carbolic lotion 1: 20 for 2 hrs.
- Ø Immerse receptacles in phenyl lotion 1:20 for 2 hours Rinse them before use.
- Ø **Infected furniture and mackintoshes:** Mop with carbolic lotion 1:20 before routine cleansing.
- Ø **Infected blankets, pillows and mattresses:** In most hospitals these are submitted to steam sterilisation e.g. 25 lbs. pressure at 260° F for ½ an hour.

Ø **Crockery and glassware when it is inconvenient to boil:**

These may be immersed in carbolic lotion 1:20 for 2 hours. Wash thoroughly before use.

**6). Care of the sanitary annexe:**

**A. Care of the sanitary annexe** is considered to important and the steps are,

- Ø This is cleaned thoroughly daily, tidied at frequent intervals and well ventilated.
- Ø Insides and outsides of the sinks are cleaned.
- Ø Bedpans and urinals are washed with hot soapy water.
- Ø Bedpans and urinals are stored in large tanks containing a suitable cheap disinfectant, which is changed daily.
- Ø Ventilated cupboards may be provided for bedpan storage.
- Ø Enamelware is washed daily and stains removed before they become fixed.
- Ø The sanitary annex should have the following:
  - 1) Lavatory brush and mop.
  - 2) A bucket with a tightly fitting lid to receive dressings prior to their removal to the incinerator.
  - 3) Soil linen box.

**B. Care of the flush out**

- Ø This is cleaned daily.
- Ø Frequent flushing is required.
- Ø The lavatory brush is stored in a disinfectant, which is changed daily.

**C. Care of the bath room**

Walls and floors of bath room should be washed daily.

**7). Stock Taking**

- Ø Stock taking is done periodically of all kitchen utensil, cutlery and dressing instruments.

- Ø This ensures the nurses with a sense of responsibility. Stock taking of linen and equipment is taken at definite intervals, e.g. every three months.
- Ø Certain days are allocated for reporting of repairs, losses and breakages.

## 8). Hospital Economy

- Ø Economy of time is too often neglected. If a nurse is undecided about the method of carrying out a duty, she should ask for guidance and not waste time in her efforts of trial and error. It is quicker in the long run to do things correctly.
- Ø A nurse should look after her health so that working hours are not lost through illness.
- Ø Daily inventories of important instruments will prevent their loss.
- Ø **Dressings** -Dressing should be large enough to cover the wound only. Old blankets are used for medical fomentations and not lint. A wide bandage should not be used when a small one will do. Dressing lotions should be carefully measured so that there is no waste.
- Ø During dressing, the bed-linen is protected by a dressing mackintosh and dressing towel.
- Ø Taps, lights and gas should be turned off when not in use. Faulty taps must be reported. Kettles sterilizers and saucepans must not be allowed to boil dry, or left on the gas unnecessarily. The kettle should not be filled when a small quantity of hot water is required.
- Ø Articles must be used for the purpose for which they are made.
- Ø Medicine and drugs must be accurately used as ordered. Many deteriorate from exposure or evaporation.
- Ø Soap must not be allowed to stay in water.
- Ø Disinfectants should not be wasted or used in wrong strengths.

- Ø Cleaning powders, furniture polish and metal polish should be used sparingly.
- Ø Torn linen must not be used without mending or it may be torn further and rendered useless.
- Ø Bed linen should be protected wherever necessary.
- Ø During meals patient's wear and bed lines are protected with towels.
- Ø A small amount of diet should be given to a patient and a second help if desired and permitted. Excess food should be returned to the main kitchen.
- Ø Although patients should look as nice as possible, it must be remembered that laundering involves wear and tear and is very expensive.
- Ø Crockery must be handled carefully and not allowed to chip or crack.
- Ø Nurses should be taught the prices of articles, lotions etc.
- Ø False economy is stupid and even criminal on occasions.
- Ø Nurses must remember that hospitals are maintained with the public's money. The people can often ill afford their contributions.
- Ø Each ward is assessed separately and list of expenses sent round to the wards. They impress the nursing staff and encourage economy.

## **Admission, observation, charting, feeding and discharge**

### **Admission of the patient**

The entrance of a patient into a health care agency such as a hospital or a private clinic is termed as admission. A patient enters the hospital by himself or he may be brought to the hospital by his relatives, friends, neighbours or others.

Mentally ill patients, persons who have tried to commit suicide and accident patients are admitted through a legal process.

All ill person enters the hospital to get his disorder cured whereas a healthy individual gets admitted into a hospital for a day or two for investigations and observations and in order to find out whether he is suffering from any illness which has not been manifested by any external signs and symptoms.

Patients who have become seriously ill suddenly, come to the hospital without having had any time to settle their family and work affairs.

Hence, they are not only worried and anxious about their illness, but also are upset about various other problems affecting their family.

Nurses must understand their physical and mental problems and be very kind and understanding.

### **Need for good reception of the patient.**

A nurse has an important role to play in the reception of the patient to the hospital. The following are the purposes of this procedure.

1. To prepare the patient both physically and mentally for his stay in the hospital.
2. To help the patient to be comfortable and to provide him with a clean and safe environment.
3. To give a good impression of the hospital and its services so that the patient will fully co-operate with the treatment and nursing care.

A patient may be coming to hospital for the first time. He leaves his familiar home surrounding and his loved ones and comes to an unknown place and to unknown people. Any change in human life is anxiety producing and is viewed with fear.

Added to this, his physical condition gives him fear and anxiety. Hence, it is the nurse's duty to receive the patient, kindly sympathetically and with an understanding of his illness. If he is admitted, he is given a diet sheet and sent to the ward. If he is too ill and needs immediate attention he is given emergency treatment and then transported to the ward.

As soon as the patient comes to the ward, receive him, his relatives and his friends as if you are receiving your guests into your home. Ask them to be seated while you prepare the bed ready for the patient.

If the patient is in a serious condition, the ward nurse is informed in advance about the arrival of the patient, so that the patient does not have to wait till the bed is made ready.

### **Need for orientation to place and people**

Inform the patient and his relatives about the hospital routine, the hospital rules, the general set up of the ward and the personnel working in the ward. Inform the patient's relatives about the time of visiting hours and supply them with visiting passes.

If the patient is seriously ill, give the relative a special pass so that he will be able to stay with the patient in the hospital.

### **Need for admission assessment**

Do a good assessment of his physical condition in order to plan his care. If his physical state needs immediate treatment report to physician and prepare your patient for physical examination and carry out the treatment, which the physician prescribes after the physical examination.

### **Need for safeguarding patient's personal belongings:-**

It is always good policy to discourage patients to keep valuable things and money with them. Send the valuables home through relatives. If he does not have anyone with him, enter the description of items in the register and send the valuables to the office for safe custody. Get the patient's signature or thumb impression in the register. However, inform the patient that he will get back his valuables on discharge.

It is important that you take care of the patient's clothing. You should see that the clothing are cleaned and stored away with proper label or send them home for a fresh set of clean clothes.

However, encourage, patients to use hospital clothing. If a patient is suffering from infectious disease, see that the clothing are disinfected and cleaned before they are sent home or stored away.

## **Need for personal hygiene**

As a nurse it is important that you attend the personal hygiene of the patient on admission. If the patient is able to have a bath in the bathroom, he can be given a bath.

If he is unable to walk, you can give him a bed-bath. You should carry out other aspects of your patient's personal hygiene such as care of hair, mouth and nails.

Especially in our country, the patients who are ignorant and illiterate do not see to their personal hygiene when they become sick. So when a patient comes to the hospital, this need has to be attended to on his admission.

During the process of cleaning your patient, you get an opportunity to examine and observe him thoroughly and talk to him so that you will be able to know about his physical and mental condition.

## **Observation of the patient**

Webster's dictionary defines observation as "the act or power of noticing". Nurses are with the patients throughout day and night. Your report of observation is very valuable in helping the physician to arrive at proper diagnosis and treatment.

The essence of good nursing depends largely on intelligent observation. It is through observation you notice your patients' deviations from normal condition.

Your observation and prompt actions may help patients from getting into serious complications such as hemorrhage and other similar problems. Your plan of nursing care also depends upon good observation.

Good observation depends on your intelligence and knowledge. Skill in observation is acquired through careful training in using your senses namely, seeing, hearing, touching and smelling.

It is through the sense of seeing you observe whether the patient is walking with difficulty, whether he is in pain and whether he has any other visible problems.

From hearing the sound of his breathing you will be able to understand whether the patient is having difficulty in breathing. Touching the patient reveals whether his body temperature is raised above normal or whether the skin is of normal texture or not.

Your sense of smell tells you the nature of discharge from wounds and body cavities.

Observation is a continuous process as a patient's condition is never static. It changes continuously. These changes are noticed through careful observation. A nurse's observation includes not only the physical condition of the patient, but also his psychological aspects.

Your observation becomes meaningful when it is accompanied by questioning. To come to clear interpretations of your observations, you have to question your patient so that you will be able to find out the problems experienced by the patient.

Through observation you identify the objective symptoms of your patient. Changes in colour of the skin, pulse, respiration, discharges from body cavities and changes in speech are some of the examples of objective symptoms.

Pain, nausea, fear, anxiety, dizziness and itching are identified by questioning the patient. These are examples of **subjective symptoms**.

Certain symptoms cannot be identified by observation or questioning. For example, some special techniques are needed to note changes in temperature, pulse, respiration and blood pressure; X-rays and laboratory tests are used for finding out changes in structure and functions of various systems of the human body.

- Ø Physicians use methods such as inspection, palpation, percussion and auscultation for observation of patient's condition.
- Ø Inspection is man's observing with eye.
- Ø Palpation is the art of feeling with the hand.



- Ø Percussion and auscultation depend on the production of sound.
- Ø Percussion is tapping an area to produce sounds.
- Ø Auscultation is listening to sounds within the body with a stethoscope. It is the art of hearing the heart sound, bowel movement etc.
- Ø Olfaction : Sense of smell. (odour)

### **Specific observations**

When a patient comes to the hospital or clinic, do an overall observation of the patient, note down his problems, report to the senior nurse and write your observations in the nurse's record sheet.

Use the following as a guide for your observation and for estimation of your patient's condition.

#### **1. The general structure of the body**

- Ø Whether he is obese, malnourished, acutely ill or chronically ill.
- Ø Whether he is weak and unable to walk or walks with aid
- Ø Whether he is in pain
- Ø Note the colour of the skin-pale, jaundiced.

#### **2. Mental status and level of consciousness**

- Ø Whether the patient is cheerful or depressed, anxious and worried, irritate, afraid or sad.
- Ø Whether oriented to place, person and time.
- Ø Whether fully conscious, drowsy or comatose.

#### **3. Hair and scalp**

- Ø Whether the hair is clean, thick, thin, matted, dirty or coarse.
- Ø Whether there is any lesion, dandruff, pediculi or nits on the scalp.

**4. Eyes**

- Ø Whether the eyes are protruding, sunken or crossed.  
Whether the colour is abnormal - Reddish or yellow.
- Ø Whether there is swelling, discharge, abnormal watering, pain, burning, itching, photophobia or headache.
- Ø Whether the vision is normal or poor.
- Ø Whether the patient uses glasses.

**5. Face**

- Ø Whether the face is pale, flushed or jaundiced.
- Ø Whether there is swelling, ulcers, rashes or injuries.
- Ø Whether his cheeks are swollen or sunken.

**6. Mouth**

- Ø Whether his breath smells of drugs or alcohol or has a bad smell.
- Ø Whether the gum is inflamed, swollen, bleeding or uncrated.
- Ø Whether the lips are cyanotic, dry swollen, cracked or ulcerated.
- Ø Whether the teeth are loose, broken, artificial or irregularly arranged
- Ø Whether he has any toothache.
- Ø Whether the taste is impaired or disturbed
- Ø Whether the tongue is dry, cracked, coated, inflamed, ulcerated, blistered, fissured or swollen.

**7. Throat**

- Ø Whether the patient has any ulcer, inflammation or pain. Whether he has any difficulty in swallowing.

**8. Speech**

- Ø Whether the speech is absent
- Ø Whether he has any difficulty in speech-stammering or incoherent.

Ø Whether the voice is hoarse or weak.

### **9. Nose**

Ø Whether there is any deformity, swelling or discharge of mucous, blood or pus.

Ø Whether the sense of smell is present or absent.

### **10. Ears**

Ø Whether he is able to hear or not

Ø Whether there is collection of wax in the ear.

Ø Whether the patient experiences any ringing or buzzing sounds, dizziness, itching or pricking.

### **11. Neck**

Ø Whether the patient has pain and difficulty in moving the neck.

Ø Whether there is any swelling or distended vein.

### **12. Chest**

Ø Whether the patient suffers from cough

Ø Whether the sputum is of abnormal colour or quantity

Ø Whether the breathing is laboured or normal.

### **13. Breast**

Ø Whether there are any abnormalities in the shape and size.

Ø Whether there are any lumps or discharge from the nipples.

### **14. Abdomen**

Ø Whether it is soft, tender, distended, hard, swollen, flabby or protruding.

Ø Whether he has any nausea, vomiting or pain.

Ø Whether his appetite is normal or not.

### **15. Extremities**

Ø Whether the nails are broken or brittle

- Ø Whether there is clubbing of fingertips, tremors of hands, swelling of extremities, pain in the joints or any other abnormality.

## **16. Skin**

- Ø Whether there are any sores, wounds, rashes or scales.
- Ø Whether the skin is dry, moist, hot, cold or clammy.

## **17. Excretions and discharges**

- Ø Whether the colour, consistency, amount, odour, and characteristics of stools, urine, sputum, perspiration, vomitus and vaginal discharge are normal or abnormal.
- Ø Whether patient gets any pain or any other discomfort during excretion.

## **Charting**

The nurses are required to report and record their observations. She reports her findings to the professional nurse and to the physician.

Recording of the observations is called charting. The nurses should chart their observations correctly. All chartings should be brief, concise, account and complete.

Charting helps physicians, nurses and others to understand the condition and progress of the patient. The chart is also used for legal procedures and research.

A patient's chart includes records maintained by physicians and nurses. A nurse should be able to maintain records related to nursing and she should be able to understand the notes made by physicians and others.

## **Safety and Comfortable Environment**

The environment in which the patient is placed should be comfortable and safe and it should contribute to his well being and should not retard his recovery.

## **Safety and comfort measures**

Safety means protection from possible injury. Many factors contribute towards the safety of patients in the hospital.

The hospital buildings should be structurally sound for ensuring safety for patients with physical limitations such as, blind, aged or handicapped.

The nursing personnel must be safety conscious and they should take all efforts to prevent accidents in the hospital. She should report all accidents promptly and take measures to prevent them from happening again. A register should be maintained for recording accidents.

### **Mechanical Devices for comfort measures**

To hospitals use many mechanical devices for ensuring safety/patients.

Ø Bed bars (side rails) are used to prevent patients from falling out of bed. Patients who requires this safety measure are post operative patients, unconscious, semi-conscious mentally disturbed, sedated, blind or children or very old patients.

Ø Back rest: These are usually made of metals. These are used to support the back of the patient in upright position.

Ø Over bed table: The table such as the cardiac table is placed in front of the patient and the top of the table is adjusted to the desired height. As pillow is arranged on the top of the table so that the patient can lean forward on it for support. When he wants to take food, read or write.



**Fig 3.1 A patient resting with back rest and over bed table( Cardiac table)**

- Ø Foot-boards: (Foot- rests): These are made of wood and are L shaped, so that one end can be slipped under the mattress to hold the other end in a firm upright position. The patient is placed in supine position to rest the bottoms of the feet flat against the surface of the foot-board (covered with sheet). These are used to prevent foot drop by maintaining good alignment.
- Ø Sand-bags: These are canvas, rubber or plastic bags filled with sand and are 1,5 and 10 lbs in weight. These are used to immobilize the body part, placing them snugly next to the part. Eg. On either side of the feet to maintain the position of the feet on the foot-board, immobilize the fractured limb.
- Ø Blocks (shock blocks): These are made of wood, may be high or low. These are placed under the foot of the bed for various reasons. Eg. surgical shock, traction and postural drainage. This may be placed under the head of bed to promote drainage and improve cerebral circulation.
- Ø Hand rolls : These are made of cloth that is rolled into a cylinder about 4-5 inches long and 2-3 inches in diameter and stuffed firmly. These are used to keep the fingers from being held in a tight fist leading to flexion contracture in patients who are unable to move the hands due to paralysis, injury or disease
- Ø Thigh rolls: These are made by folding a sheet to a desired length of 2-3 feet and then rolled into a tight cylinder. These are used to support the hips and thighs, preventing them outward rotation and keeping the feet in good alignment, in case of paralysis, fracture of the femur or hip surgery. To use the roll, place the loose end (flap) under the patients hips and thighs with the role

under the flap end and then tucking snugly along the hip and thigh

- Ø Cradle: These are mostly semicircular in shape, made of wood or metal. These are used to prevent the weight of top bedclothes on patient's feet and toes. To use the cradle, Place it over the bottom bedclothes and the top bedclothes are then brought over the cradle. These are used for patients affected by burns.
- Ø Restraints are devices used to prevent agitated patients, persons who get out of bed at night in their sleep and small children, from falling out of bed.
- Ø Wire mesh for windows and doors are fixed to prevent insects.

### **Common Hazards**

- Ø Patients should be safeguarded from fire accidents and from careless application of heat. Fire accidents occur mainly due to allowing patients to smoke in bed, use of faulty electric appliances, and careless use of oxygen cylinders.
- Ø Patient may get injured from careless application of hot water bags, electric pads and application of medications on the skin.
- Ø **Poisonous drugs should be kept under lock and key with specific red label.**
- Ø Patients may come to harm through bacteriological sources, insects and rodents. Food and water should be made safe for consumption. Insects and rodents should be eliminated.

### **COMFORT**

Comfort is a sense of mental and physical well being.

**Physical comfort** gets affected due to a dirty and wet bed and lack of body alignment. High temperature and humidity, poor ventilation, too much noise, unpleasant odours and glaring lighting make the patient uncomfortable.

To promote comfort for the patients, certain mechanical devices can be used. Pillows can be used for giving support for the various part of the body.

Sometimes-patient feels comfortable in a propped up position. In a hospital, a backrest is provided for the patient to keep him in a sitting position.

For relaxation of abdominal muscles, when patients are in pain or after an abdominal operation, knees can be kept flexed by means of a knee rest.

A pillow or a blanket or sheet rolled as a pillow can be improvised as a knee rest. Patients should not be kept with flexed knees for a long period. His circulation may get affected. Hence his position is changed frequently.

For supporting feet and for preventing foot drop, foot rests are used. This device keeps the feet at right angles to the leg and prevents deformities. Foot-rest can be improvised with sand bags.

Other devices used as comfort measures are air rings or cotton rings and air cushions to prevent pressure ulcer.

**Mental comfort** is provided for the patient by eliminating his fear, anxiety and worry. He should receive sympathy and consideration from the nursing and medical staff. His relatives should avoid unpleasant news to him while he is in the hospital. Meeting his spiritual needs may help to give him mental peace and comfort.

### **Feeding of patients.**

#### **Preparing and serving of patient**

Meals should be accurately prepared , according to the requirements of the individual patient and his disease. Great care should be taken and be kept away from the patient to avoid spilling.

Meals should be attractively served. The plate should be clean on both surfaces. A nicely prepared, well cooked food improves appetite.



The patient must be placed in the most suitable position and the plate is conveniently placed. A towel must be placed around his neck so that it gives maximum protection to the patient and bedclothes. Hot food should be given if permitted.

### **Spoon feeding**

This is often used for the feeding of children and patients who cannot feed themselves. The spoon should be of suitable size and time should be allowed for the mastication.

The nurse should appear unhurried. It is usual for the nurse to stand on the right side of the patient but exceptions occur.

Help the patient to take their feeds who are unable to feed themselves and everything possible must be done to alleviate the feeling of helplessness.

Children with harelips and cleft palate are mostly spoon fed; sometimes a special spoon is used and after operation, a sterile spoon is used.

The child should be well supported and the spoon placed well to the back of the mouth. After operations for harelip or cleft palate, great care should be taken to prevent the spoon from touching the suture lines.

### **Feeding with a feeding cup**

The feeder (feeding cup) must be perfectly clean, especially the spout and under the over hanging half-lid. It should be placed on a saucer with a spoon, and carried to the bed side on a tray which is covered with a tray cloth.

Spread a towel around the patient's neck. The feed should not be too hot. The nurse's left arm should be placed under the pillow to raise the patient's head and the spout of the feeder placed between his lips.

The patient should be taught to place his tongue over the spout tip when requiring a rest, or to make a sign to the nurse.

In some instances, feeding is made more easy if a piece of rubber tubing is attached to the spout of the feeder, this should be carefully washed and boiled at least once daily.

In some cases both feeder and rubber spout are boiled before and after each feed. A special brush is provided for the cleaning of spouted feeders.

At the end of the meal, the patient's mouth should be dried, in some cases the mouth may require cleaning before and after the meal.

### **Discharging the patient**

Discharge is a preparation of a patient and discharge records to leave the hospital.

#### **Purpose**

- 1) To ensure continuity of care to the patient after discharge
- 2) To assist the patient in discharge process

#### **Guidelines**

The patient are discharged from the hospital in one of the following ways

1. **Discharge to home.** The discharge to home or another hospital or another unit within the hospital is initiated by the doctor who advises the patient that he is well enough to leave the hospital or requires treatment in another unit within the hospital or in an another hospital
2. **Discharge to another hospital or another unit within the hospital (referral).** When a patient or family is not satisfied with the treatment or care given and wants to leave the hospital against the medical advice, in such cases the patient or the relative is asked to sign a statement that he is going or taking the patient on his own will and responsibility.
3. **Discharge against medical advice (AMA).**  
Patient leaves the hospital against the medical officer's advice. When a patient escapes from the hospital without the

knowledge of the hospital staff and without signing the said statement he is treated as absconded in the records.

### **Nurses Responsibility**

1. Inform the patient and the relatives a day or two before the discharge
2. Get the discharge slip prepared after checking the vital signs and examining the patient.
3. The nurses should see that the patients personnel hygiene is maintained, he is dressed in home clothes and has taken meals.
4. Hand over the patient's belongings and any valuables, which have been kept safely, to the patient or the relative under proper receipt.
5. Complete the unit admission and discharge registers, case sheet and other records.
6. Hand over the case sheet and other records to medical record department under proper receipt.
7. Inform the hospital authorities about the discharge if the patient is medico-legal.
8. Hand over the discharge slip to the patient or relative and explain about
  - a. the treatment and the diet to be taken at home
  - b. follow-up visits and inform to bring the discharge slip on every visits
  - c. any special advices pertaining to condition
9. See that the patient receives all the medicines as per discharge slip.
10. Check the hospital things before the patient leaves the ward.
11. Place the patient in the wheel chair or stretcher according to the patient's condition until he leaves the hospital.

12. Immediately after the patient leaves, reorganise the patient unit.

### Summary

- Hospitals are institutions, which are designed to care the sick, injured and the well.
- The basic functions of a hospital are care of the sick and injured, diagnosis, treatment and rehabilitative services.
- Many hospitals undertake education of doctors, nurses and technicians and also undertake research works.
- There are various departments in a hospital like medical, nursing, pharmacy and dietary department.
- Every hospital has its own policies and rules, which govern their various activities.
- The main aim of a hospital is patient care and comfort.
- Every nurse should know how to keep her ward clean.
- Proper disinfection should be done for infected articles by immersing in 1:20 carbolic lotion for 2 hours.
- Stock taking should be done periodically of all kitchen utensils, instruments, linen and drugs.
- Economy of time, money and men power should be kept in mind in ward management.
- The entrance of a patient into a health care agency is termed as admission.
- The patient who is admitted need good reception, orientation to place and people, safeguarding his personal belongings, physical assessment, prompt

personal hygiene and observation to identify deviations from normal.

- Recording of the observations is called charting.
- The nurse provides a safe and comfortable environment to the patient by using the mechanical devices.
- Discharge is a preparation of a patient and discharge records to leave the hospital.

## Questions

### Part A

Fill in the blanks

1. New articles should be washed -----
2. ----- is done periodically hat to identify the lost articles.
3. Two ----- surfaces should not come together but must be separated.
4. Rubber articles should not be stored in the -----
5. Excessive boiling makes ----- limp and over stretched.
6. Infected blankets, pillows and mattresses are steam sterilized under pressure for ----- hour.
7. Disinfectants should be used in ----- strength.
8. Discourage patients to keep ----- with them.
9. Good observation depends on ----- and -----
10. ----- and ----- are used for finding out changes in structure and functions of various systems of the human body.

### **Part B**

1. Define hospital.
2. What is a comfortable environment ?
3. What is hospital orientation?
4. What is a comfort device?

### **Part C**

1. What are the functions of hospitals?
2. How will you care for the hospital linens.?
3. How will you care for the rubber article?
4. What are the purposes of good reception on admission?
5. Write about stock taking
6. What are mechanical devices used as comfort measures for patients?
7. What are the types of discharge procedures?
8. What are the safety and comfort measures to be taken in ward management?
9. What is charting and how will you maintain proper charts?

### **Part D**

1. Explain the nurses' responsibilities in assisting domestic ward management?
2. Describe the admission procedure in a hospital in detail.
3. What are the general observations to be done while a patient is admitted in the hospital.
4. What are the nurses responsibilities while discharging a patient.
5. Write in detail about the mechanical devices used for patients' comfort.

## 4. INFECTION CONTROL

Good health depends in part on a safe environment. Practices that control and prevent transmission of infection help to protect patients and health workers from disease.

Patients admitted in hospitals are at risk for acquiring infections because of lower resistance to infections microorganisms, increased exposure to number and types of disease causing microorganisms and invasive procedures.

Health care workers can protect themselves from contact with infectious material or exposure to communicable diseases by having knowledge of the infectious process and appropriate barrier protection Hepatitis B. AIDS and tuberculosis have caused a greater emphasis on infection control techniques.

Knowledge of microbiology is an essential component in nursing for practicing disinfections and sterilization to eliminate pathogenic microbes causing infectious disease.

Microbiology is a study of life process of the smallest living organisms (microbes). Microbes are so small that they can be seen only with the aid of a microscope.

### Classification of Micro Organisms.

Microorganisms are classified as follows:

1. Virus.
  2. Bacteria
  3. Protozoa (Parasites)
  4. Fungi
  5. Rickettsiae.
- Ø **Virus:** Viruses are very minute living organisms, which can pass through bacterial filters and can be seen only under electron microscope.
  - Ø **Bacteria:** Bacteria are heterogenous and belong to both animal and plant kingdom.

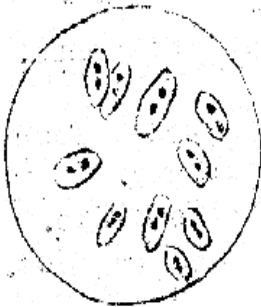
**Fig. 4.1 Morphology of Bacteria**



Spirochaetes



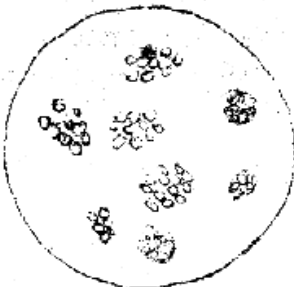
Spirilla eg. *Vibrio cholera*



Diplococci arranged  
in clusters.



*Salmonella typhi* with  
flagellae.



Staphylococci arranged in  
Terminal in clusters.



*Clostridium fetani* with  
Terminal spores.





Streptococci arranged  
in chains



Clostridium perfringent  
Bricks shaped

- Ø **Streptococci:** They are round shaped organisms arranged in chain. They are gram positive, non-motile, highly pathogenic and do not grow in ordinary media. They grow in blood and serum media.
- Ø **Staphylococci:** Staphylococci are arranged in clusters like grapes. They are gram positive and violet in colour when stained. They are non-motile and non-spore forming organisms. There are two types of pathogenic staphylococci
  - (a) Staphylococcus albus and
  - (b) Staphylococcus aureus.
- Ø **Diplococci:** Diplococci are arranged in pairs and they are gram-negative organisms. Examples of diplococci are Neisseria gonococci and Neisseria meningococci. They grow in special culture media of heated blood.
- Ø **Pneumococci:** Pneumococci are also arranged in pairs. They are gram-positive and found in nasopharynx.
- Ø **Bacillus:** Bacilli are rod shaped organisms. These are gram positive and gram-negative organisms. Gram-positive bacilli are Corynebacterium diphtheriae, clostridium tetani and bacillus anthracis and mycobacterium tuberculosis.
- Ø **Clostridium Tetani:** Clostridium tetani or bacillus tetani are rod shaped spore forming organisms. Mostly they are

found in the intestinal tract of man and animals. They are also present in soil.

- Ø **Bacillus anthracis:** Bacilli anthracis are large rods with spores. They are found in animal hairs, wool, soil, water and dust.
- Ø **Escherichia coli:** These are small rod shaped organisms, sometimes motile and sometimes encapsulated. They are found in the intestinal tracts of man and animals and they are non-pathogenic.
- Ø **Salmonella:** Like E.coli, Salmonella also are small, motile and rod shaped bacilli.
- Ø **Vibrio:** Vibrio are comma shaped, motile, gram negative and non-spore forming organisms
- Ø **Rickettsiae:** Rickettsiae are larger than virus and smaller than bacteria in size. They are variously shaped like minute rods or spheres.
- Ø **Virus:** Viruses are the lowest form of living creatures, which are capable of reproduction. They are ultra microscopic structures and are not visible in ordinary microscope. They are visible only in electron microscope.

### Common Viral and diseases of man

Organisms	Mode of entry	Disease
Virus variola	Inhalation	Small pox
Influenza	Inhalation	Epidemic influenza
Virus varicella	Mouth	Mumps
Virus rubella	Inhalation	Measles
Virus hepatitis		
Virus A	Ingestion	Infective hepatitis
Virus B	Inoculation	Serum hepatitis
Polio virus	Ingestion	Poliomyelitis
Human Immuno Deficiency Virus	Inoculation, transplacental Sexual contact	Acquired Immuno Deficiency Syndrome

## Methods used for identification of microbes.

Microbes are considered as unseen enemies of man. They can be seen only under microscope. To identify the specific microbes, the following methods are done.

**SMEAR, FIXING, HANGING DROP PREPARATION, STAINING, CULTURE, ANIMAL INOCULATION, SEROLOGICAL TESTS.**

### Microscope:

Microscope is the instrument, which is used to magnify objects, and structure, which are too small to see by the naked eye. Since the science of microbiology is concerned with the microorganisms, we can appreciate that microscope is the most essential piece of equipment in the laboratory to identify bacteria. There are varieties of microscopes of which three are most important.

1. The compound optical microscope, which is used for routine bacteriological examinations.
2. The dark field microscope, which is used to identify spirochaetes, e.g. treponema pallidum
3. The electron microscope is the most powerful microscope used to magnify the object by 100,000 times. This is used in the identification of viruses.

- Ø **Smear:** Place a drop of specimen, which is to be examined, on the middle of a slide. Place a drop of distilled water (Water is needed only for solid specimen, e.g. motion) with a sterile loop, and spread the specimen uniformly on the slide. This kind of examination is known as direct microscopic examination.
- Ø **Fixing:** Fix the smear by flaming the slide. Flaming is done by passing the slide on a flame for three or four times. Fixing can also be done by using chemicals such as formalin, methyl alcohol, mercuric chloride.
- Ø **Hanging Drop Preparation:** It is often used to determine whether the bacteria are motile or non-motile.

Hanging drop preparation aids in studying the organisms in living state.

**Human Immuno Deficiency Virus:** It is identified by ELISA and Westernblot tests.

### **Types of Specimen Collected:**

- Ø **Swabs:** It is usually collected in a sterile test tube. Care should be taken so as to prevent contaminations of specimen.
- Ø **Throat swab for cultures:** These should be taken only with a view of the throat, in a good light and using a tongue depressor. Materials should be taken only from the infected area.
- Ø **Sputum:** It should be collected in a sterile container having wide mouth. Sputum should be collected directly after a cough and sent immediately to the laboratory.
- Ø **Urine:** Urine specimen for chemical and microscopic examinations can be collected in a clean container or test tube, but for culture it should be collected in a sterile test tube.
- Ø **Faeces:** Fresh stools should be collected for bacteriological examination.
- Ø **Blood:** It should be collected in a sterile container. The nurse should assist while collecting other specimens like cerebro spinal fluid. Etc. When assisting the physician, she should adopt aseptic precautions so as to avoid contamination of specimen.

### **Terminologies**

- Ø **Pathogens:**  
Microorganisms, those are capable of producing disease.
- Ø **Asymptomatic infection:**  
If the microorganisms fail to cause serious injuries to cells or tissues and patient is symptom free of the particular disease.

Ø **Disease:**

The pathogens multiply and cause an alteration in normal tissues and manifest with signs and symptoms.

Ø **Communicable disease:**

If the infectious disease can be transmitted directly from one person to another, it is known as communicable disease or contagious disease.

Ø **Disinfection:**

It is a process by which pathogenic organisms are killed by physical and chemical agents.

Ø **Disinfectant:**

It is a chemical substance, which kills the pathogenic microorganisms or organisms capable of giving rise to infection, e.g. Iodine, phenyl, carbolic acid.

Ø **Antiseptic:**

It is a chemical substance which inhibits the growth of microorganisms and do not kill the organisms (e.g.) dettol.

Ø **Detergents:**

Detergent increases the cleaning power of water and leaves no film or scum. Some are used only for cleaning without any bacteriocidal action.

Ø **Bacteriostasis:**

It is a process of inhibiting the growth of bacteria (e.g.) Freezing and drying.

Ø **Bactericide:**

It is a substance, which kills microorganisms.

Ø **Sepsis:**

It is a term used for the presence of pathogenic organisms.

Ø **Inflammation:**

The body's cellular response to injury or infection is inflammation.

Ø **Antigen:**

Remnants of the micro organisms that trigger the immune response. Antigens are usually composed of proteins.

Ø **Antibodies:**

Antibodies are large protein molecules. Antibodies are immunoglobulins, which are synthesized and secreted by the plasma cells when an antigen enters the body, to neutralise the antigen.

Types of immunoglobulin IgA, Ig D, Ig E, Ig G and Ig M, The most abundant circulating antibody is IgG.

Ø **Sterilisation:**

Sterilisation is defined as the process by which an article, surface, or medium is free of all microorganisms, either in the vegetative or spore state.

Ø **Chemotherapy**

It is the treatment of disease by means of chemicals, which are known as chemotherapeutic agents (e.g.) Sulphonamides. Destruction or inhibition of growth of organisms depends upon the concentration of chemotherapeutic agents.

Ø **Antibiotics:**

These are drugs used to kill the organisms (e.g.) Penicillin.

Ø **Local infection:**

An infection that is localized within a particular part or a single organ. Proper care controls spread.

Ø **Systemic infection:**

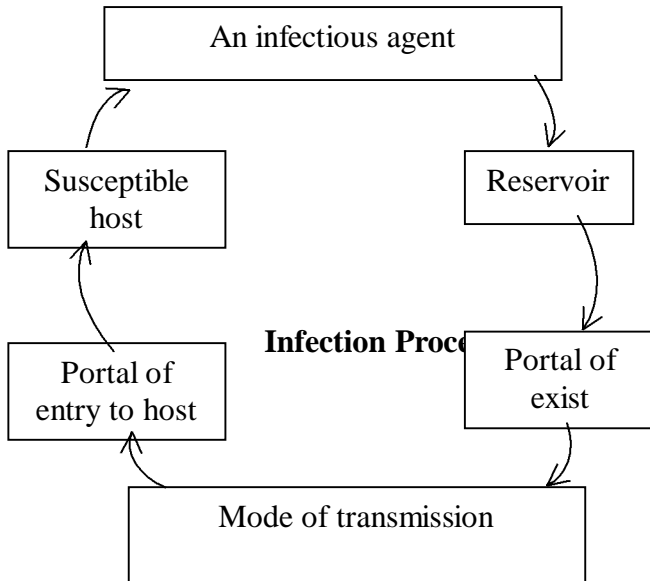
An infection that affects the entire body. It can become fatal.

**Infection Process:**

Development of an infection occurs in a cycle that depends on the following elements.

- Ø An infection agent or pathogen.

- Ø Source for pathogen growth (A reservoir)
- Ø A portal of exit from the reservoir
- Ø A mode of transmission
- Ø A portal of entry to a host
- Ø A susceptible host



**Fig. 4.2 Chain of infection**

An infection will develop if this chain remains intact. Nurses use infection prevention and control practices to break the chain so that infection will not develop.

### 1). **Infectious agent:**

Microorganisms include bacteria, viruses, fungi and protozoa. They are the common infectious agents. The potential for microorganisms or parasites to cause disease depends on the following factors:

- Sufficient number of organisms
- Virulence or ability to produce disease

- Ability to enter and survive to the host
- Susceptibility of host.

**2). Reservoir:**

A reservoir is where a pathogen can survive. Skin of patients, carriers, animals, food, water insects, and inanimate objects are common reservoirs of infection.

**3). Portal of exist**

Microorganisms can enter through a variety of sites such as skin and mucous membrane, respiratory tract, urinary tract, gastrointestinal tract, reproductive tract and blood.

**4). Modes of transmission:**

Direct contact or indirect contact with infected source, contaminated air, water, blood, food, flies, mosquito are the common modes of transmission to infection. Major mode of transmission of microorganisms occurs in the hands of the health care providers.

**Table**  
**Modes of transmission**

S.No.	Routes and means	Examples of organisms
1	Contact <ul style="list-style-type: none"> <li>a. Direct contact</li> <li>b. Indirect contact</li> <li>c. Droplet infection</li> </ul>	Hepatitis A virus Hepatitis B virus Measles virus, Rubella virus
2	Air Droplet nuclei (residue or evaporated droplets suspended in air)	Mycobacterium tuberculosis
3	Vehicles <ul style="list-style-type: none"> <li>a. Contaminated items</li> <li>Water</li> </ul>	Vibrio Cholera Hepatitis C.



	Blood b. Improperly handled food.	Salmonella, Escherichia coli Clostridium botulinum.
4	Vector Flies Mosquito  Louse Flea	Vibrio cholera Plasmodium falciparum (Malaria) Rickettsia typhi Yersinia pestis (plague)

**5). Portal of entry:**

Organisms can enter the body through skin, mucus membranes, respiratory tract, gastro intestinal tract, reproductive tract and blood.

**6). Susceptible host**

Whether a person acquires an infection depends on susceptibility to an infectious agent. Susceptibility depends on the individual degree of resistance to a pathogen. The susceptibility of host depends upon the virulence of microorganisms and immune status of the host.

**Course of infection by stage:**

Ø **Incubation period:**

Interval between entrance of pathogen into body and appearance of first symptoms.

eg. chickenpox 2-3 weeks.

common cold 1-2 days

mumps 18 days

Ø **Prodromal stage:**

Interval from onset of non-specific signs and symptoms (malaise, low-grade fever, fatigue) to more specific symptoms. During this time, microorganisms grow and multiply and patient is more capable of spreading disease to others.

### Ø **Illness stage:**

Interval when patient manifests signs and symptoms specific to a particular disease.

e.g.

common cold - Sore throat, sinus congestion

rhinitis.

mumps - earache, high fever, parotid and salivary gland swelling.

The severity of patient's illness depends on the extent of infection, the pathogenicity of the microorganisms and susceptibility of individuals.

### Ø **Convalescence:**

Interval when acute symptoms of infection disappear until the individual regain his normal health. Length of recovery depends on severity of infection and patient's general health status. Recovery may take several days to months.

### Ø **Defences against infection:**

- The body has normal defenses against infection.
- **Normal body flora** that reside inside and outside of the body protect a person from several pathogens
- The inflammatory response is a **protective vascular and cellular reaction** that neutralizes pathogens and repairs body cells.
- Each organ system has **defence mechanism** that defense against exposure to infectious micro organisms.

### **Nosocomial Infection:**

Nosocomial infections are infections that are acquired by a patient due to delivery of health care services.

Most nosocomial infections are transmitted by health care workers.

### Ø **Iatrogenic infections:**

Iatrogenic infections are a type of nosocomial infection resulting from a diagnostic or therapeutic procedure.

(eg) urinary tract infection that develops after catheter insertion.

Nosocomial infections may be exogenous infection or endogenous infection.

### Ø **Exogenous infection:**

Exogenous infection arises from microorganisms external to the individual, which do not exist as normal flora. Eg. *Salmonella typhi* – Typhoid fever  
*Clostridium tetani* – Tetanus.

### Ø **Endogenous infection:**

Endogenous infection occurs when part of the patient's flora becomes altered (virulent) and also increase in number

Eg. *Streptococci*, *Enterococci*

## **Sites and causes for nosocomial infection**

- |                            |   |                                      |
|----------------------------|---|--------------------------------------|
| 1. Urinary tract catheter. | - | Insertion of urinary                 |
|                            | - | Improper hand washing technique.     |
|                            | - | Contaminated catheter, tube and bag  |
|                            | - | reflux of urine from bag to bladder. |
| 2. Surgical wounds         | - | improper handwashing technique       |
|                            | - | improper skin preparation            |

- improper sterilization of instruments & dressing materials
- Failure to use aseptic techniques
- 3. Blood stream
  - Contaminated intravenous fluids, tubing or needles.
  - improper care of needle, insertion site.
  - improper hand washing technique

### **Risk factors for infection:**

- Broken skin or mucous
- Obstructed urine outflow
- Decreased mobility
- Reduced haemoglobin level.

### **Methods of Disinfections and Sterilisation:**

1. Mechanical
  - i. Scrubbing
  - ii. Filtration
  - iii. Sedimentation.
2. Physical
  - i. Moist heat
    - boiling
    - steam under pressure
    - pasteurization.
  - ii. Dry heat.
    - Baking.
    - Incineration
    - Flaming.
    - Sunlight.

- iii. Low temperature.
- 3. Chemical. – use of disinfectants such as  
Phenol  
lysol etc.

### **Mechanical:**

- 1) **Scrubbing:** Hand washing is one of the important procedures of a nurse in order to control and prevent self-infection as well as cross infection. Scrubbing and washing the hands with soap and water removes the organisms mechanically.
- 2) **Filtration:** In laboratories fluids are sterilized by filtration. The process of filtration aids in retaining certain bacteria.
- 3) **Sedimentation:** It is used in the purification of water. By this method the suspending materials together with bacteria settles down in the bottom of liquid.

### **Physical Methods:**

- 1) **Moist heat:**

**Boiling** – Boiling at 100° C for 3 to 5 minutes kills microorganisms except spore bearing organisms such as bacillus tetani. There are certain rules to be observed while boiling.

- Ø Scrub and clean the articles to remove organic matter, which will coagulate around the organisms and protect them.
- Ø Articles except the glass should be put at the boiling point of water (great care should be taken for glass articles, and they should be wrapped with cloth and put in cold water and then brought to boil).
- Ø Articles should be well covered by the water and boiled for the required length of time.

**Steam under pressure:**

Spore bearing organisms are killed by steam under pressure. Autoclave is an apparatus used for sterilization of articles by steam under pressure.

In this, the steam is allowed to circulate in a closed container and it is compressed and thereby raises the temperature above the boiling point of water ( $121^{\circ}\text{C}$ ).

In this method the articles are sterilized under 15 pounds pressure of steam for 15 to 20 minutes. Materials sterilized by autoclaving method are dressings, gloves, linen, syringes, certain instruments and culture medias.

**Pasteurization:**

Pasteurization is a method of sterilizing milk. Milk is heated to a temperature of  $60^{\circ}\text{C}$  for half an hour and rapidly cooled to  $13^{\circ}\text{C}$ . This aids in destroying all pathogenic organisms and reduces acid-producing organisms and thus prevents souring of milk.

**2). Dry Heat:****Baking:**

This method of sterilization is used in sterilizing glassware, syringes, needles, culture tubes and medias. Most of the vegetative forms of bacteria are killed. Spores need to be heated for 1 to 2 hours. The apparatus used for baking is known as “**hot air oven**”.

**Incineration:**

In order to destroy all organisms, infected wound dressings, contaminated materials, garbage and other hospital wastages etc are burnt by incineration. The apparatus used for this complete burning is **incinerator**.

**Flaming:**

This is used in sterilizing platinum loops in laboratory and also in sterilizing needles and instruments. This aids in killing organisms.

**Sunlight:**

The ultra-violet rays from sunlight have the effect of destroying a large number of bacteria. Blankets, pillows, mattress are disinfected by sunlight. Care should be taken to turn the articles often to kill the microorganisms on both surfaces.

**3). Low temperature:**

Cold has the effect of decreasing or completely stopping the growth of bacteria. Constant freezing will destroy bacteria.

**Chemical Methods:**

Certain chemicals are used in disinfection of articles like thermometer and also the disinfection of floor and decontamination of infected linen etc.

**Principles to be observed:**

- 1) All articles contaminated with blood, faeces, pus, sputum, or other substances must be rinsed with cold water to prevent coagulation of protein material.
- 2) Use soap and water for cleaning the instruments and use a brush whenever necessary.
- 3) Allow sufficient time for articles to be disinfected or sterilized by physical or chemical agents.
- 4) It is important to select the right disinfectant, the right strength and the right time.
- 5) Use the right procedure to render instruments and other articles safe for further use in order to prevent the spread of infection.

**Chemical substances, which are commonly used.**

- 1) **Dettol:** This is widely used chemical for sterilization of instruments, thermometer etc. It is non-poisonous and non-irritant to the skin. 5 to 50% solution is used for dressings and wound irrigation.

- 2) **Savlon:** 1:30 savlon solution is used to destroy or kill vegetative bacteria.
- 3) **Chloride of lime(Bleaching powder):** This is used for disinfection of drinking water, stools, urine, sputum. As it decomposes quickly when exposed to air. Solutions must be made fresh for each use.
- 4) **Formalin:** A 40 percent solution is used to disinfect faeces, urine and sputum. It is not used for the skin and tissues, as it is an irritant.
- 5) **Tincture of Iodine:** 1-2 percent iodine is used for cleaning skin and treating injuries to the skin.
- 6) **Hydrogen peroxide:** 1-5 percent of solution is used in cleaning wounds and to remove pus from infected ears. Hydrogen peroxide is also used to clean the mouth. It is an oxidizing agent.
- 7) **Potassium permanganate:** It is an oxidizing agent used for cleaning the mouth 1:1000 strength. It is also used for irrigation of wounds.
- 8) **Carbolic acid (Phenol):** It is a good disinfectant for faeces, pus, blood and sputum. It is a skin irritant and a poison. Dissolves easily in hot water. For thermometers 1:20 solution for a duration of 10 minutes.
- 9) **Lysol:** This is a phenol or chlorasol preparation mixed with soap. It is less poisonous than a carbolic acid but has a greater bacteriocidal action. 2 % solution for 6-8 hours is used for disinfecting linen.
- 10) **Ethyl alcohol** 70% is effective for skin disinfection. Certain gases like formaldehyde and gluteraldehyde are used in disinfection of rooms.



## Immunity

Immunity is the power to resist and overcome infection caused by particular organisms:

### Factors Influencing the Immune status of Individuals:

#### Inherent:

- 1) **Racial:** Some races are susceptible or immune to certain diseases. For example, Hebrews are more resistant to tuberculosis than other people.
- 2) **Species:** Some of the species of animals have resistance to certain diseases e.g. lower animals never get measles or typhoid fever while man is susceptible to get these diseases. Birds do not get infection with certain kind of tubercle bacilli, which affects cattle or man.
- 3) **Individual:** some people have a strong natural resistance or immunity to certain diseases. This is known as individual immunity.

#### Types of Immunity

- 1) **Natural immunity:** Natural immunity results after acquiring certain diseases like measles, and usually lasts a life time.
- 2) **Artificial immunity:** Artificial immunity follows the receipt of a vaccine such as polio vaccine.
- 3) **Active immunity:** Non-virulent microorganisms are injected as antigens and the body produces antibodies against the antigen.
- 4) **Passive immunity:** Immunoglobulins or antibodies are injected as a vaccine to neutralize to antigen.

- 5) **Acquired immunity:** Acquired immunity may be natural or artificial.

**Acquired artificial immunity:**

Immunity which, is acquired artificially by introducing vaccine and toxoid (active) and serum (passive) is known as acquired artificial immunity.

**Acquired natural immunity:**

People who suffered from disease will have immunity against that particular disease e.g. small pox. This is known as acquired natural active immunity.

**Acquired natural passive immunity.**

- a. The child gets antibodies from its mother through placenta and breast milk and has immunity for sometime against certain diseases.

**Types of Immunisation**

- 1) **Active immunization:** It implies administration of antigenic preparation in order to stimulate production of antibodies within the tissues of the individual. This is known as active immunity. The material used for producing active immunity are vaccines (e.g.) BCG vaccine.
- 2) **Passive immunization:** Sera containing specific antibodies are directly injected to produce passive immunity. **Eg.** Anti-toxin sera in diphtheria (prepared from horse serum) and tetanus immunoglobulins.

**Vaccines may consist of:**

- a. Live, virulent organism in sub lethal doses (e.g.) cholera vaccine, anti-rabies vaccine.
- b. Live attenuated organisms – e.g. vaccine for small pox, tuberculosis (BCG) and yellow fever.
- c. Dead organisms e.g. vaccines of typhoid, cholera and plague.
- d. Toxins of organisms, such as toxoids – e.g. vaccines for diphtheria, tetanus and scarlet fever.

## Summary

- Bacteria, virus, fungi and protozoa are the common pathogens that cause disease in human.
- Microorganisms are transmitted by direct and indirect contact, by airborne spread, by vectors and contaminated articles.
- Increasing age, poor nutrition, stress, disease, poor immunity status, invasive procedures may increase an individual's susceptibility to infection.
- The major sites for nosocomial infection are the urinary and respiratory tracts, bloodstream and surgical or traumatic wounds.
- Invasive procedures, long hospital stay and contact with health care personnel increase a hospitalized patient's risk for acquiring nosocomial infection.
- Normal body flora helps to resist infection by inhibiting multiplication of pathogenic microorganisms.
- The potential for the microbes to cause disease depends on number of organisms, virulence, ability to enter and survive in a host and susceptibility of the host.
- An infection can develop as long as the six elements (infectious agents, reservoir, portal of exit, mode of transmission, portal of entry and host) composing the infection chain are uninterrupted.
- Infection may be controlled or prevented by disinfection and sterilization, which are carried out by mechanical, physical and chemical methods.

## Questions:

### Part-A

1. Antibodies are otherwise known as\_\_\_\_\_.
2. \_\_\_\_\_ is where a pathogen can survive but may or may not multiply.
3. Tuberculosis is caused by \_\_\_\_\_.
4. \_\_\_\_\_ causes cholera.
5. \_\_\_\_\_ is transmitted through contaminated needles and instruments.
6. Measles, influenza are caused by \_\_\_\_\_ infection.
7. \_\_\_\_\_ is transmitted through \_\_\_\_\_ route.
8. Interval between entrance of pathogen into body and appearance of the symptoms\_\_\_\_\_.
9. Interval from onset of nonspecific signs and symptom to more specific symptom\_\_\_\_\_.
10. Interval when patient manifests signs and symptoms\_\_\_\_\_.
11. Interval when acute symptoms of infection disappear\_\_\_\_\_.
12. \_\_\_\_\_ depends on the individual degree of resistance to pathogens.
13. The most important and the most basic technique in preventing transmission of infection is \_\_\_\_\_.

### Match the following

Plasmodium falciparum	AIDS
Clostridium tetani	Malaria
Salmonella	Tetanus
Mycobacterium tuberculosis	Typhoid fever
Human Immuno deficiency virus	Tuberculosis

### **Part B**

1. Define micro-organisms
2. Define disinfection.
3. Define sterilization.
4. What is an antigen?
5. What are the immunoglobulins?
6. What are the risk factors for infection?
7. Define iatrogenic infection.

### **Part C**

1. What are the physical methods of disinfection?
2. What are the chemical methods of disinfection?
3. What are the mechanical methods of disinfection?
4. Write about the course of infection by stage
5. Write short note on – Nosocomial infection.

### **Part D**

1. Explain about immunity.
2. Describe the methods of disinfection and Sterilisation.

## **5. STRUCTURE AND FUNCTIONS OF HUMAN BODY**

### **5.1 INTRODUCTION TO STRUCTURE OF HUMAN BODY**

**Anatomy – The Structure of the body**

**Physiology – Function of the body**

#### **The body as a whole**

The body is wonderfully made, like a complex, perfect machine. Each part is specially constructed to carry out its own function, and to work as a whole with the other parts.

Look at a person standing with arms at the sides, palms turning forward, this is called the ‘anatomical position’. The body is seen to consist of the head, neck, trunk, upper limbs (the arms) and lower limbs (the legs).

#### **The following terms are used in anatomy**

1. SUPERIOR – higher
2. INFERIOR – lower
3. ANTERIOR – nearer the front of the body
4. POSTERIOR – nearer the back of the body
5. MEDIAL – nearer to the mid-line
6. LATERAL – to the side
7. PROXIMAL – nearer to the head or source
8. DISTAL – distant from the head or source
9. EXTERNAL – outside, or away from the trunk centre
10. INTERNAL – inside, or nearer to the trunk centre
11. SUPERFICIAL – nearer the body surface
12. DEEP – inside, away from the body surface

The body has a strong frame work of bones called the skeleton. The skeleton is covered by muscles and other soft tissues, and by skin on the outside.

### **Cavities of the body and their contents**

Some body parts form spaces called cavities, in which important internal organs are protected.

1. The cranial cavity or skull – contains the brain
2. The thoracic cavity or chest contains:-
  - Ø the lungs
  - Ø the air passages – trachea and bronchial tubes
  - Ø the oesophagus or food pipe, which lies behind the trachea
  - Ø the heart
  - Ø the great blood vessels, and the thoracic duct (the largest lymphatic vessel)
3. The abdominal cavity, which is separated from the thoracic cavity by a dome-shaped muscle called the diaphragm. It contains:-
  - Ø the stomach
  - Ø the small intestines
  - Ø the large intestine or bowel
  - Ø the liver
  - Ø the spleen
  - Ø the kidneys
  - Ø the ureters
  - Ø the pancreas
4. The Pelvic cavity which contains:-
  - Ø the reproductive organs
  - Ø the bladder when empty (when full it rises into the abdominal cavity)
  - Ø the rectum

## Cells and Tissues

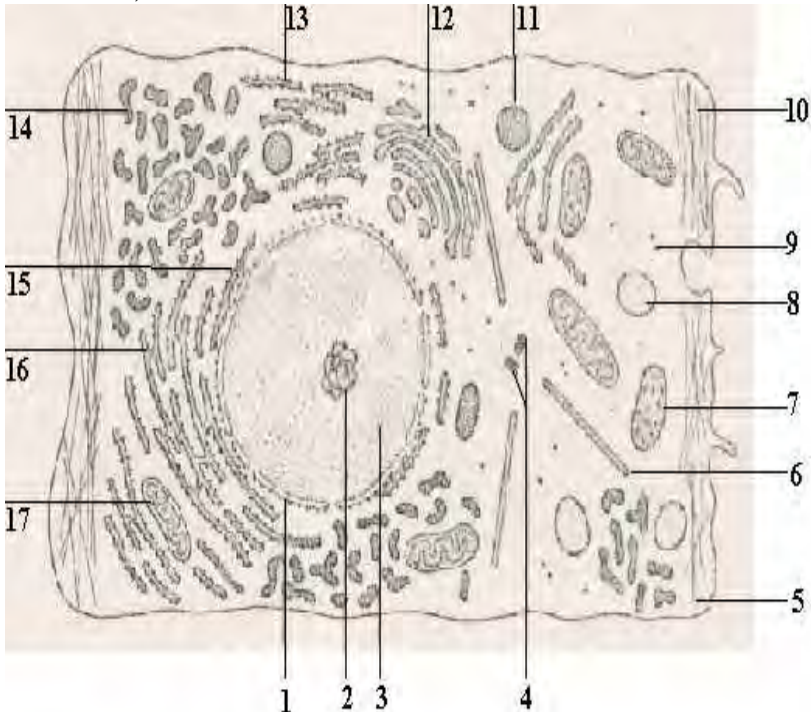
All living things, including the human body, are made up of living cells. The cell is the structural and the functional unit with which the human body is built.

Just as many kinds of materials may be used in the construction of a large building, in the same way many different kinds of cells are found in the body.

### Structure of a Cell

A cell has the following parts:

1. Cell membrane, the outer covering
2. Protoplasm, the main substance of the cell
3. Nucleus, which controls activities of the cell



**Fig 5.1- Structure of the cell**

**1.nuclear envelope**

**2.nucleolus**

**3.chromatin**



- |                                           |                            |                           |
|-------------------------------------------|----------------------------|---------------------------|
| <b>4.centrioles</b>                       | <b>5.micro filament</b>    | <b>6.microtubule</b>      |
| <b>7.lysosome</b>                         | <b>8.secretory vesicle</b> | <b>9.free ribosome</b>    |
| <b>10.plasma membrane</b>                 | <b>11.peroxisome</b>       | <b>12.golgi apparatus</b> |
| <b>13.granular endoplasmic reticulum</b>  |                            |                           |
| <b>14.agranular endoplasmic reticulum</b> | <b>15.nuclear pore</b>     |                           |
| <b>16.bound ribosome</b>                  | <b>17.mitochondria</b>     |                           |

## Functions of Cells

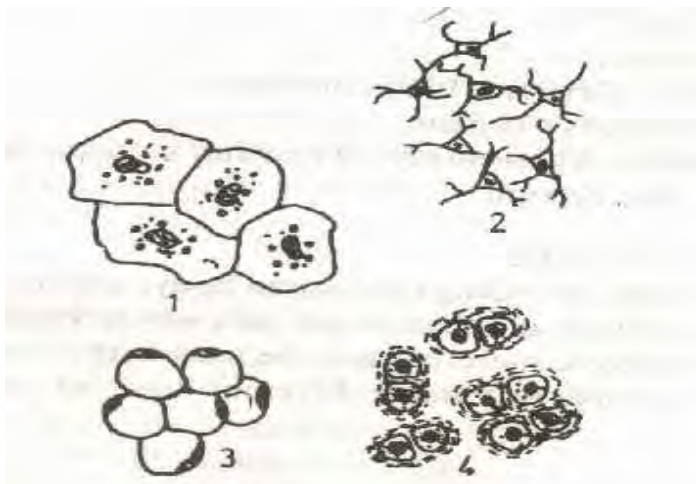
By functions we mean the activities

1. Digestion – intake of the nutrients
2. Excretion – eliminating of wastes
3. Respiration – taking and using oxygen, and giving out carbon- di-oxide
4. Growth and repair
5. Some cells move about, and some have special functions
6. Reproduction is by each cell simply dividing into two.

## Tissues

Tissues are materials made up of groups of similar cells. Cells are of various types, and tissues vary according to the types of cells in their structure. There are four main types of tissue in the human body:

1. Epithelial, which forms coverings like the skin, lining membranes and glands
2. Connective, which helps to support and bind parts together, holding them in place.
3. Muscular – this tissue has the power of contraction, which causes movement
4. Nervous – conducts nerve impulses



**Fig 5.2. Various kinds of cells**

1). Epithelium 2). Connective 3) Fat 4) Cartilage

## Organs and Systems

Tissues are jointed into larger units called organs, such as the heart, lungs, brain, liver. Each organ is made up of types of tissue, which enable it to do its special work.

A system is a group of organs, which together carry out one of the essential functions of the body. There are nine systems, listed below. All of these systems work harmoniously together in a healthy body.

	<b>Systems of the body</b>	<b>Functions</b>
1	Skeletal System	Support, movement and protection
2	Muscular System	Movements and production of heat
3	Nervous System	Control of body activities
4	Circular System	Transport of food and oxygen, waste products, etc
5	Respiratory System	Taking in of oxygen and giving off carbon-di-oxide
6	Digestive System	Taking in food, breaking it down into nutrients for use by body cells

7	Excretory System	Removal of waste matter from the body
8	Endocrine (glandular) System	Production of hormones, which influence the activity of cells
9	Reproductive System	Enables new individuals to be born.

## I - Skeletal System

The skeleton is the bony framework of the body. The human skeleton is wonderfully made in such a way, that it can support the body in the erect position and enable the body to move freely.

### Structure and Functions of the Skeleton

The skeleton is composed of 206 separate bones in the adult, and the cartilages and ligaments, which help to unite the bones at the joints.

#### The Parts of the Skeleton are:

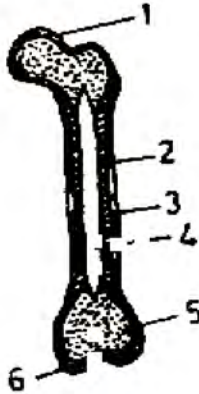
1	Skull, made up of	29	bones in all (including middle ear bones and the hyoid
2	Spine or Vertebral column	26	separate bones
3	Thorax or Chest	25	(12 pairs of ribs and the breast-bone)
4	Upper limbs, each 32 bones–	64	
5	Lower limbs, each 31	62	
	Total	206	

### Types of Bones

- Ø **Long bones** – These are in the arms, legs and fingers. They act as levers to move parts.



A).Femur

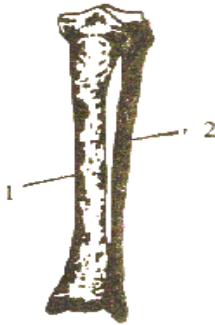


B). Vertical section

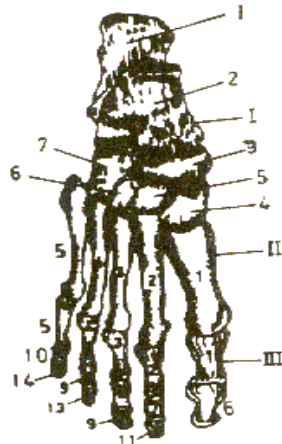
- 1) Hyaline Cartilage,
- 2) Periosteum,
- 3) Compact Bone,
- 4) Medullary Cavity,
- 5) Cancellous Bone
- 6) Hyaline Cartilage

**Fig. 5.3 Diagram of Long Bone**

Ø **Short bones** – As in the wrists and ankles.



Leg born



The foot bone

**Fig.5.4. Short Bones**

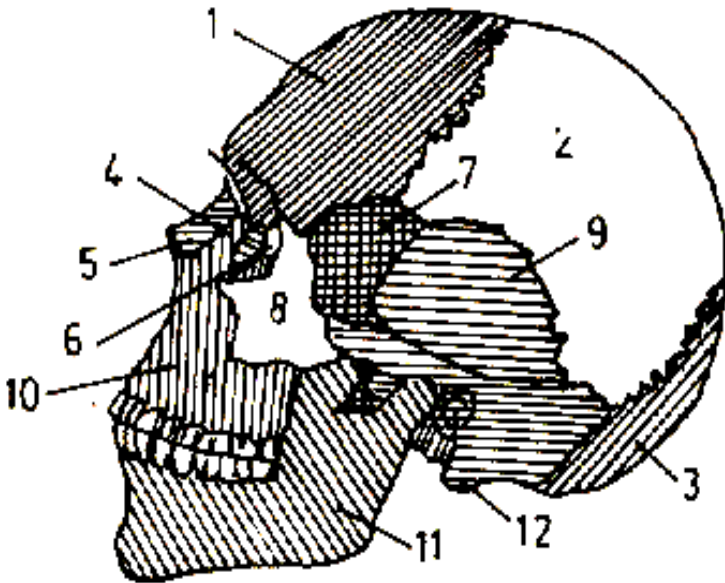
1. Tibia
2. Fibula

- I. Tarsal Bones 7;
- II. Metatarsal bones 5;
- III. Phalanges 14.

- Ø **Flat bones** – These includes the ribs, shoulder blades, and bones of the cranium.
- Ø **Irregular bones** – Such as the bones of the face and of the spine.

### Functions of the Skeleton

- 1) Supports and gives shape to the body
- 2) Protects internal organs
- 3) Movements with the help of muscles
- 4) Forms blood cells.



**Fig 5.5. The Skull**

- |                    |                   |                  |
|--------------------|-------------------|------------------|
| 1) Frontal Bone    | 2) Parietal Bone  | 3) Occipital     |
| 4) Lacrimal Bone   | 5) Nasal Bone     | 6) Ethmoid Bone  |
| 7) Sphenoid Bone   | 8) Malar Bone     | 9) Temporal Bone |
| 10) Maxillary Bone | 12) Mandible Bone |                  |

## Structure of Skeletal Tissue

- 1) **Periostium**-This is the outer covering of bones. It carries blood vessels and nerves.
- 2) **Compact Bone**-Mainly composed of calcium and phosphorus, is the hard outer layer of bone tissue.
- 3) **Cancellous Bone**, inside is a porous type of bone with many tiny spaces. It helps to make the bones light.
  - a) **Red Marrow**:This fills the spaces in cancellous bone. Red bone marrow produces red blood cells and some white blood cells.
  - b) **Yellow Marrow**: This is mainly composed of fat cells. Yellow bone marrow fills the shaft of the long bone making them light.
  - c) **Cartilage**: A strong plain tissue like hard rubbers is attached to some bones. eg The end of the nose, and of its ribs).

In babies and children's bone consists of more cartilage, which is replaced by hard bone as the child grow. In children an injured bones bends instead of breaking, and this is called a "Greenstick fracture"

Ligaments are made of strong fibrous tissue and they hold bones together at the joints, allowing some movement when ligaments around a joint are stretched and torn without injury to bone this is called a "sprain"

The skull consists of two parts

- 1) The cranium, which is like a box in which the brain is well protected.
- 2) The bones of the face

The cranium is made up of eight bones as follows.

- 1) **Frontal bone**-Which forms the forehead and helps to protect the eyes.
- 2) **Parietal bone** one at each side of the top of the skull, joined in to the middle.
- 3) **Temporal bones**, one on each side below the parietals bones. These protect the inner parts of the ears.

- 4) **One occipital bone:** This forms the back of the head and part of the base of the skull. It has a large opening for the spinal cord to pass through.
- 5) **One sphenoid**, a hat shaped bone, which also forms part of the base of the skull. It has a little seat for the pituitary gland, and some holes for blood vessels and cranial nerves pass through.
- 6) **One ethmoid**, which forms the roof of the nose and in between the eyes. It has many small holes for the nerves of smell to pass through the brain.

**The face has the following fourteen bones:**

- Ø Two nasal bones, which form the bridge of the nose.
- Ø Two lacrimal bones, near the eyes, which contain the tear ducts.
- Ø Two cheek bones
- Ø Two upper jawbones, with upper teeth.
- Ø Two palate bones which join with the upper jaw bones in forming the hard palate.
- Ø Two curved bone, one in each side of wall of the nose.
- Ø Two vomer bones, which rests on the palate and helps to form the nasal septum.
- Ø One lower jaw bone, which consists of the horizontal part on which are the lower teeth, and two vertical parts, which meet the temporal bones. The “angle of the jaw” on each side is important. All the bones of the skull except the lower jaw are joined firmly together by fixed joints called “Sutures”
- Ø Sinuses. Some skull bones have hollow spaces called “Sinuses” which connect with the nose and are filled with air. Sinuses make the skull lighter, and help in the sound of the voice ‘Sinusitis’ is infection in these spaces. The main sinuses are the frontal ones above the eyes, and large antrum sinuses, one in each of the upper jawbones.

- Ø Hyoid Bones, this is a horse shaped little bone in the upper part of the neck. The tongue muscle is attached to this bone.

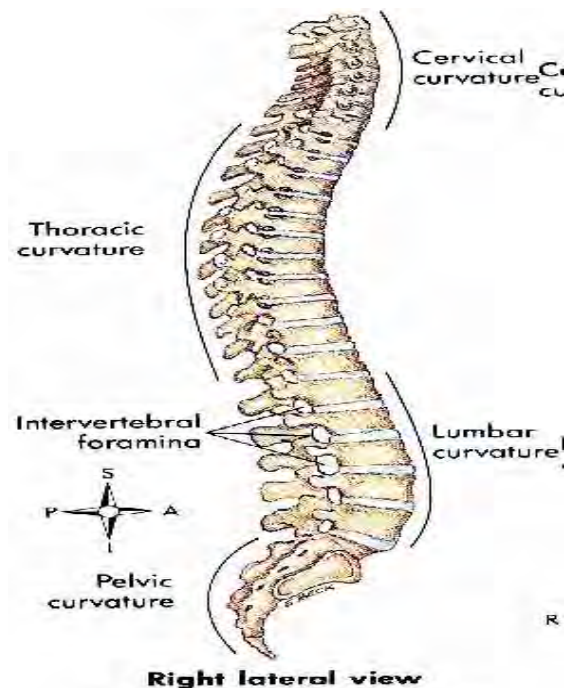
## **The Vertebral Column**

Spine or backbone is the central part of the skeleton. It supports the head and encloses the spinal cord. It consists of 33 irregular bones called “Vertebrae” but some are fused together and so these are actually 26 separate bones forming the spine.

The parts of the vertebral column are as follows:

- Ø cervical vertebral column in the neck region. The first two, called atlas and axis are important for nodding and turning the head.
- Ø 12 dorsal or thoracic vertebrae at the back of the chest. The ribs are joined to these vertebrae.
- Ø 5 lumbar vertebrae in the waist region. These are big and strong for giving support.
- Ø 5 sacral vertebrae are fused together to form the sacrum, a triangular shaped bone with a hollow anteriorly. The sacrum helps to form the pelvis.
- Ø 4 small vertebrae in the tail region are fused to form a small triangular bone called the coccyx. It is attached to the lower part of the sacrum.





**Fig 5.6 Vertebral Column**

### **The Thorax:**

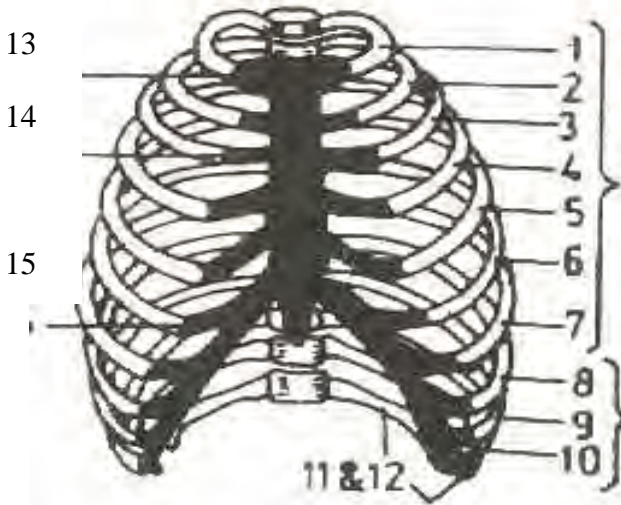
The Thorax or chest is formed by the sternum (Breast-bone) and costal cartilages in front, the ribs at the sides, and the twelve dorsal vertebral bones at the back.

The sternum is a flat bone, shaped like a dagger pointing downwards. The tip consists of a cartilage known as the **xiphisternum**. The upper part, like the handle is joined to the two collar bones. The costal cartilages are joined to the sides of the sternum and to the true ribs.

The ribs are twelve pairs of the long curved bones. The upper seven pairs are called **true ribs**. These are each attached to the sternum by its costal cartilages.

The next five pairs of ribs are called **false ribs** because they are joined by their cartilages to those of the ribs above and

not directly to the sternum. The last two pairs are not connected to the sternum at all, and are called **floating ribs**.



**Fig 5.7 The Thorax**

- |                                        |                   |
|----------------------------------------|-------------------|
| 1-7.True ribs.                         | 8-10. False ribs. |
| 11. and 12. Floating ribs 13. Sternum. |                   |
| 14. Costal cartilages                  | 15.Xiphisternum   |

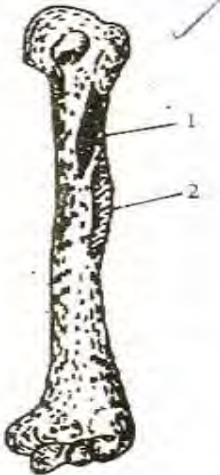
### **Functions of the Thorax**

- 1) Protection for the heart ,lungs,liver,stomach and spleen.
- 2) Support for the bones of the shoulder girdle and for the breast.
- 3) Important in respiration.

### **Bones of the upper limbs**

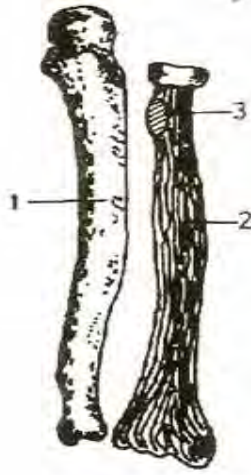
Each upper limb consists of thirty two bones.

- Ø One **collar bone** : These together with those of the other side form the shoulder bone
  - Ø **Shoulder girdle**
  - Ø One **humerus**, the bone of the upper arm
  - Ø One **radius**, the outer bone of the fore arm
  - Ø One **ulnar**, the inner bone of the forearm.
  - Ø Eight **carpal bones** of the wrist.
  - Ø Fourteen **phalanges** of the fingers.
- 
- Ø The collarbone (**clavicle**) on each side is a long bone with two curves. Its inner end is attached to the sternum, and outer end with the shoulder blade. The collarbone is easily felt at the lower and front part of the neck. It keeps the shoulder blade in place. When it is broken the shoulder drops forward and downwards.
  - Ø The shoulder blade (**scapula**) on each side is at the upper and outer part of the back of the thorax. It is a large flat, triangular shaped bone with a ridge or spine at the back. It takes part in the shoulder joint.
  - Ø The humerus is a long bone with a rounded head at the shoulders and a broad lower end at the elbow joint.
  - Ø The radius and ulnar bones of the forearm reach from the elbow joint to the wrist.
  - Ø The wrist consists of eight carpal bones. These short bones are arranged in two rows, proximal and distal, with four bones in each row.
  - Ø The palm consists of five long bones called **metacarpal**, which articulate with the distal row of carpal bones and with the proximal row of phalanges. The phalanges are long bones. The thumb has only two phalanges while the fingers have three each



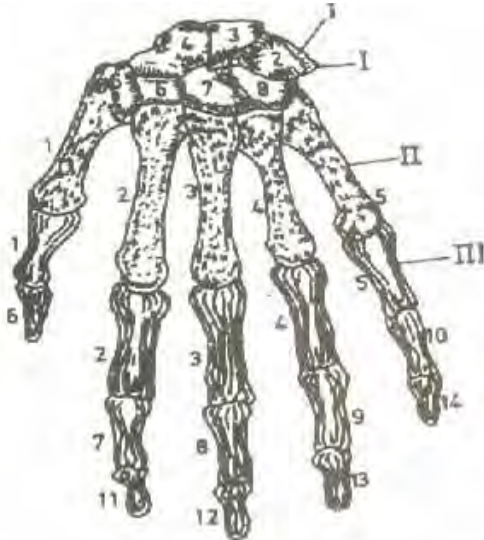
**Fig 5.8. The Humerus**

1. The Attachment of Pectoralis
2. The Attachment of Deltoid



**The Ulna and Radius**

1. The attachment of biceps



**Fig.5.9 The Hand**

- I. The carpal bones 8
- II. Metacarpal bones 5
- III. Phalanges bones 14



**Fig 5.10 The Innominate bone**

- |                           |                              |                 |
|---------------------------|------------------------------|-----------------|
| <b>1. Ilium</b>           | <b>2. Sacro- iliac Joint</b> | <b>3. Pubis</b> |
| <b>4. Symphysis Pubis</b> | <b>5. Ischium</b>            |                 |

### **Bones of the lower limbs:**

Each lower limb consists of thirty one bones:-

- Ø One **innominate** or hip bone,
- Ø One **femur**, the thigh bone,
- Ø One **patella** or knee cap,
- Ø One **tibia**
- Ø One **fibula** the lower leg bones
- Ø Seven **tarsal** bones of the ankle,
- Ø Five **metatarsal** bones of the foot,
- Ø Fourteen **phalanges** of the toes.

- 1) **The innominate bones**, one on each side, join with the sacrum to form the pelvis. Besides protecting the pelvic organs, the pelvis supports the abdomen and provides the deep sockets for the hip joints.

In the female, the true pelvis (lower part) is round so that the head, of the baby can pass through during

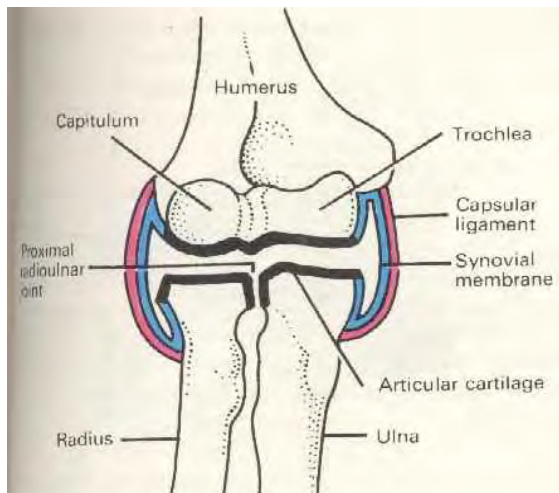
delivery. In the male the true pelvis is long, narrow and heart – shaped.

The innominate bone in a child is separated into three bones, which are fused together in the adult. Therefore the bone has three parts as follows:-

- (1) Ilium, the upper flat part, forms the false pelvis. Its upper ridge is called the iliac crest.
  - (2) Ischium, the heavy lower part, which supports the body when sitting.
  - (3) Pubis, the front part. The pubic bones from the joint called symphysis pubis.
- Ø **The femur** (thigh bone) is the longest and strongest bone in the body.
  - Ø **The patella** (kneecap) is a small bone at the front of the knee joint.
  - Ø **The tibia** is the long bone on the inner side of the lower leg
  - Ø **The fibula** is a long thin bone on the outer side of the leg.
  - Ø **The tarsal bones** of the ankle. These are seven short bones. The largest is the heel bone (**calcaneum**). The upper bone takes part in the ankle joint.
  - Ø **The metatarsal bones** are five long bones in front of the feet. They support the toes.
  - Ø **The toe bones (phalanges)** are fourteen in number. Like the finger bones, they are small long bones, two in the big toe and three in each of the other toes.

## JOINTS

A joint is the point at which two or more bones meet. Bones are held together at the joints by other connective tissue such as fibrous tissue, cartilage, ligaments and tendons. Muscles are the means by which all movement in the body takes place, including the movement of bones at some of the joints.



**Fig.5.11. Joints**

### **Types of Joints**

- 1) **Fibrous joints** - in which there is no movement. eg. the 'sutures' of the skull. The bones are joined together closely as though they were stitched (sutured) together.
- 2) **Cartilaginous joints** – in which two bones are joined by a pad of fibrous cartilage, which allows slight movement. They are found in the vertebral column and pelvis.
- 3) **Synovial joints** – which are freely movable, are found in the limbs and jaw.
- 4) **Ball and Socket joints** – the round head of one bone fits into the cavity of another bone : eg., shoulder and hip joints.
- 5) **Hinge joint** – the only movements are flexion and extension. eg., elbow, knee.
- 6) **Gliding joint** – the bones glide on one another and allow fairly free movements. eg., wrist and ankle joint.
- 7) **Pivot joint** – turning is the only movement. eg. The movement between the atlas and axis for turning the head.

## MUSCULAR SYSTEM

The function of a muscle is to contract and to produce movement. A muscle is made up of bundles of fibers held together. These are the red flesh of the body. There are three types of muscles:-

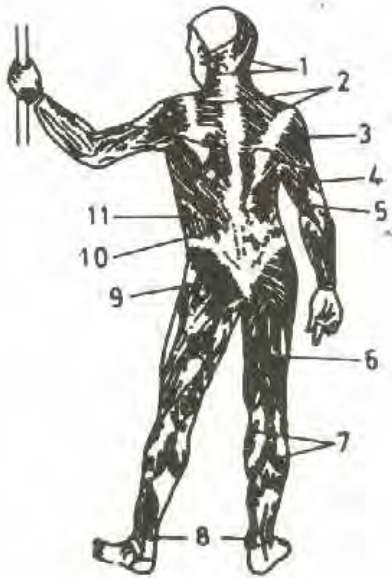
- 1) **Voluntary muscles**:- These are connected with the skeletal system, causing the joints to move. They are called voluntary because their action can be controlled by the will.
- 2) **Involuntary muscle**:- Work without conscious control by the individual and are found in the internal organs.
- 3) **Cardiac muscle**:- A special type found only in the heart. The fibres are striped but the muscle is not under control of the will.



1. Sterno-mastoid
2. Deltoid
3. Pectoralis
4. Biceps
5. Quadriceps
6. Trapezius
7. Teres major
8. External oblique
9. Rectus  
abdominus
10. Ilio-psoas
11. Sartorius

**Fig. 5.12 Muscles of the body (Anterior)**





1. Sternocleidomastoid
2. Trapezius
3. Deltoid
4. Triceps
5. Biceps
6. Hamstrings
7. Gastrocnemius
8. Achilles tendon
9. Gluteus maximus
10. External oblique
11. Latissimus

**Fig 5.13 Muscles to the body (Posterior)**

## NERVOUS SYSTEM

This functions like a telephone system. With the brain as the head office, and nerves like the telephone wires communication takes place with all parts of the body. By means of numerous messages sent and received, the various tissues and organs of the body work in harmony.

The nervous system has two parts:-

- 1) **Central nervous system** – made up of the brain and cranial nerves, spinal cord, and spinal nerves.
  - a. It controls the voluntary muscles of the head, trunk and limbs.
  - b. It receives messages from sense organs such as skin, eyes and ears.
- 2) The **Autonomic nervous system** – this is made up of sympathetic and parasympathetic nerves. It controls involuntary (internal) muscles and glandular secretions.

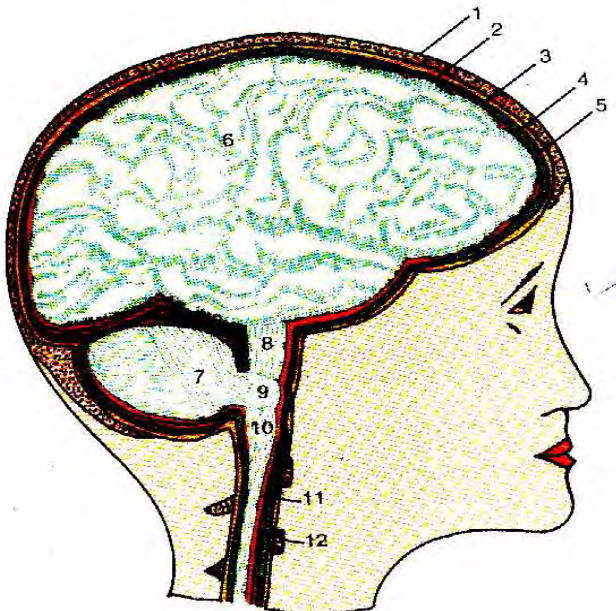
## The Brain

This is the most important part of the central nervous system. It is well protected in the cranial cavity and has the following parts.

- 1) The cerebrum or forebrain
- 2) The cerebellum or hindbrain
- 3) The midbrain
- 4) The brain stem - consisting of pons and medulla

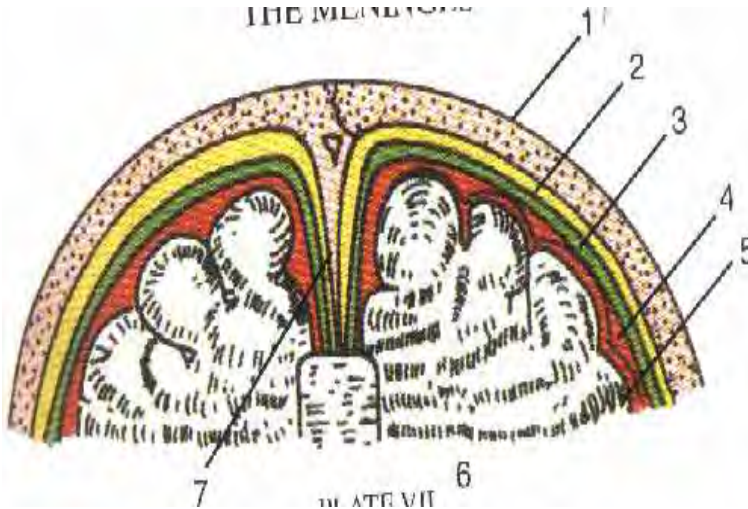
## Functions of Cerebrum

- 1) **Frontal lobe :-**
  - Ø motor centres controlling voluntary muscles.
  - Ø speech centre
  - Ø mental powers such as memory, intelligence and will
- 2) **Parietal lobe :-** The sensory centres for sensations of touch, pain, heat, cold and pressure
- 3) **Temporal lobe :-** For hearing
- 4) **Occipital lobe :-** For vision (sight)



**Fig. 5.14 The Brain and the Spinal Cord**

- |                       |                 |                 |
|-----------------------|-----------------|-----------------|
| 1. Bone               | 2. Dura mater   | 3. Arachnoid    |
| 4. Theca              | 5. Pia mater    | 6. Cerebrum     |
| 7. Cerebellum         | 8. Mid-brain    | 9. Pons varolii |
| 10. Medulla oblongata | 11. Spinal Cord | 12. Vertebrae   |



**Fig. 5.15 The Meninges**

- |              |               |              |          |
|--------------|---------------|--------------|----------|
| 1. Bone      | 2. Dura mater | 3. Arachnoid | 4. Theca |
| 5. Pia mater | 6. Cerebrum   | 7. Fissure   |          |

### **Functions of the cerebellum**

1. Helps to maintain balance
2. Helps to maintain muscle tone
3. Co-ordinates the work of muscles

### **Functions of the mid-brain**

- 1) Acts as a pathway for messages to and from the cerebrum
- 2) Contains reflex centres for vision and hearing
- 3) Contains centres for controlling body temperature (**hypothalamus**), the emotions and sexual responses

## Functions of the medulla

- 1) Connects the brain with the spinal cord and conveys messages. It is in the medulla that cerebral nerve fibres cross over to the opposite side.
- 2) Contain nerves centres, which control the vital functions of circulation and respiration.
- 3) Contain reflex centres of swallowing, vomiting and coughing.

## Cranial Nerves

There are twelve pairs of cranial nerves which come out from the brain and brain-stem. They pass through holes in the skull to the eyes, ears, face, tongue, throat, etc.

The tenth cranial nerve called vagus, give branches to the larynx, lungs, heart and digestive organs. The vagus nerve function as part of the autonomic nervous system.

## The Spinal Cord

The spinal cord is a cord of nervous tissue, the thickness of a little finger and about 12cm long. It lies inside a canal formed by the vertebrae. It connects above with the medulla where the back of the neck joins the skull and extends to the level of the first lumbar vertebrae.

## Functions of the Spinal Cord

- 1) Receives motor impulses from the frontal lobe of the cerebrum, and passes them on to muscles via the spinal nerves.
- 2) Receives sensations from the skin and other tissues and relays the message to the brain.
- 3) Reflex action. This is the quick response in the spinal cord itself. eg., if you touch something hot, the message received in the spinal cord is immediately flashed to the muscles of the arm, and before the news reaches the brain you have taken your hand away.

## The meninges and cerebro spinal fluid (C.S.F)

The brain and spinal cord are covered by three membranes called **meninges**.

- 1) **Durameter** is the outer, thick elastic cover. It lines the skull and spinal cord.
- 2) **Arachonoid**, a thin middle membrane. It is a loose covering and under is a space called ‘**theca**’ (**sub arachonoid space**) containing cerebro spinal fluid (C.S.F.)
- 3) **Piameter** is closest to the nerve tissue and carries blood vessels. When these membranes get infected, the condition is known as **meningitis**.

## Cerebro spinal fluid (C.S.F)

This is a clear fluid, which circulates both inside and outside the brain and spinal cord. A little cerebrospinal fluid is sometimes removed by ‘lumbar puncture’ to help in diagnosing disease of the nervous system.

## Functions of cerebrospinal fluid

- 1) It acts as a water cushion to protect the brain and spinal cord from shocks and jarring.
- 2) It nourishes and cleanses, washing away water and toxins.

## THE CARDIOVASCULAR SYSTEM

The cardiovascular system is the transport system of the body. It is the means by which food, Oxygen, water and other requirements are conveyed to the tissue calls, and their waste products are carried away.

The heart is important organ of the circulatory system it is placed behind breastbone and within the thoracic cage. It is hollow muscular organ. It is enclosed in a sac known as the pericardium. It is about the size of a person’s clenched fist and weighs around 300gm in a man and 250 gm in a woman.

The heart has four chambers, two atria (upper) and two ventricles lower. Valves connect the upper and lower chambers.

The right and left sides of the heart are totally separated by a muscular wall and there is no communication between them.

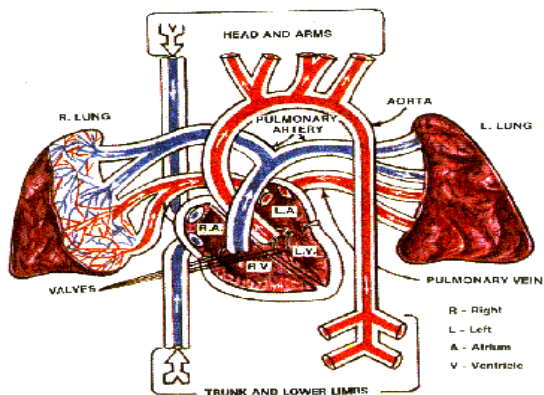
The right side of the heart receives the oxygenated (impure) blood collected from the different parts of the body through small and big veins, which enters the lungs. In the lungs the blood is oxygenated and carbon-di-oxide and metabolic waste are removed.

The left side of the heart receives (pure) blood from the lungs and supplies it to the entire body through the major blood vessel (aorta) and its numerable branches (arteries and capillaries).

The left ventricle generates greater pressure than the right ventricle to enable the blood to be pumped throughout the body. Hence the left ventricle is more thicker and more muscular.

The coronary arteries branch out (left and right coronary arteries) from the root of the aorta near its origin from the left ventricle. Both the coronary arteries branch into smaller vessels, which are distributed all over the surface of the heart. For efficient pumping, it is necessary for the heart to beat at a reasonable rate of 60 –90 beats per minute, which is achieved through controlled electrical impulses (conductive system)

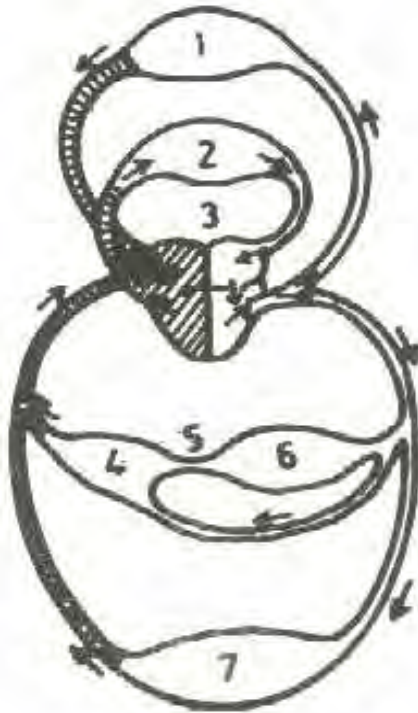
#### HEART AND BLOOD CIRCULATION



**Fig.5.16. Heart and blood Circulation**

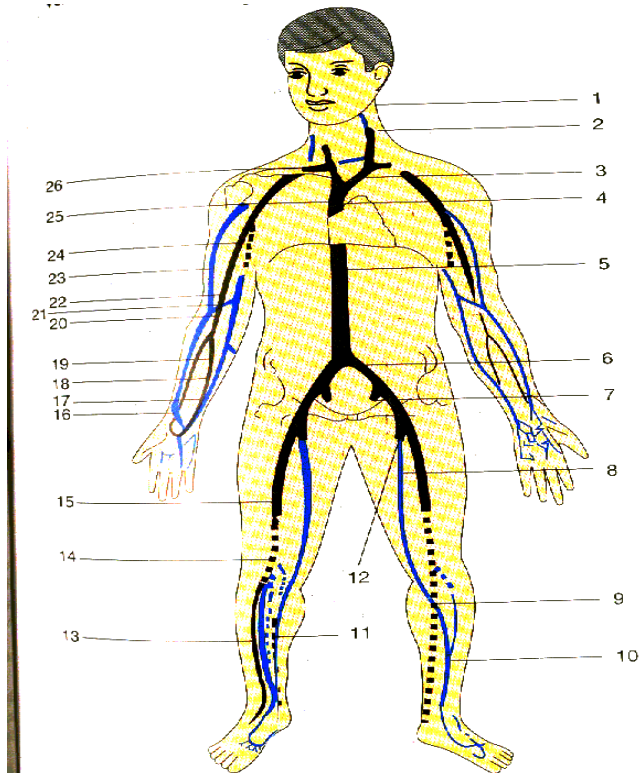
**Functions of Heart**

- 1) It draws blood back from the capillaries and veins.
- 2) It sends blood into the lungs where it is oxygenated.
- 3) It sends blood through the aorta to all the parts of the body.



**Fig 5.17 A Diagram Showing the systemic circulation**

- 1. Head, neck and upper limbs**
- 2. Lungs**
- 3. Heart**
- 4. Liver**
- 5. Portal vein**
- 6. Digestive organs**
- 7. Lower parts of the body**



**Fig 5.18 Major blood vessels in the body**

**1.L.External jugular vein. 2.L.Internal jugular vein  
3.L.Brachiocephalic vein. 4. Superior venacava.**

**5. Inferior venacava. 6.L.Common iliac vein 7.L.Internal iliac vein. 8. L.Long Saphenous vein 9.L.Long saphenous vein. 10.L.Short saphenous vein. 11.R.Posterior tibial vein. 12.L.External iliac vein. 13.R.Anterior tibial vein. 14.R.Popliteal vein. 15.R.Femoral vein. 16.R.Cephalic vein. 17.R.Ulnar vein. 18.R.Median vein 19.R.Radial vein. 20.R.Median cubital vein. 21.R.Basalic vein.**

**22.R.Brachial artery 23.R.Cephalic vein. 24.R.Axillary vein. 25.R.Brachiocephalic vein R.Subclavian vein**



### **The parts of the circulatory systems are**

- 1) Blood
- 2) The heart, which is the pump forcing blood into circulation.
- 3) The blood vessels in which the blood travels.
- 4) The lymphatic system is closely connected, and can be considered a part of the circulatory system.

### **Functions of Blood**

- 1) Carries oxygen to the tissues by means of red blood cells.
- 2) Carries food to the tissues.
- 3) Carries away waste products from the tissues to the excretory organ.
- 4) Carries hormones from the glands to the target tissues.
- 5) Fights germ infection by means of the white cells and antibodies.
- 6) Distributes heat and helps to maintain body temperature.
- 7) Helps to maintain water balance in the body.

### **The Lymphatic System and Spleen**

The lymphatic system is a special type of circulatory system. It is composed of

- 1) The lymph
  - 2) The lymphatic vessels
  - 3) The lymph glands or nodes
- Ø **Lymph** is a fluid like plasma and the tissue fluid but in cases of infection it may contain bacteria. Lymph is really the tissue fluid, which finds its way into the lymphatic vessels.
  - Ø **Lymphatic Vessels** : Lymphatics start in tissue spaces between the cells and start like the veins. Inside them are the valves which help the flow of lymph towards the two largest lymphatic vessels.
  - Ø **Lymph glands** are small bean – shaped structures, situated along the course of the lymphatics. They are found mainly

grouped together in the neck, axilla, groins and in the pelvic and abdominal cavities. Lymphoid tissue is also found in the tonsils, pharynx and intestines.

### **Functions of Lymph.**

Lymph glands help to protect the body from infection by

- 1) Filtering the lymph to prevent germs from getting into the blood stream, and fighting to overcome them.
- 2) Producing new lymphocytes for the blood.

### **The spleen**

This is a dark purple organ situated in the left side of the upper abdomen, behind the stomach.

### **Functions of the Spleen are**

- 1) It produces new lymphocytes for the blood.
- 2) It helps to fight infection.
- 3) It destroys worn out red blood cells and removes the iron from them to be re-used.
- 4) It acts as a reservoir for Red Blood Cells, which it releases in time of need, such as a sudden haemorrhage.

## **DIGESTIVE SYSTEM**

Digestion is the process by which the complex forms of food materials are broken down into simpler form of food materials suitable for absorption.

Once the food is digested, it must be transferred to the blood stream and the process by which this transfer occurs is called absorption. Digestion, and absorption are two chief functions of the digestive system.

### **The Alimentary Canal**

The alimentary canal is a long muscular digestive tube extending through the body. It is about 750cm in length. It consists of the following parts:

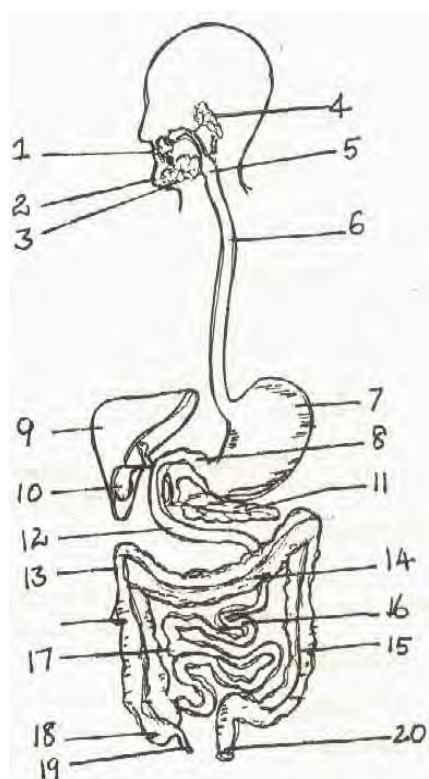
- 1) The mouth
- 2) Oesophagus

- 3) Stomach
- 4) Small intestine
- 5) Large intestine
- 6) Rectum
- 7) Anal canal

The gastro intestinal tract consists a tube composed of four principal layers. From outside inwards –

1. Tunica adventitia or serous coat
2. Tunica media or the muscular coat
3. Tunica intima or the inner lining of the blood vessel

1. Mouth
2. Salivary Glands
3. Submandibular gland
4. Parotid salivary gland
5. pharynx
6. Oesophagus.
7. Stomach
8. Pylorus
9. Liver
10. Gall bladder
11. Pancreas
12. Duodenum
13. Ascending colon
14. Transverse colon
15. Descending colon
16. Jejunum
17. Ileum
18. Caecum
19. Vermiform Appendix
20. Rectum



**Fig 5.19 Digestive System**

## Functions of Digestive System

- 1) Break down the food substances into small particles.
- 2) Digestion of food substances.
- 3) Absorption of food substances.
- 4) Excretion of undigested food and toxic substances.

The digestive system may be divided into two group of organs

The alimentary canal, which is a continuous, passage way beginning at the mouth, where the food is taken in and terminating at the anus where the solid products of digestion, which are not absorbed, are expelled from the body.

The accessory organs – which are vitally necessary for the digestive process, do not happen to be the part of the alimentary canal.

## Physiology of Digestion

Digestion takes place in three parts of the alimentary canal. They are

- 1) Mouth – with the help of saliva from three pairs of salivary glands.
- 2) Stomach – with the help of gastric juice from the stomach wall and
- 3) Small intestine – with the help of pancreatic juice from the pancreas, bile juice from the liver and the intestinal juice from the small intestine.

Most of the digestive juices contain the chemicals known as enzymes.

## The Mouth

The mouth is also called the oral cavity. In the mouth there are about 32 teeth. They are

- Molars – 12
- Pre molars – 8
- Canines – 4
- Incisors – 8

The teeth help to break down the food substances into small particles. Into this space there projects a muscular organ called the tongue. It helps in chewing and swallowing and is one of the principal organs of speech.

The tongue has on its surface a number of taste buds by means of which we can differentiate sensation of taste. (bitter, sweet, sour and salty).

In chewing, the teeth grind the food into pieces while the secretion of saliva moistens and lubricates the food.

Saliva is a juice secreted by three pairs of salivary glands in the mouth. They are

- 1) The parotid
- 2) The sub – maxillary and
- 3) The sub – lingual gland
  - The parotid – located in front and below each external ear.
  - The sub–maxillary – located between the mandible and the muscle of the floor of the mouth.
  - Sublingual – located in floor of the mouth.

Salivary secretion is a reflex process, both conditioned and unconditioned reflexes are involved. A new born infant salivates when food is placed in its mouth. But the sight and smell of food does not produce any reaction.

Later by associating the sight and smell of food with its taste, the child learns that the food has certain qualities and these every qualities are afterwards capable of eliciting salivary secretion.

### **Functions of Saliva**

1. It keeps the mouth moist and helps in speech.
2. It helps in the process of mastication of the foodstuff and in preparing it into a bolus suitable for digestion.
3. It dilutes hot, irritant substances and thus prevents injury to the mucous membrane.
4. Saliva contains two enzymes. Ptyalin and maltase, which converts starchy food into sugars.

5. Saliva helps in the sensation of taste.
6. It helps heat loss. This is mainly found in animals. When they become hot, more saliva is secreted causing greater heat loss.
7. It helps in the excretion of certain substances like drugs containing mercury, lead and iodine.

### **Digestion in the mouth**

The food is chewed; and saliva the first of the digestive juices acts on it, softens it so that it can be easily swallowed. Saliva contains two enzymes

(1) Ptyalin

(2) Maltase.

Ptyalin splits starch into maltose and maltase converts maltose into glucose.

### **Oesophagus**

The oesophagus is a tube connecting the pharynx and the stomach. It conveys the food from the mouth to the stomach.

### **Stomach**

The stomach is an enlarged section of alimentary tube. Both ends of the stomach are guarded by valves which normally permit the passage of substances in only one direction.

The proximal end is guarded by cardiac sphincter and the distal end of the stomach is guarded by pyloric sphincter.

Stomach acts as a pouch for holding large quantities of food so that frequent feeding can be avoided. The stomach mixes up the food thoroughly by its movements. It also destroys the bacteria by the high acidity.

### **Digestion in the Stomach**

The food material after being broken down by mechanical grinding and having been converted into a bolus with the saliva reaches the stomach, which pours a large quantity of gastric juice everyday.

The mechanism of production of gastric juice is a chemical or hormonal in nature. When the digested food is in contact with the gastric mucosa, a chemical extract is formed. It is named as gastrin, and belongs to the group of gastro intestinal hormones. This causes the discharge of gastric juice.

The gastric juice contain mainly hydrochloric acid and enzymes

- 1) Pepsin
- 2) Renin
- 3) Lipase.

### **Functions of hydrochloric acid**

- 1) Kills bacteria present in the food
- 2) Softens the connective tissues of meat
- 3) Converts inactive form of pepsinogen into active form of pepsin.

### **Functions of enzymes**

- 1) Pepsin - converts protein into peptones.
- 2) Rennin - converts the undigestible protein of milk into easily digestible one.
- 3) Lipase ..converts fats into fatty acids and glycerol.

### **Liver**

The liver is one of the largest and important organ situated on the right side of the abdomen. Bile is secreted by the liver.

### **Functions of Liver**

- 1) The production of bile from the pigment of broken down red blood cells.
- 2) The removal of toxins that have been absorbed from the intestine.
- 3) The storage of simple sugar in the form of glycogen which is released as needed in the form of glucose
- 4) The storage of fat soluble vitamins including A, D, E and K.
- 5) The manufacture of heparin, which prevents clotting of the blood in the blood vessels.

- 6) The formation of antibodies which acts against disease producing organisms.
- 7) The production of certain blood plasma proteins such as fibrinogen and albumin.
- 8) The removal of a waste product called urea from amino acids.

### **Bile juice**

- Ø In the absence of bile, fats are not digested properly which results in fatty diarrhoea. Thus bile is essential for digestion though it does not contain any digestive enzymes.
- Ø The bile is taken by the hepatic duct and is stored in the gall bladder, which is situated on the lower surface of the liver. The bile is concentrated and sent to the duodenum through the cystic duct when chyme from the stomach enters the duodenum.
- Ø Bile contains bile salt, bile pigment, mucin and water. The two pigments present in the bile are called
  - i. **bilirubin** and
  - ii. **bili verdin.**
 These pigments give colour to the faeces and urine.
- Ø Due to liver damage or obstruction of the bile duct, bilirubin collects in excess quantities in blood and changes the colour of the skin and the eyes. There may be changes in the colour of the urine also. This is called **jaundice**.

### **Functions of Bile Juice**

- 1) It stimulates the functions of the proteolytic enzymes and the amylase.
- 2) It dissolves fatty acid and glycerol.
- 3) It coordinates with lipase to convert the fat into fatty acids.
- 4) It helps in the absorption of the fatty acid and glycerol.



- 5) With the help of other digestive juices it neutralizes the acidic nature of food.

### **Pancreas**

Pancreas an elongated structure lying across the posterior wall of the abdomen. It is an exocrine as well as an endocrine gland. The pancreas not only produces the pancreatic juice but also secretes hormones eg. Insulin and glucagon. It is released directly in the blood which regulates the blood glucose level. The pancreatic juice contains three enzymes. They are

- 1) Trypsin
- 2) Amylase and
- 3) Lipase.

Besides these enzymes pancreatic juice contains large quantities of sodium bicarbonate which neutralizes the hydrochloric acid present in the gastric juice secreted by the stomach.

### **Large intestine**

The large intestine is as the name implies has the larger diameter than the small intestine. It is about 150cm in length. The small intestine opens into the large intestine.

There is a small pouch at the beginning part of the large intestine. This pouch is called the **caecum**. Large intestine consists of ascending colon, transverse colon and descending colon

### **Rectum and anal canal**

The descending colon of large intestine opens into last part, the rectum and anal canal. It is about 15cm to 20cm long. The rectum serves as a temporary storage area for the indigestible and non-absorbable substances.

The narrow portion of the distal part of the large intestine is called the **anal canal**, which leads to the outside through an opening called the **anus**.

## Small intestine

The small intestine is about 600cm long in adult extending from the pyloric sphincter of the stomach to intestine. The first 25cm or 30cm of the small intestine is called the **duodenum** followed by the **jejunum** and the remainder is the **ileum**.

## Digestion in the Small Intestine

The food in the stomach is partially digested by the gastric juice, but the small intestine is the organ in which the completion of the digestion and absorption occurs.

In the duodenum there is an opening into which lead two ducts carrying digestive juices i.e., pancreatic juice via the pancreatic duct from the pancreas and the other, bile, via bile duct from the liver.

Bile is not primarily a digestive juice because it contains no enzyme but it helps in the digestion of fats. The bile salts emulsifies fats and helps the pancreatic lipase to act and digest it easily. The pancreatic juice contain three powerful enzymes. They are:

- 1) **Pancreatic:** Converts carbohydrates into simple sugars like **amylase** glucose, fructose and galactose.
- 2) **Trypsin** : Converts peptones into poly peptides. In the beginning trypsin is present in the form of inactive trypsinogen.

This trypsinogen is converted into active trypsin by the action of enterokinase which is secreted in the small intestine.

- 3) **Pancreatic lipase:** Converts fats into fatty acids and glycerol.

After pancreatic digestion, the food which is now called chyme proceeds further in the intestine. Here it comes into contact with succus entericus which is a juice produced by the

small intestine. Succus entericus contains three enzymes. They are :

- 1) **Pepsin** : It converts poly peptides into amino acids.
- 2) **Nucleotidase** : Converts Nucleotide, into nucleoside.
- 3) **Nucleosidase** : Converts nucleosides into pentose, purine and pyrimidin.

It also contains three sugar-splitting enzymes called lactase, maltase and sucrase converting the respective sugars into simple sugars, mostly glucose. It also has lipase, which acts on fats and converts them into fatty acids and glycerol.

The final product of digestion of the carbohydrates is glucose while the proteins are amino acids and fats are fatty acids and glycerol.

## ABSORPTION OF FOOD

Absorption is the process by which water, minerals, vitamins and end products of digestion are absorbed through the mucosa of alimentary canal (especially the small intestines) into blood stream either directly or via lymphatic vessels.

In the stomach there is little absorption. Water, alcohol, glucose and simple salts are absorbed to a certain degree. The main absorption occurs in small intestines especially in the lower (ileum) part, the upper part of the small intestine is mainly associated with the process of digestion.

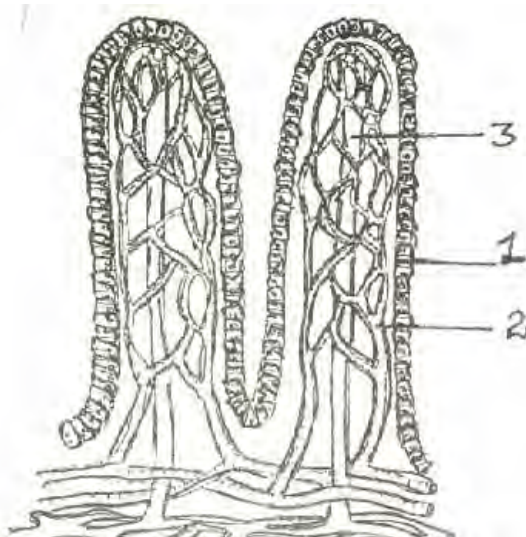
The mucous membrane of small intestine is covered with minute finger like projections known as **villi**. Each villus contains arteriole, a venule, a capillary network and a lacteal (lymphatic vessel).

Nutrients that diffuse through the epithelial cells which covers the villus are able to pass through the capillary walls and the lacteal enters the blood.

About 90% of all absorption takes place throughout the length of the small intestine. The other 10% occurs in the stomach and large intestine.

Both monosaccharides and amino acids are absorbed by a positive pressure gradient between the intestinal content and the blood as well as by an active process involving enzymatic reactions and transported in the blood stream to the liver via the hepatic portal system.

The excess amount of glucose is converted into glycogen and stored in the liver, when need arises glycogen is converted into glucose and is utilized by the body.



**Fig 5.20 Structure of Villus**

**1. Epithelial cells. 2. Blood Vessel 3. Lacteal**

Vitamin K which are synthesized by the bacteria in the colon are absorbed from the large intestine. Large quantities of water are however absorbed from the large intestine and the fluid content of the small intestine are converted into the pasty consistency and ejected through the opening called the **anus**.

### **Movements of the gastro intestinal tract**

**Deglutition** is the process by which the masticated food is transported across the pharynx and reaches the stomach. Due

to contractile movements of the stomach, the food is well mixed up with gastric juice.

After being in the stomach for 3 or 4 hours the pyloric sphincter opens pushing the food into the duodenum.

The intestine shows three important types of movements. They are:

- 1) **Pendular movement** These movements are induced by contraction of the circular and longitudinal muscles of the intestine. This movement contributes to the thorough mixing of chyme with the digestive juice.
- 2) **Segmental movement:** This movement occurs by the contraction of the circular muscles, which produces transverse folds, dividing the intestine into short segment.
- 3) **Peristaltic Movement:** It is the wave like contraction of the alimentary canal, which propels the food through the gastro intestinal tract.

## RESPIRATORY SYSTEM

Respiration is the process of gaseous exchange between an organism and its environment. In the higher animals, and man the gaseous exchange between the tissues and environment is termed as **internal** or **tissue respiration**.

The exchange of gases between the body and the environment-taking place in the lungs is termed as **external respiration**. The external respiration constitutes processes of **inspiration** and **expiration**.

Inspiration is an active muscular contraction while expiration is merely a passive act of the relaxation of respiratory muscles.

### **Structure of respiratory system**

The respiratory system is responsible for taking in oxygen and giving off carbon-di-oxide and water. It is divided into the upper respiratory tract and lower respiratory tract.

§ **The upper respiratory tract** : Nose, Mouth, the throat, pharynx, the larynx, and numerous sinus cavities in the head.

§ **The lower respiratory tract** : The trachea, the bronchi and the lungs, which contain bronchial tube bronchioles and alveoli or air sac.

The two **lungs, which are the principal organs of the respiratory system are situated in the upper part of the thoracic cage.**

They are inert organs, i.e. they do not work by themselves, but function with the help of a muscular wall known as the **diaphragm**.

The pharynx is a tube approximately 12cm in length, which is a common opening for both digestive and respiratory system.

It connects the oral cavity to the oesophagus (food tube) and the nasal cavity to the larynx and wind pipe. The opening into the larynx is oval in shape and guarded by the leaf like epiglottis.

The **epiglottis** folds down over the opening like a trap door while food or liquid is being swallowed, it prevents the entry of foreign substances into the respiratory passage ways.

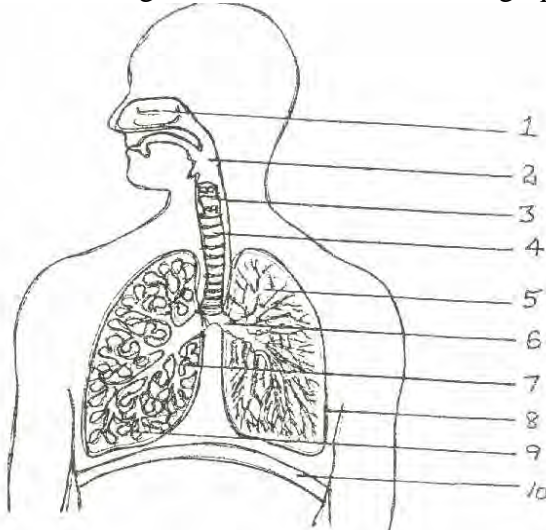
The closure of the epiglottis, when we swallow, is a reflex action and can be interfered with, if one attempts to talk and swallow at the same time.

If this happens one may choke to death in the absence of immediate assistance. From the pharynx, air passes through the trachea, which is 12cm long and 1.5cm in diameter. The tract, consists of a large number of C shaped cartilage rings. The larynx or the **voice box** is at the top of the trachea. It is the vocal cords inside the box, which by its coming together and going away from one another produces different sounds.

The trachea branches at its lower end into the right and left bronchi which enters the lungs. Within the lungs these

passageways repeatedly divide, forming microscopic tubes called **bronchioles**.

Each bronchiole ends with several clusters of microscopic elastic air sacs called **alveoli**, which are the functional units of lungs. This resembles bunch of grapes.



**Fig 5.21 Structure of lungs**

**1.Nasal cavity 2. Throat 3. Larynx(Voice box)**

**4. Trachea(wind pipe) 5. Lung 6. Bronchi 7. Bronchial tubes**

**8.Pleura 9.Alveoli (air sacs) 10.Diaphragm**

The paired lungs lie within the large cavity of the chest, the thoracic cavity. The lungs are grayish colour and are spongy in appearance.

The right lungs has three lobes – upper, middle and lower, and the left lung has two lobes – upper and lower. The floor of the thoracic cavity is formed by a dome like muscular structure called **diaphragm**. Each lung is enclosed by two layers of membrane called the **pleural membranes**.

The chest cavity is also lined with this membrane. This layer being known as the parietal pleura, while visceral pleura lines the lung parenchyma.

## Respiration

We breathe continuously from birth to death, day and night, in health and disease.

**Respiration may be defined as the mechanical process of breathing in and out, a function which involves both the respiratory system and muscles of the respiration.**

The 2 phases of breathing are

- 1) **Inhalation** – during which the air is drawn into the lungs
- 2) **Exhalation** – which refers to the expulsion of air from the alveoli.

## Inhalation

The diaphragm when relaxed is a flattened dome shape structure pointing upwards to the lungs. During the process of inhalation it contracts.

It flattens, pulls down the thorax, increases the volume of the thorax, and thus decreases the atmospheric pressure in the lungs. This causes air to rush in during inspiration.

## Exhalation

During the process of exhalation, the diaphragm relaxes, the thorax is pushed up, the volume decreases and the atmospheric pressure increases and air rushes out of the lungs.

The inspired air, which contains oxygen, passes down into the billions of minute air chambers or air cells known as alveoli, which have very thin walls. Around these walls are the capillaries of the pulmonary system.

It is at this point that the fresh air gives off its oxygen to the blood and takes carbon di oxide from the blood by diffusion, which is then expelled with the expired air.

## Physiology of Respiration

The respiratory center of the brain is located in the medulla, immediately above the spinal cord. From this center nerve fibers extend down into the spinal cord. From the neck



part of the cord, these nerve fibers continue through the **phrenic** nerve to the diaphragm.

The diaphragm does not continue to work if it is cut off from its nerve supply. If one nerve is cut, the diaphragm of that side is paralysed. This center is governed by variation in the chemistry of the blood.

If there is an increase in  $\text{CO}_2$  in the blood, the cells of the respiratory center are stimulated and they in turn send impulses down the phrenic nerve to the diaphragm.

### **Respiratory rate**

In adults, the respiratory rate is 14 to 18 times per minute. Children breathe more superficially, and therefore have a higher respiratory rate.

### **Importance of respiration**

- 1) It supplies oxygen and eliminates carbon dioxide.
- 2) It excretes volatile substances like ammonia, ketone bodies, essential oils, alcohol and water vapour, etc.,
- 3) By adjusting the amount of carbon-dioxide elimination, it helps to maintain the acid base balance.
- 4) It helps to maintain the normal body temperature.
- 5) It is necessary for the maintenance of optimal oxidation-reduction process in the body.

### **EXCRETORY SYSTEM**

During the vital activity of the human and animal body, significant amounts of organic degradation products are produced, a proportion of which is not utilized by cells.

These degradation products must be eliminated from the body. The end products of metabolism which have to be removed from the body are called **excreta**, and the organs that remove them are called **excretory** organs.

The lungs eliminate carbon-dioxide and water vapour into the environment. The gastrointestinal tract excretes a small

amount of water, bile acids, pigments, cholesterol, certain drugs (when administered into the body) salts of heavy metals (cadmium, iron, manganese) and indigestible food residues (faeces).

The skin performs its excretory function by sweat and sebaceous glands. Sweat glands excrete sweat, which contains water, salts urea, uric acid, creatinine and other compounds.

The main excretory organs are the kidneys which eliminate in the urine most of metabolites primarily those containing nitrogen. (urea, ammonia, creatinine).

### **Kidneys**

The kidney is a bean shaped organ about 5cm long, 3cm wide and 2cm thick. They are situated at both sides of the lumbar area.

The weight of the kidney is about 200–250gms. On the inner or medial border there is a notch called the **hilum** at which region the artery, the vein and the ureter connect with the kidney.

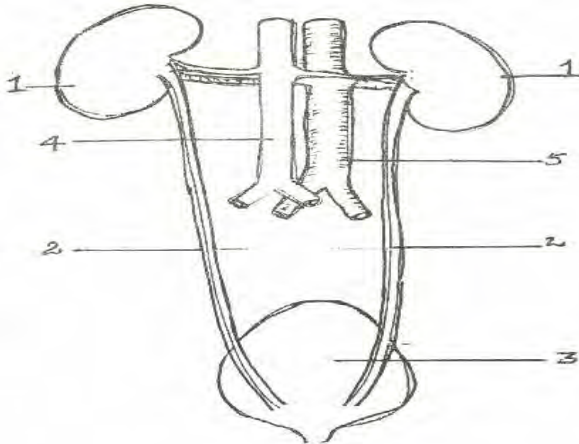
Each kidney has a pelvis, where the urine collects. The urine is drained off from the pelvis by the **ureters**. The ureters end in the urinary bladder, which can hold about 800ml of urine. The urethra carries the urine from the bladder and voids it at convenient intervals.

In a longitudinal section, the kidney is seen to consist of outer cortex and inner medulla. The medulla consists of 10 – 18 conical or pyramidal shaped structures, known as the **renal pyramids**.

The base of a renal pyramid faces towards the cortex. The pelvis is the funnel shaped upper end of the ureter.

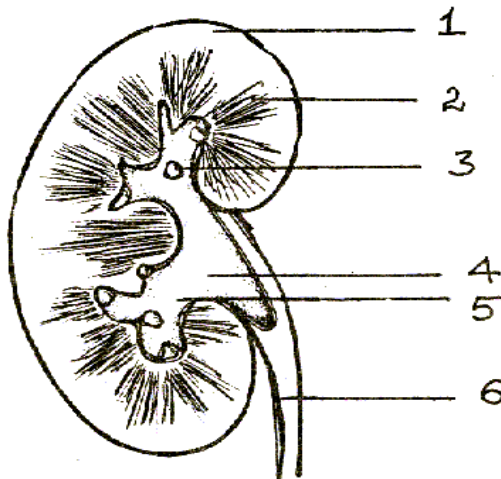
Microscopic examination of mammalian kidneys reveals that each kidney consists of about a million nephron, which are the functional unit of the kidney.

The number of nephrons varies depending on species. The nephron consists of the glomerulus, the renal tubules, the collecting tubules and the associated blood vessels.



**Fig 5.22 The Urinary System**

**1.Kidney 2.Ureters 3.Bladder 4.Aorta 5.Inferior Vena cava**



**Fig 5.23 Diagrammatic section of the Kidney**

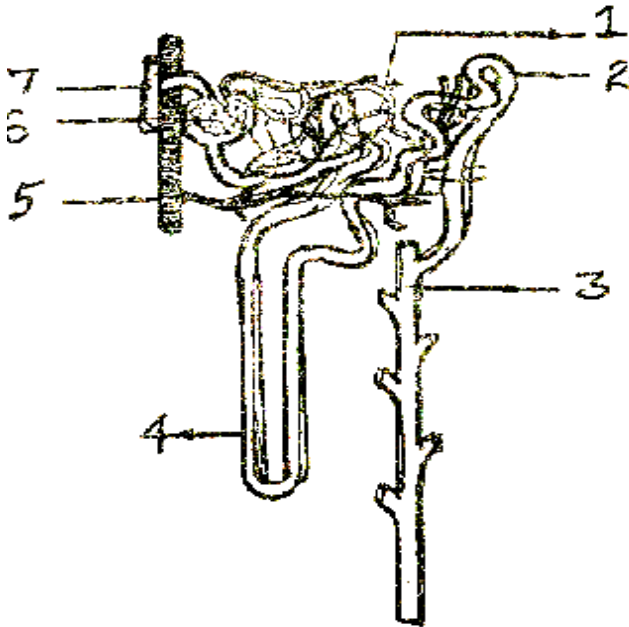
**1. Cortex      2.Medulla      3. Pyramid      4.Apex of pyramid  
5.Pelvis      6.Ureter**

The glomerulus is a tuft of capillary vessels, which is invaginated into an epithelial cup shaped lining called the **Bowman's capsule**.

The renal artery divides into innumerable branches and the ultimate divisions of the artery form a tuft of capillaries called **glomerulus**.

The blood pressure inside the glomerulus drives out the fluid though it is opposed by the osmotic pressure. This fluid thus driven out is collected in the Bowman's capsule.

The filtrate in the capsule consists of all the constituents of blood, except the plasma proteins and the formed elements of blood. This process is known as **ultra filtration**.



**Fig 5.24 Nephron**

**1.Convoluted tubule 2.Distal convoluted tubule 3. Collecting tubules 4. Loop of henles 5.Vein 6. Glomerulus 7. Artery**

The filtrate then passes to the descending ascending portion of loop (Henles loop) and then to the convoluted tubules (proximal and distal) and finally reaches the collecting duct.

A large number of substances are reabsorbed (**reabsorbtion**) by the tubules, a few substance added (**secretion**) to the filterate and the final urine is formed.

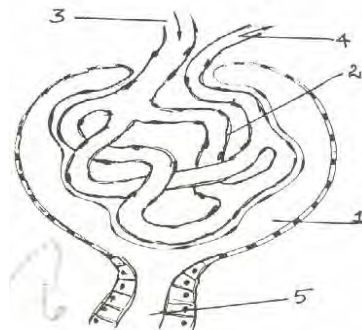
For example, water, glucose, some salts and a small fraction of urea are reabsorbed from the primary urine into the blood. Usually about 200 litres of filtrate is formed per day of which one and a half litres is sent out as urine.

Therefore, nearly 198½ litres of water has to be reabsorbed every day by the kidney tubules. About 80% of this re-absorption takes place in the proximal tubules and the rest is absorbed in the distal tubules, and sent back to the blood stream.

Re-absorption is carried out with the help of **antidiuretic hormone** which is secreted in the posterior pituitary gland.

Thus each nephron is able to ‘clean’ or filter a very large volume of blood without causing the body to lose much of its water or other essential materials.

The composition of final urine radically differs from that of the primary urine. It is devoid of glucose, amino acids, certain salts (phosphates and sodium) and has a very high urea concentration.



**Fig 5.25 Diagram of the Glomerulus and its capsule**  
**1. Glomerular capsule 2. Glomerulus 3. Afferent arteriole**  
**4.Efferent arterioale 5. Renal tubule**

The urine thus formed collects into the bladder through the ureters which are long, slender, muscular tube that extend from the kidney to the lower part of the urinary bladder.

The bladder is a muscular bag which collects the urine and voids it at intervals through the urethra. When the bladder is empty, the muscular wall becomes thick and the entire organ feels firm.

The organ may increase from the length of 2 or 3 inches to 5 inches or more inches.

A moderately full bladder holds about 800ml of urine. When 400ml of urine is collected in the bladder, the normal desire for micturition is felt. The process of expelling urine through the urethra is called urination or **micturition**.

The act of micturition is a reflex action. It is controlled by the action of circular muscles, continuous with those in the walls of the bladder and in the urethra.

## **Skin**

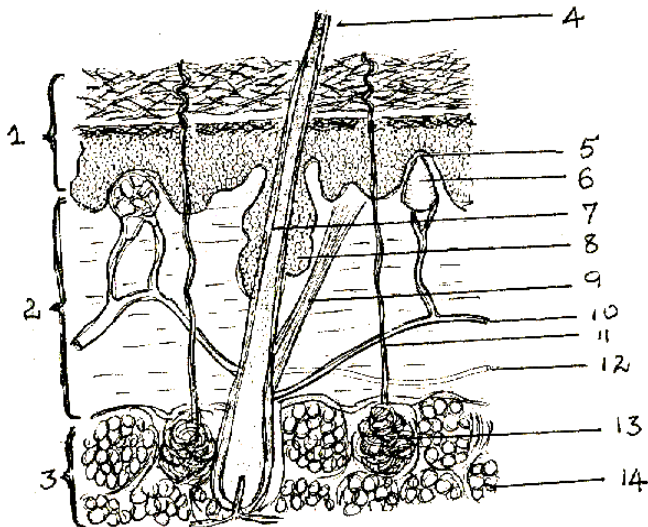
The skin forms a protective outer covering around the entire body. It consists of an outer thin layer called the **epidermis** and an inner thick layer called the **dermis**. Numerous structures such as glands, sense organs and appendages such as hair nails are embedded in the skin.

## **Epidermis**

This is the outermost thin portion of the skin. No blood vessels are found in this layer. It derives its nutrition from lymph. Nerves are found in this layer. The epidermis consists of four layers of cells.

They are:

- 1) The Stratum Corneum
- 2) The Stratum Lucidum
- 3) Stratum Granulosum and
- 4) The Stratum Malphigi



**Fig 5.26 Diagramatic section of the skin.**

**1.Epidermis 2. Corneum 3.Subcutaneous 4.Hair Shaft 5.Papilla 6.Tactile corpuscle 7.Hair root 8.Sebaceous gland 9.Errector Muscle 10.Nerve 11.Duct of sweat gland 12.Blood vessel 13.Papilla of the hair 14.Adipose tissue**

**(i) The Stratum Corneum :**

The cells in this layer are thin, scale like, dead, and cornified. The corneous layer is thickened in those parts of the body such as the palm and sole of the foot. It is thinner in the lips. Hoofs, horns, nails, feathers, the scales of the fishes are all special outgrowths of this layer.

**(ii) The Stratum Lucidum :**

This is a thin more or less transparent layer, in which the cells are indistinct.

**(iii) The Stratum Granulosum :**

It consists of three to five layers of flattened cells, containing dark granules of irregular shape.

#### (iv) The Stratum Malphigi :

This layer is the lowermost and broadest layer of the epidermis. It is capable of active multiplication. This layer is made up of polyhedral cells. These cells are called prickle cells. The innermost cells of this layer contains pigment granules called **melanin** which give the skin its colour.

#### Dermis

Situated below the epidermis is the most thickest dermis formed mostly of connective tissue which is richly supplied with blood vessels and nerves.

The boundary line between the dermis and epidermis is neither smooth nor straight; it is rather zig zag because of the conical projection of the dermis into the epidermis.

These projections are called **dermal papillae**. This layer is tough, flexible and highly elastic.

#### It contains the following :

- 1) Fine elastic fibres
- 2) Capillary blood vessels and lymphatics
- 3) Sensory nerve endings of various types
- 4) Hair roots or hair follicles
- 5) Sweat glands
- 6) Sebaceous glands and
- 7) Involuntary muscle fibres. These muscle fibre, called *errectores pilorum* are attached to the hair follicle and when these muscles contract, the hairs become vertical and ‘goose-skin’ is brought about.

#### Glands :

There are two sets of glands in the skin. They are

1. The sweat glands and
2. The sebaceous glands.



Each sweat gland consists of a long tube, which at one end opens on to the surface through the sweat pore. At the other end, in the deeper part of the dermis, the tube forms a coiled mass with a blind end.

In the coiled portion of the sweat gland there are glandular cells, which separate water and small quantities of metabolic waste products from the blood that circulates through the capillary network associated with the gland.

The sweat passes through the sweat pore and evaporates from the surface by taking heat from the skin. The sweat glands are present in large amounts on the palms, soles, forehead and in the armpits.

The sebaceous glands are irregularly shaped sac – like glands that open into the hair follicles. The oily secretions (sebum) of these glands make the hair, water proof and protect the skin from drying effects of the atmosphere due to high temperatures and low humidity.

### **Sensory Nerve Endings**

Numerous sensory nerves specialized to pick up stimuli that cause; sensations of touch, pressure, pain, heat and cold are scattered in the skin.

They are connected to the brain by nerve fibres. Stimuli picked up by the sense organs are transmitted to the brain where they are interpreted to give the correct information.

### **Appendages**

Hair and nails are appendages of the skin formed as a result of the out growth or thickening of the epidermis.

### **Functions of the skin**

The skin is not merely an outer covering for the body but it serves a variety of functions.

1. **Protection:** The skin protects the inner parts of the body from mechanical injuries. A healthy skin also protects the body from the invasion of disease causing germs.

The nails, hoofs, and horns are also defensive appendages of the skin.

2. **Excretion:** Like kidneys, the skin through its sweat glands, eliminates salts, and metabolic waste products in the form of sweat.
3. **Sensory function:** The numerous sense organs and nerve endings hidden in the skin make it an important sensory structure that picks up different stimuli and informs the brain of such changes in the environment.
4. **Production of vitamin D :** The skin contains a substance called 7-de-hydro cholesterol which is converted into vitamin D by ultra – violet rays of the sun.
5. **Regulation of body temperature:** - By conduction, convection and radiation – a large amount of heat is lost from the body. The subcutaneous fat and hairs act as non – conductors of heat. Evaporation of sweat takes away a large amount of heat from the body.
6. **Water balance:** Formation and evaporation of sweat is an important factor in the regulation of water balance of the body.
7. **Acid - base equilibrium:** Sweat being acid in reaction a good amount of acid is excreted through it. In acidosis, it becomes more acid and in this way helps to maintain a constant reaction in the body.
8. **Secretion:** -Sebum which is secreted by the sebaceous glands helps to keep the skin greasy and prevents drying. Sweat is secreted by sweat gland. Milk is secreted by mammary gland. The mammary glands are the skin structures. They are the modified sebaceous glands.
9. **Storage function:** The subcutaneous tissue can store –
  - (a) Fat
  - (b) Water
  - (c) Salts
  - (d) Glucose and such other substances.

## ENDOCRINE SYSTEM

The glands of the body may be divided into those with and external secretion (**exocrine glands**) and those with Internal secretion (**endocrine glands**).

Example of exocrine glands are the sweat, lachrymal and mammary glands which pass their secretion along the ducts to the external surface of the body and the glands of the mouth, stomach, and intestine which pass their secretions along ducts into the alimentary tract.

The endocrine or ductless gland on the other hand have no ducts or openings to the exterior. Their secretions are passed directly into the blood stream and transmitted to the tissues.

A **hormone** is a chemical substance produced by the endocrine glands and their overall function is to regulate the activities of various body organs and their functions. The first hormone was discovered by Bayliss in 1903.

**The main endocrine glands in the body are**

- 1) Thyroid
- 2) Parathyroid
- 3) Islets of Langerhans
- 4) Adrenal gland
- 5) Pituitary and
- 6) sex glands.

### Ø **Thyroid Gland**

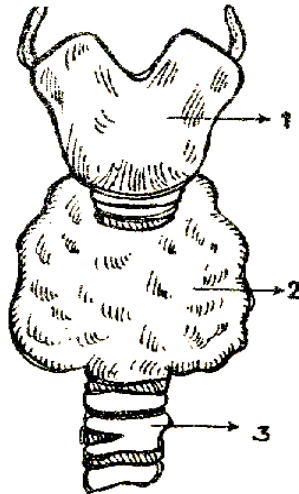
The largest of the endocrine glands is the thyroid which is located in the neck region. The thyroid gland weighs 25gms in a healthy adult. It has two oval parts called the lateral lobes on either side of the trachea.

These two lobes are connected by a narrow band called isthmus. The entire gland is enclosed by a connective tissue capsule.

This gland produces hormone, **thyroxine** rich in iodine. Thyroid gets iodine from the blood stream. It is then fixed with the amino acids thyroxine compounds.

Two molecules of diiodo – thyroxine combine to form thyroxine.

By eating vegetables grown in iodine – containing soils or by eating sea – foods and iodised salt the body gets sufficient amount of iodine for the production of thyroxine.



**Fig 5.27 Thyroid gland**

**1. Thyroid Cartilage 2. Thyroid gland 3. Trachea**

Thyroid stimulating hormone (TSH) produced by the Anterior pituitary lobe increases the activity of thyroid gland. Whenever, the thyroxin level falls below a particular level TSH is stimulated.

### **Functions of Thyroxin**

- 1) Helps to regulate tissue growth and development
- 2) Increases the BMR and thus raises the body temperature.
- 3) It controls the metabolism by regulating the anabolic and
- 4) catabolic process.
- 5) Stimulates the cells to break down the proteins for energy.

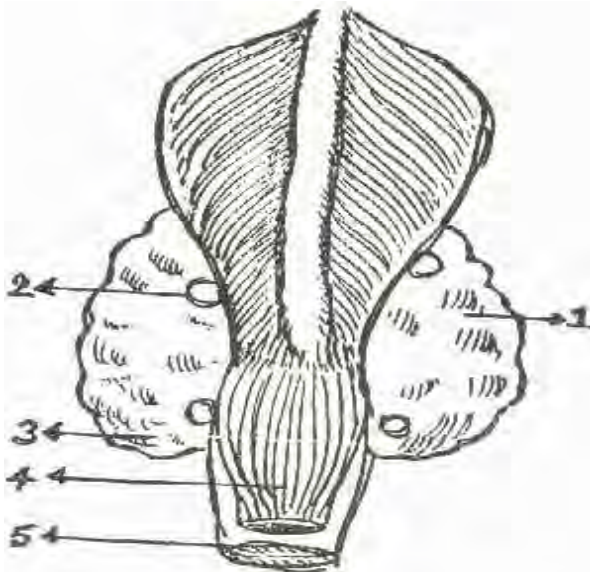
- 6) Decreases the break down of fats
- 7) Increases the break down of body glucose and enhances the glucose absorption.
- 8) Calcium and phosphorus are removed from the bones and excreted in increased amounts.
- 9) Helps in the conversion of beta – carotene into vitamin A.

### Ø **Parathyroid Gland**

These are two tiny oval pair (6mm x 2mm) of glands situated at upper and lower poles of lateral lobes of thyroid gland. It secretes the hormone parathyroxine.

### **Functions of parathyroxine**

- 1) Increases the concentration of organic acid in the bone.
- 2) Increases the calcium and phosphorus solubility
- 3) Increases the reabsorption of calcium from the bones resulting
- 4) in increased serum calcium level.
- 5) Increases phosphate excretion in the urine.
- 6) Increases the reabsorption of calcium from the renal tubules.
- 7) Promotes the absorption of calcium and phosphorus from the
- 8) intestine.
- 9) Stimulates the process of lactation in mammary gland.



**Fig 5.28 Parathyroid gland**

1. **Right Parathyroid gland** 2. **Left parathyroid gland**
3. **Thyroid gland** 4. **Alimentary canal** 5. **wind pipe**

### Ø **Islets of Langerhans in the pancreas**

The pancreas is both an exocrine gland secreting digestive juice through a duct into the duodenum and an endocrine gland secreting hormone into the blood stream.

It consists of head, body and tail. The head fits into the curve of duodenum. Then body and tail are directed towards the left. The pancreatic islets represent the endocrine part of the pancreas.

Most of the islets are located in the tail and only a small number in the head of the pancreas. There are two different types of cells in the islets of Langerhans. The alpha cells and beta cells are very important.

The alpha cells secrete a hormone **Glucagon** whereas the beta cells secrete **insulin**.

### Functions of Glucogan

- 1) Increases the blood glucose level
- 2) Break down the liver glycogen into glucose.
- 3) Stimulates the break down of lipid in adipose tissue.

### Functions of Insulin

- 1) Converts glucose into glycogen and accelerates the transport of glucose from the blood into the cells.
- 2) Decreases the blood sugar level
- 3) Builds up the glycogen store in the liver.

### Ø Adrenal Gland

The adrenal or supra renals are two small glands each one situated above a kidney. Adrenal gland consists of two different parts each of which acts as a separate gland.

The inner area is called **medulla** which is brown in colour while the outer area is called the **cortex** which is lighter in colour.

#### Adrenal cortex

It is composed of three layers. They are

- 1) Zona glomerulosa (outer layer)
- 2) Zona Faciculate (middle layer)
- 3) Zona reticularis (inner layer).

The adrenal cortex secretes three hormones. They are

- 1) **Glucocorticoids:** Acts as antagonists to insulin and cause increase in blood sugar.
- 2) **Minerlo corticoids:** Acts on sodium and potassium and help in the conservation of sodium in the body.
- 3) **Sex steroids :** Stimulates the development of the reproductive organs in child hood. It is responsible for development of secondary sex characteristics and reproductive function.

## Adrenal Medulla

Adrenal Medulla secretes hormones. They are adrenaline and nor – adrenaline.

### Functions of medullary hormones

- 1) Dilation of the pupils and improves visual acuity.
- 2) Increases both rate and amplitude of contraction of heart and raises the cardiac output.
- 3) Increases both rate and amplitude of respiratory movements and causes dilation of the bronchioles.
- 4) Raises the blood sugar level by means of glycogenolysis.
- 5) Increases the basal metabolic rate.
- 6) Dilation of the walls of intestine and the urinary bladder.

The functions of adrenaline are similar to that of nor – adrenaline except in a few instances. For example. Adrenalin increases the heart rate whereas nor – adrenalin decreases heart rate.

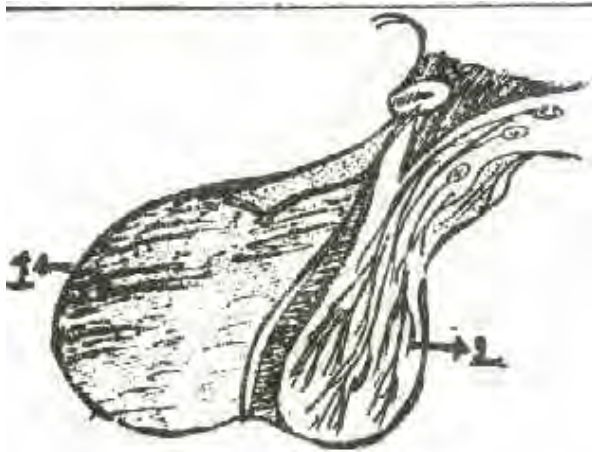
## Ø Pituitary Gland

The pituitary is a small gland about the size of a cherry. It is situated at the base of the brain. It plays a peculiar role in the system of endocrine glands.

It is referred to as the **master gland** of internal secretion because it controls the activities of other endocrine glands. The pituitary gland is divided into two main parts

- 1) Anterior pituitary and
- 2) Posterior pituitary.





**Fig 5.29 Pituitary gland**  
**1. Anterior lobe 2. Posterior lobe**

### Ø The Anterior Pituitary

This part secretes a large number of hormones. Many of them stimulate other glands. Its main hormones are:

- 1) Growth Hormone: It facilitates the growth of the bone and cartilage tissue. Over activity of the anterior pituitary lobe in childhood results in excessive growth and height. This condition is known as **gigantism**.

A decreased activity of the **anterior** pituitary causes a severe growth retardation leading to dwarfism.

Excessive production of growth hormone in an adult leads to excessive development of certain regions such as fingers and toes, feet, hands, nose, lower jaw, tongue, thoracic and abdominal organs. This condition is known as **acromegaly**.

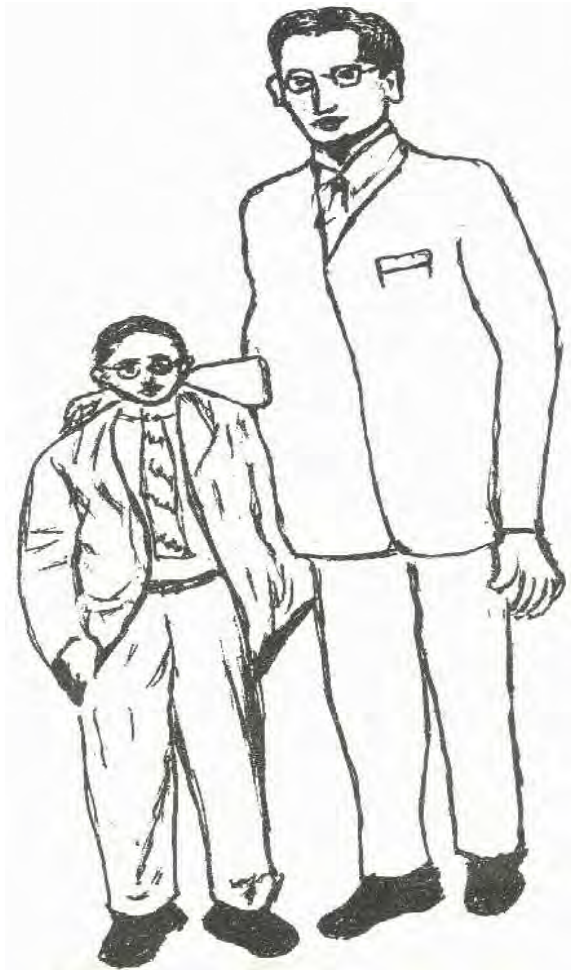
- 2) Thyrotropic stimulating hormone (TSH): This hormone stimulates the activity of the thyroid

gland. Administration of this hormone causes over growth of thyroid tissue.

- 3) Adrenocorticotrophic hormone: (ACTH): This hormone stimulates the cortex of the adrenal gland and increases the production of the hormones of adrenal cortex.
- 4) Follicle stimulating hormone (FSH): This hormone influences the growth, development and maturation and of the ovarian follicles. In males, the hormone stimulates the formation of sperm in the testes.
- 5) Prolactin hormone: It acts on the mammary gland and helps in the formation and flow of milk during lactation.
- 6) Luteinising hormone: It is required for the growth of follicle in the ovary and stimulates ovulation. In the absence of the hormone, no ovulation and production of the corpus luteum can occur. In males it stimulates the interstitial cells of testes to secrete testosterone.

### **Posterior lobe of the pituitary**

This lobe is just behind the anterior lobe. It produces two hormones. oxytocin and vasopressin. Oxytocin acts on the smooth muscles especially that of the uterus and produces powerful contractions of the uterus and helps in parturition.



**Fig 5.30 Pituitary gigantism(Right) in man compared with normal stature**

Vasopressin acts on the smooth muscle of the arterial system and increases the blood pressure. This hormone helps in the reabsorption of water from the distal convoluted tubule. Vasopressin deficiency is the cause of diabetes insipidus in which water is not

reabsorbed. So great amounts of urine are excreted with no sugar in it. such patients feel constantly thirsty.

### Ø **The sex glands**

The sex glands including the ovaries of the female and the testis of the male are important endocrine structures. The secretion of this glands play an important part in the development of the sexual characteristics.

The male sex gland secretes hormone called **testosterone** and is responsible for secondary sex characteristics. The female sex gland secretes a hormone called **estrogen** and it stimulates the development and functioning of the female reproductive organs.

There is one other hormone produced by female sex gland and it is called **progesterone**. This hormone assists in the normal development of the pregnancy.

## **REPRODUCTIVE SYSTEM**

The reproductive system consists of those organs whose function is to produce a new individual.

### **Male And Female Sexual Reproductive Organs:**

**The sex organs in the male and females can be divided as**

- 1) Primary sex organs i.e. those producing male and female gametes.
- 2) Secondary (or accessory) sex organs i.e. those concerned with carriage of gamete and other functions.

### **Primary sex organs in male and female**

There are a pair of testes producing **spermatozoa** (male gametes) while in females are a pair of ovaries producing **ovum** (female gamete). These primary sex organs in addition to producing male and female gametes secrete male and female sex hormones as well.

**Accessory sex organs in the male**

- 1) Epididymis gland
- 2) vas deferens
- 3) seminal vesicles
- 4) prostate gland
- 5) urethra
- 6) penis

**Accessory sex organs in the female**

- 1) fallopian tubes
- 2) uterus
- 3) vagina
- 4) clitoris

**Male reproductive system**

There is one pair of testes lying one in each scrotal sac. The scrotum is a bag of skin having two separate compartments.

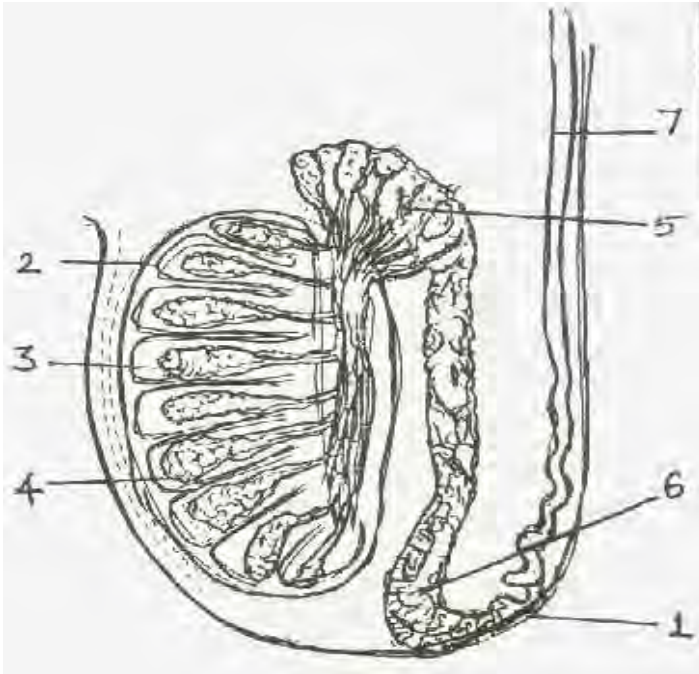
One for each testis lying at the root of the penis. Each testis is oval shaped measures. 5 x 3 x 2 cm and weighs about 15gm.

Each testis is covered with a layer of fibrous tissue called tunica albuginea. Many septae from this layer divide the testes into pyramidal lobules in which lie seminiferous tubules and the interstitial cells.

The seminiferous tubules are concerned with process of spermatogenesis. The interstitial cells called Ludwig cells lie between the tubules and secrete the testosterone (male sex hormone).

From the lining of these tubules spermatozoa are produced by the process of cell division. The epididymis is a very fine convoluted tube, being 4 – 6 meters long and joins the posterior part of the testes and vas deferens.

It stores the spermatozoa. The spermatozoa remain inactive in epididymis and are capable of surviving for months.



**Fig 5.31 Male reproductive System**

Vas deferens is a fibro – elastic duct 30 – 40 cm in length and extends from epididymis to end in ejaculatory duct which is joined by seminal duct and opens in prostatic urethra.

The prostate gland lies at the base of the urinary bladder and is covered with fibrous capsule which by a number of septa divides into many follicles.

The ejaculatory ducts lead from the seminal vesicle through the prostate gland to the urethra. In males the urethra is about 20 – 22 cm in length and serves the purpose of urination as well as ejaculation of semen.

### **Functions of the testes**

- 1) They produce and mature the male reproductive cells called spermatozoa

- 2) Secrete seminal fluid.
- 3) Secrete hormone testosterone directly into the blood.

### Functions of Hormone

- 1) **Androgen:** Maintains spermatogenesis and sexual activity
- 2) **Testosterone:** stimulates the development of the secondary sexual characteristics of the male such as the growth of beard, the deepening of the voice, the growth and the distribution of hair on the body, the growth and development of the accessory sex organs. Stimulate the production of sperms at puberty.

### Ovary

The gonads of the female are called ovaries and the cells that they produce are known as ova or egg – cells. each female has a pair of oval shaped structure, about the size of a almond.

Each ovary measures 3.5 x 2.5 x 11.5 cm and weigh 8 – 10 gms. They are situated at the back of the abdominal cavity at the hip level. An ovary consists of the following

- 1) **The germinal epithelium:** It is the outer part of the ovaries from which the primitive graafian follicles develop.
- 2) **Tunica Albuginea:** This is made up of connective tissues found under the germinal epithelium.
- 3) **Stroma:** It is a connective tissue network continuous with Tunica albuginea and containing involuntary muscle fibres. It supports the ovarian tissues and carries blood vessels, lymphatics and nerves.
- 4) **Graafian Follicles:** These are small islands of cells found at the peripheral part of the ovary. The female gametes called ova are produced in the graffian follicles.

When an ovum matures, the follicle in which it develops bursts. The follicle usually takes 10 – 14 days. This process of rupture of graffian follicle is called the “**ovulation**”.

- 5) **Corpus – luteum:** when the follicle ruptures corpus luteum develops. In the absence of pregnancy, it persists upto 27<sup>th</sup> day and degenerates on the 28<sup>th</sup> day.

If pregnancy occurs it persists to about 4 to 5 months. It secretes progesterone which is essential for the maintenance of pregnancy.

- 6) **Interstitial cells:** - There are polyhedral cells found in between follicles. These cells secrete oestrogen.

### Functions

- 1) Produce ova and expel one at approximately 28 days interval during the reproductive life.
- 2) Secretes hormones (oestrogen and progesterone). Oestrogen influence secondary sex characteristics and is responsible for the changes in the accessory organs of reproduction. The progesterone prepares the uterus, for the reception of the fertilized ovum, implantation, the development of the placenta, development of the mammary glands, and inducing multiplication of the uterine muscle fibres.

### Fallopian Tubes

Close to each ovary there is a narrow tube about 10 cm long with an open end which looks like a fringe of petals. These tubes are called the fallopian tubes. These are attached to the uterus at its upper outer angles.

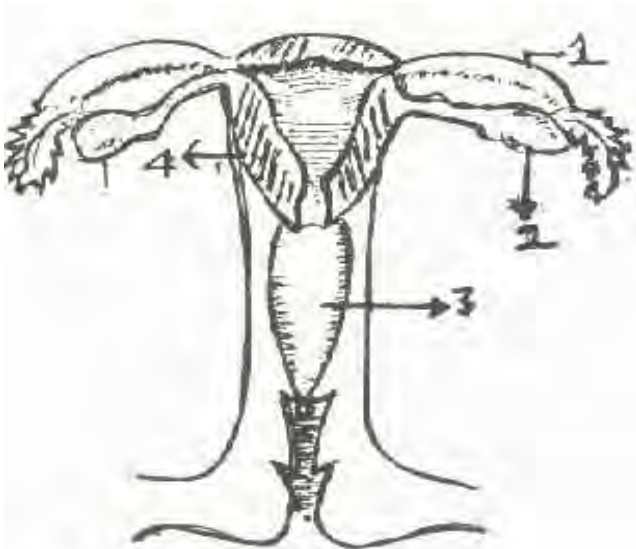
### Functions

These tubes act as ducts for the female gametes although they are not connected to the ovaries. Fertilization of the male and female gametes normally occurs in the tubes at the **ampullary** portion.



## Uterus

Uterus is a pear shaped muscular organ. The inside of which is hollow. It measures about 7.5 x 5 x 2.5 cm. Consists of an upper portion called the **body** and a lower portion called the **cervix**. The uterus is lined by a mucous membrane, known as **endometrium**.



**Fig 5.32 Female reproductive system**  
**1.Fallopian tube 2.Ovary 3.Vagina 4.Uterus**

## Functions

The uterus plays an important role in maintaining growth and development of the embryo. The ovum is discharged from the ovary. It is then transported to the uterus through the fallopian tubes. The fertilized ovum is embedded in the endometrium of the uterus. Placenta is then formed from the embryonic and endometrium tissues. This maintains the nutrition, respiration and excretion of embryo until parturition.

## Vagina

### The female external organs and its parts.

The external organs together form the vulva. They are as follows:

- 1) Mons veneris, or Pubic mont. It lies over the symphysis pubis, and is covered with hair after puberty.
- 2) Labia majora, or the outer lips, form the sides of the vulva.
- 3) Labia minora, or small lips, are within the labia majora. They are kept moist by gland secretions.
- 4) Clitoris a small sensitive organ with erectile tissue similar to the male penis.
- 5) Vestibule, a triangular part between the labia minora. The urethral opening is in the vestibule, in front of the vaginal opening.

### Summary:

- The body is made, like a complex perfect machine.
- Each part is specially constructed to carry out its own function.
- The body consists of the head, neck, trunk, upper limbs, and lower limbs.
- The body has a strong frame work of bones called the skeleton.
- There are spaces called cavities in which important internal organs are protected. Eg. The cranial cavity contains the brain.
- The human body is made up of living cells.
- Each has cell membrane, protoplasm and nucleus.
- The functions of the cells are digestion , excretion, respiration, growth and repair and reproduction.
- Tissues are made up of groups of similar cells.
- Tissues are joined into larger units called organs.
- A system is a group of organs.

- Skeletal system, muscular system, nervous system, circulatory system, respiratory system, digestive system, excretory system, endocrine system and reproductive system are the systems of our body.
- Nervous system has two parts central nervous system and autonomic nervous system. The central nervous system is made up of the brain and cranial nerves, spinal cord and spinal nerves.
- The main function of circulatory system is transportation of oxygen, nutrients to tissues and carries away metabolic waste products to the excretory organs.
- The lymph glands help to protect the body from infection.
- The function of digestive system are digestion, absorption of nutrients and excretion of undigested food.
- Respiration is the process of gaseous exchange between an organism and its environment.
- The lungs, kidney and skin are the important excretory organs in our body.
- The main endocrine glands in the body are thyroid, parathyroid, adrenal and pituitary glands.
- The endocrine glands produce a chemical substance, hormone which regulates the activities of various organs and their functions.

## Questions

### Part – A

#### Fill up the blanks

- 1) \_\_\_\_\_ is the important part of the central nervous system.
- 2) The bigger part of the brain is \_\_\_\_\_
- 3) Brain and spinal cord is covered by \_\_\_\_\_ that is called \_\_\_\_\_. It is a clear fluid \_\_\_\_\_.

- 4) Function of the front lobe of the brain \_\_\_\_\_
- 5) The end products of protein digestion is \_\_\_\_\_
- 6) Bile is stored and concentrated in \_\_\_\_\_
- 7) The process by which the masticated food is transported across the pharynx to reach the stomach is \_\_\_\_\_
- 8) The opening of the larynx is guided by \_\_\_\_\_.
- 9) The nerve that controls the diaphragm is \_\_\_\_\_ nerve.
- 10) The \_\_\_\_\_ is a tuft of capillary vessels present in the Bowman's capsule.

**Name of the following: -**

- 1) Process by which complex form of food is converted into simple nutrient.
- 2) Which neutralise the acid content of the gastric juice.
- 3) The finger like projections found in the mucous membrane of the intestine.
- 4) The chemicals present in most of the digestive juices,
- 5) The condition in which the skin, nails, and eyes become yellow.
- 6) The process of gaseous exchange between an organism and its environment
- 7) The functional and structural unit of the respiratory system.
- 8) The outer thin layer of the skin
- 9) The pigment granules which give the skin its colour.

**State where following statements are true or false**

- 1) The fatty acid and glycerol directly absorbed into the blood stream from the small intestine.
- 2) From pharynx air passess through trachea.
- 3) Each lung is enclosed in two membraneous layers known as meninges.
- 4) The conical projections of the boundary line between the dermis and epidermis is known as dermal papillae.

- 5) The secretions of the sebaceous glands are known as sebum.
- 6) Glucagon decreases the blood glucose level.

**Match the following**

- |                      |               |
|----------------------|---------------|
| a. Wind pipe         | a. Larynx     |
| b. Saliva            | b. Sucrase    |
| c. Pancreatic juice  | c. Bilirubin  |
| d. Food pipe         | d. Oesophagus |
| e. Gastric juice     | e. Trypsin    |
| f. Succuss entericus | f. Ptyalin    |
| g. Bile              | g. Pepsin     |
| h. Voice box         | h. Trachea    |

**Part - B**

- 1) What do you mean by nervous system?
- 2) What is the function of the cerebrum?
- 3) What is cerebrospinal fluid?
- 4) Define anatomy and physiology
- 5) Define metabolism?

**Part- C**

- 1) Enumerate the functions of blood.
- 2) What are the function of the heart?
- 3) What are the function of the liver?
- 4) What are the types of blood vessels?

**Part- D**

- 1) Draw the structure of the alimentary tract
- 2) Write in detail about endocrine glands
- 3) Define joints Explain the various types of joints in our body.
- 4) Write in detail about circulatory system
- 5) Structure and function of kidney.
- 6) Structure and function of the skin.
- 7) Define respiration and explain physiology of respiration.

## 6. BODY MECHANICS AND POSTURE

### Definitions

- Ø **Body mechanics** means the co-oriented use of the body parts to produce motion and maintain equilibrium in relation to both internal and external forces.
- Ø **Posture** is the relationship of the various parts of the body in activity or at rest.
- Ø **Positioning a patient in correct body alignment** means to give proper support to the body in order to maintain muscle tone and eliminate strain.

### Purpose of good body mechanics and posture

- 1) To provide maximum comfort and relaxation
- 2) To aid in normal body functions
- 3) To prevent contractures and neuromuscular deformities and complications
- 4) To conserve maximum possible energy by preventing unnecessary strain

#### 1) Standing position

In correct standing position the head is held erect, back is kept straight as much as possible, chest is put forward, shoulders are kept back, elbows are slightly flexed, wrists are extended, fingers are slightly flexed, abdomen is drawn inward and kept flat, knees are slightly flexed, and feet are pointing ahead and parallel to each other about 3 inches apart.



**Fig.6.1 Standing Position**

Knowledge of correct standing position is necessary because all other positions are modifications of standing position.

When a nurse helps the patient to sit or lie down in bed, she follows the principles of correct standing position and keeps the patient's body in good alignment.

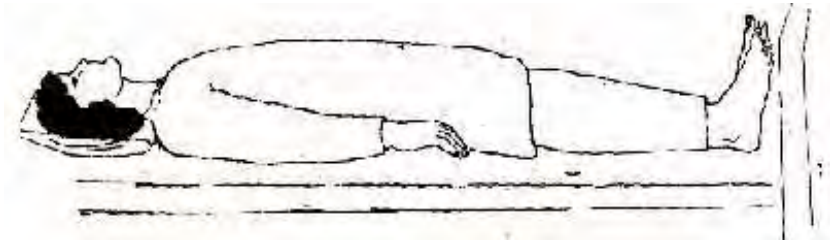
## **2) Sitting Position**

In sitting position, the weight of the body is balanced by ischial tuberosities, the buttocks and the thighs.

Elbows are flexed and supported, hips are flexed at right angles to the trunk, knees are flexed at right angles to the thighs, and ankles are flexed to right angles to the legs and are flat on floor. Back is held erect and the back and buttocks are supported by the back of the chair.

### 3) Positions used for patients :

- **Dorsal position:** Patient is flat on the bed with legs extended and arms at the sides of the body. This is not a comfortable position, as the curves of the body are not supported.



**Fig.6.2 Dorsal position**

- **Dorsal recumbent position:** This is called back lying position. This is a modification of standing position. The only difference being, the patient is in horizontal position instead of vertical.

Patient lies flat on his back with a pillow under his head. A small pad is placed in the hollow of the back, and the knees are slightly flexed. A soft pillow is arranged under the knees. A footboard is provided to prevent foot drop. Arms are kept at the sides of the body.

Most of the patients are nursed in this position.

- **Lateral position:** Patient lies on his side with spine straight. The knees are flexed; the upper knee is more flexed than the lower one.

Pillows may be provided for the head, in between the legs, and to support back and abdomen.

The lower arm is kept above the head and the upper arm is placed on a pillow in front. The arms and legs do not bear the weight of the body.

This position is used for general comfort, rest and relaxation. During back care, patient is placed in lateral position.



Left lateral position is used for vaginal, perineal and rectal examinations, and the post operative patients are kept in lateral position in order to maintain a clear airway.



**Fig.6.3 Lateral position**

- **Jack knife position:** Patient lies on his back with his shoulders slightly elevated. The hips and knees are flexed and brought up to the abdomen and chest.

This position is useful to perform a lumbar puncture.

- **Knee chest position:** The patient knees on the bed and then lowers his head, shoulders and chest and rests them on the bed.

Head is turned to one side, and kept on a pillow. The thighs are kept vertical. Arms are crossed above the head.

This position is useful for performing vaginal and rectal examinations and for correcting displaced uterus or other organs.

- **Lithotomy position:** The patient is kept on his back. Head and shoulders rest on a small soft pillow. Knees are flexed well and buttocks are brought over to the edge of the bed.

If it is used for a long period, the legs are supported by stirrups, attached to the table.

The position is used for examination or operations on rectum and genital organs.

- **Prone position:** Patient lies flat on his abdomen with head kept on a pillow and turned to one side. Pillows are kept under the waist and under the lower legs. The arms are flexed at the elbow and kept above the head.

This position is used when there is bed sore or burns or an injury at the back and as a change of position for patients with fractured spine.

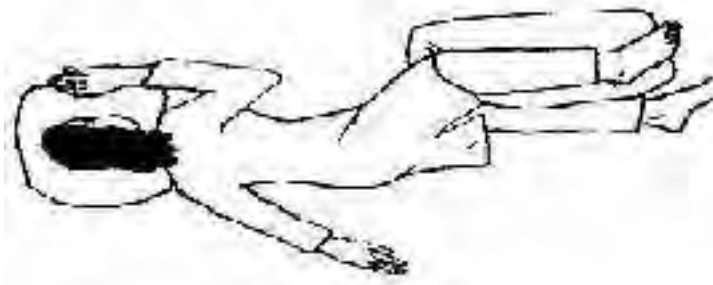


**Fig.6.4 Prone position**

- **Sims position or semi prone position :** This is a modified left lateral position. The patient lies on the left side. Head, shoulders and chest are turned forward so that her chest rests on the pillow.

The right knee is well flexed and rests on the bed in front. The left knee is slightly flexed and is positioned behind the right knee.

This position is useful for performing vaginal examinations and for rest and relaxation.



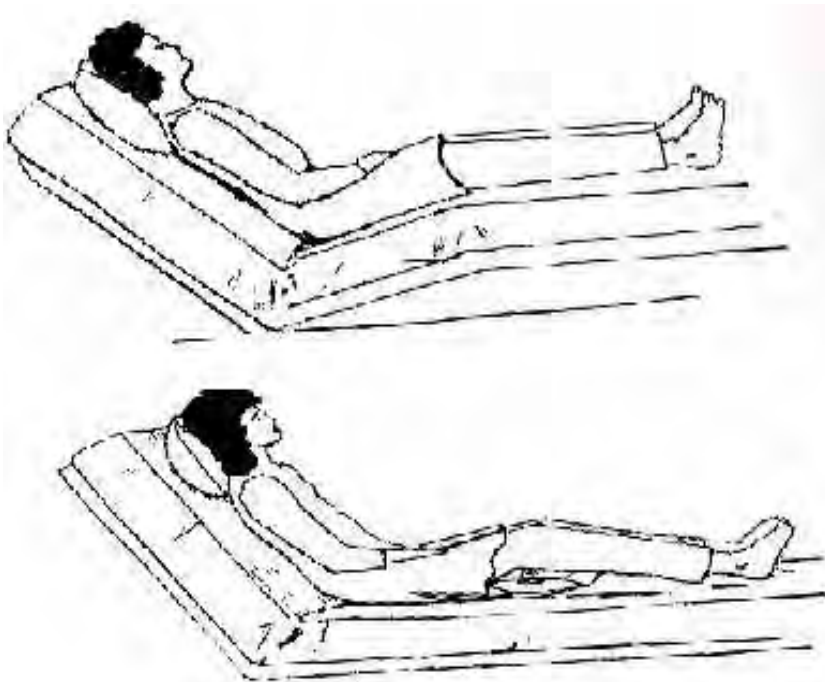
**Fig 6.5 semi prone position**

- **Fowler's positions:** Patient is in a partially sitting position. The back of the bed is elevated to 45 degrees with the aid of a backrest and pillows or by adjustment of the cot.

Patient's back, shoulder and head are supported well. The knees are flexed and supported with a pillow or by cot adjustment. A footrest is provided to prevent foot drop.

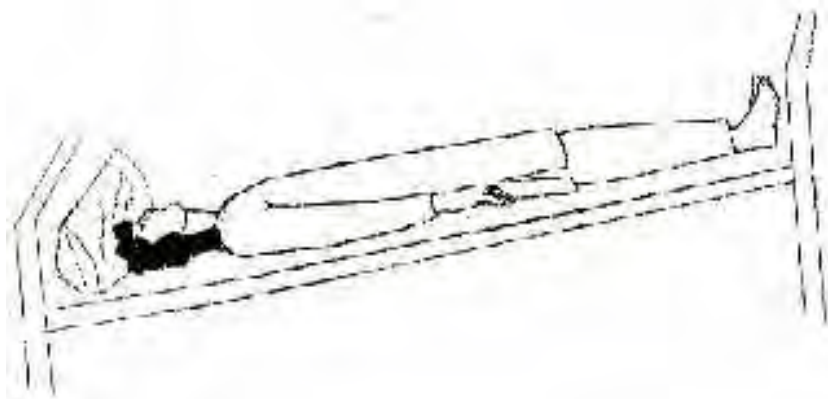
Patients are not kept in this position for long time, since there is always the danger of thrombus formation. This position is used for patients with dyspnoea (difficulty in breathing), distended abdomen, abdominal surgery, cardio-thoracic disorders and ascites.

The position is also useful while passing Ryle's tube and while performing tapping of ascites fluid.



**Fig.6.6 Fowler's positions:**

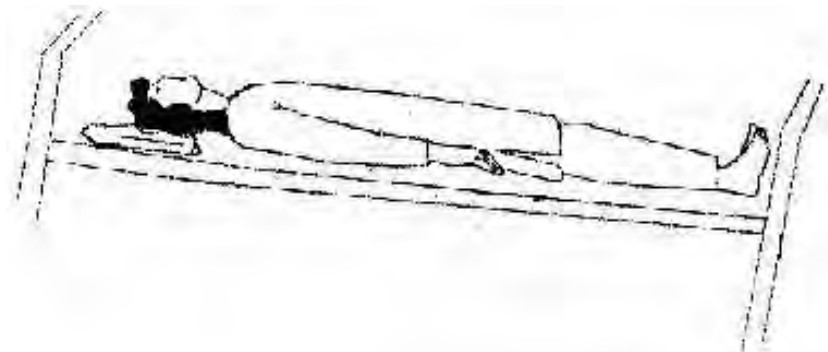
- **Trendelenburg position** : The patient lies on his back with the foot of the bed elevated on wooden blocks. Patient's head and trunk are lower than the legs.



**Fig.6.7 Trendelenburg position**

- **Reverse Trendelenburg position:** The head and shoulders are at a higher level than the hips, legs and feet.

This position is used for reducing intracranial pressure and for other treatment measures.



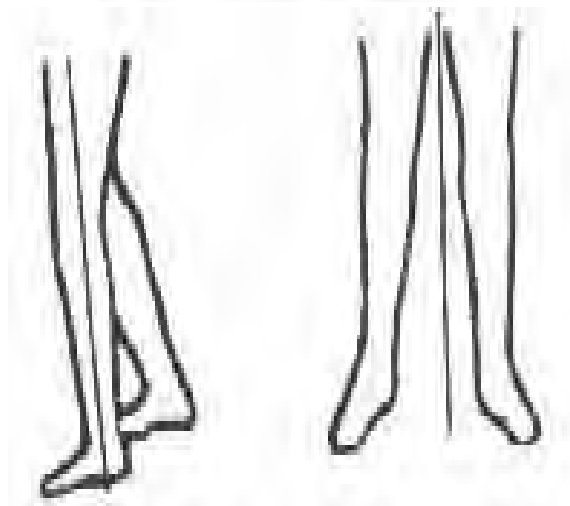
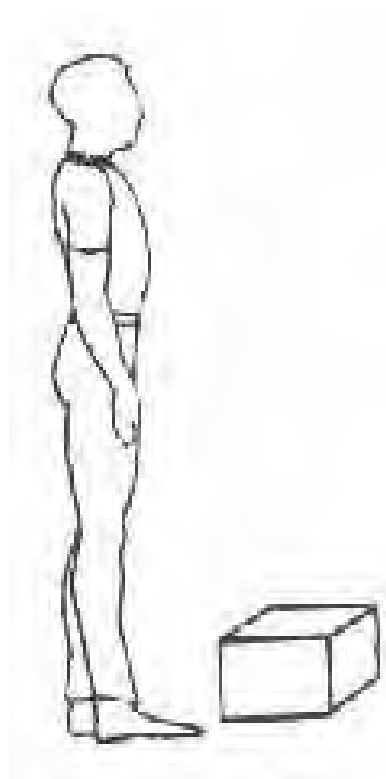
**Fig.6.8 Reverse Trendelenburg position**

#### ✓ **Moving and lifting patient**

As nurses, you may be required to move and lift patients. An important point you have to bear in mind while moving patients is that you must observe correct body mechanics for your patients as well as for yourself.

While lifting heavy objects, it is wise to stand with your feet while apart and firmly on the floor. The weight should be lifted close to the body. Flex your knees so that your strong muscles of the legs bear the weight of the object.







**Fig.6.9 Maintaing body mechaninc**

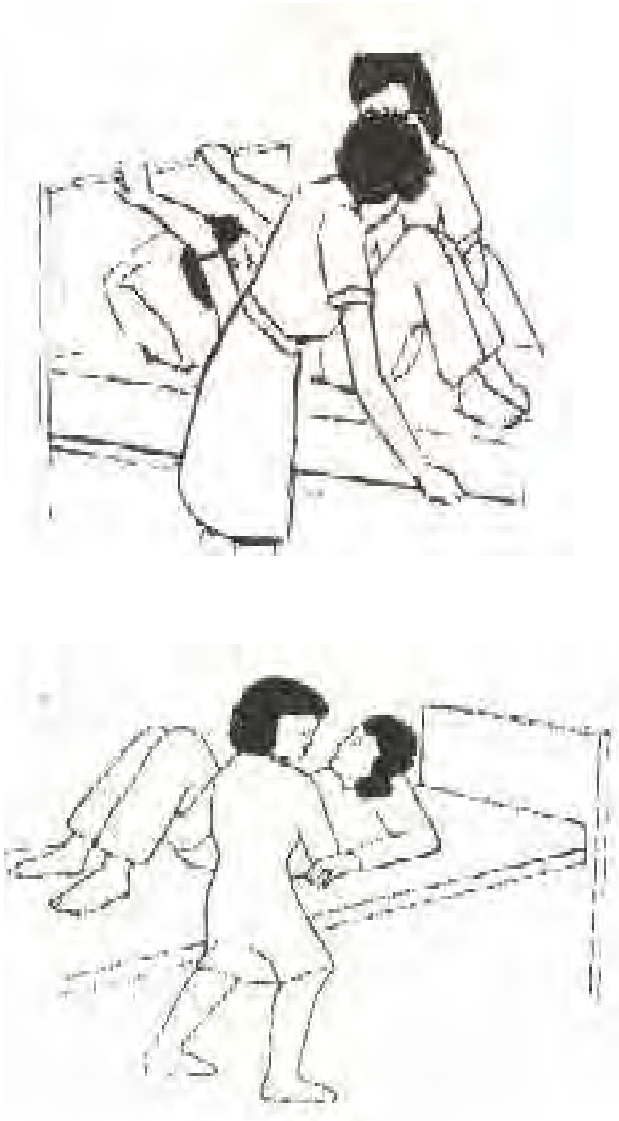
✓ **Purposes**

- 1) To perform the task efficiently
- 2) To avoid the patient from unnecessary effort
- 3) The prevent nurses from strain and back injuries
- 4) To promote circulation and muscular tone

✓ **Procedures**

- a. Moving upward or downward :** Two nurses are required to do this. One nurse places her one hand under the patient's shoulder and the other hand under the lumbar region.

The other nurse stands on the other side of the bed and does the same as the first nurse. The patient, if he is able, is asked to flex the knee and push against the matters with heels. Both nurses together bring the patient up.

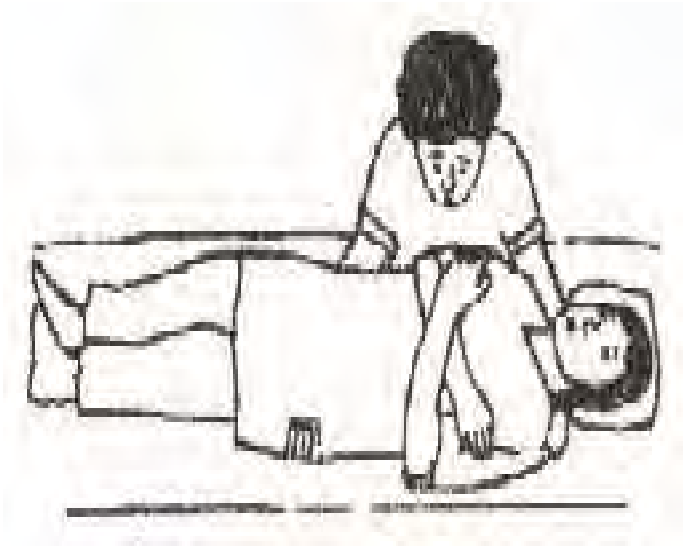


**Fig.6.10. Moving upward or downward**

- b. Moving from one side of bed to another :** Move pillows towards the side of the bed. Place your one arm under the shoulders and the other under the lumbar region.



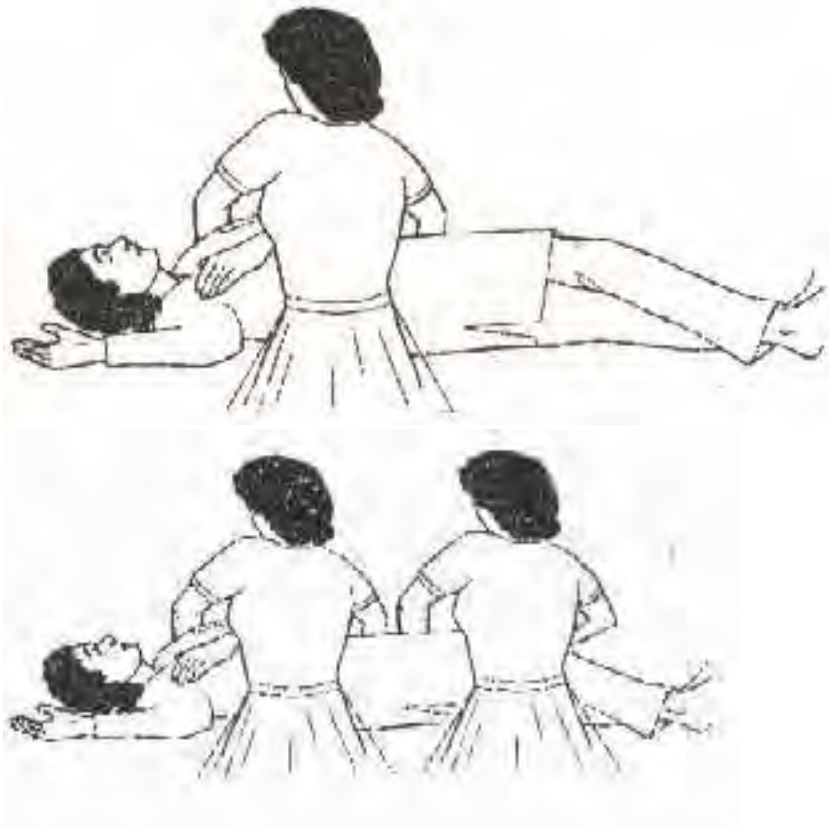
Move upper part of the body to the side of the bed. Then keep one arm under the lumbar region and the other under the thighs and move the middle part of the body of the side of the bed. Lastly place one arm under the things and the other under the ankles and move the lower part of the body to the side of the bed. See whether the whole body is straight and in good alignment.



**Fig. 6.11 Moving from one side of bed to another**

- c. **Turning on side :** Before turning move the patient a little away from the center. If he is to be turned on the left side, you stand at his left.

Keep his right arm crossed on the chest and right leg crossed over the left leg. Flex the right knee slightly keep one hand on the patient's right shoulder and the other on his right hip and gently roll him to left lateral position.



**Fig.6.12 Turning on side**

- d. Moving patients from stretcher to bed :** Keep the head of the stretcher at right angles to the foot of the bed. Three nurses are needed.

All stand on the same side of the stretcher one nurse places her arms under the patient's head and shoulders, another keeps her arms under the hips, the third has her arms under the thighs and legs.

All together lift the patient, turn and place him on the bed. The lifters observe body mechanics for themselves. They keep their backs straight, flex their knees and place their one foot forward while transferring the patient.

## SUMMARY

- Ø Body mechanics means the coordinated use of the body parts to produce motion and maintain equilibrium in relation to both internal and external forces
- Ø Posture in the relationship of the various parts of the body in activity or at rest.
- Ø Positioning a patient means to give proper support.
- Ø Purposes of good body mechanics and posture are to provide maximum comfort and relaxation, to aid in normal body functions, to prevent contractures and to conserve maximum possible energy by preventing unnecessary strain.
- Ø The common positions used for patients are standing position, sitting position, semiprone position, Fowler's position, Trendelenburg position and Reverse Trendelenburg positions.
- Ø While moving or lifting patients, nurses must observe correct body mechanics for the patients as well as herself.

## Questions

### Part – A

- 1) ----- is the relationship of the various parts of the body in activity or at rest.
- 2) ----- means to give proper support to the body in order to maintain muscle tone and eliminate strain.
- 3) ----- means the coordinated use of the body parts to produce motion and maintain equilibrium.
- 4) In sitting position the weight of the body is borne by -----, ----- and the -----.
- 5) Lithotomy ----- position is used for ----- and ----- examination.
- 6) A footboard is provided to prevent -----
- 7) Jack knife position is useful to perform a -----

- 8) ----- is useful for correcting displaced uterus or other organs.
- 9) ----- is used for examinations or operations on return and genital organs.
- 10) The patient is kept in ----- position while performing tapping of ascites fluid.
- 11) While moving patients, nurses must observe -----,-----,----- for the patients as well as for herself.

## **Part B**

- 1) Define body mechanics
- 2) Define posture?
- 3) What are the uses of knee chest position.

## **Part C**

- 1) Explain dorsal recumbent position.
- 2) How will you move a patient in upward and downward directions?
- 3) How will help a patient moving from one side of bed to another?
- 4) How will you help a patient moving from a stretcher to bed?
- 5) What are the purposes of good body mechanics and posture?
- 6) Explain a correct standing position.
- 7) Explain prone position

## **Part D**

- 1) Explain common positions used for patients in nursing practice.
- 2) Write in detail about moving and lifting of patients
  - Moving upward or downward
  - Moving from one side of bed to another
  - Turning on side
  - Moving patients from stretcher to bed.

## 7. BASIC PRINCIPLES OF PSYCHOLOGY

“Psychology” is a branch of science dealing with knowledge of mind and soul. It plays a vital role in taking care of the patients in nursing.

The knowledge of basic principles of psychology is significant in taking care of nurse herself and also in her interaction with the patient.

The nurses should understand that the fulfillment of basic needs as given below is imperative in achieving one's own self actualisation.

### 7.1 Basic Needs

In 1943, five types of human need a hierarchy, from the physiological through safety needs. Love needs. Esteem needs and culminating in a need for self-actualization has been proposed by **Maslow**, the psychologist.

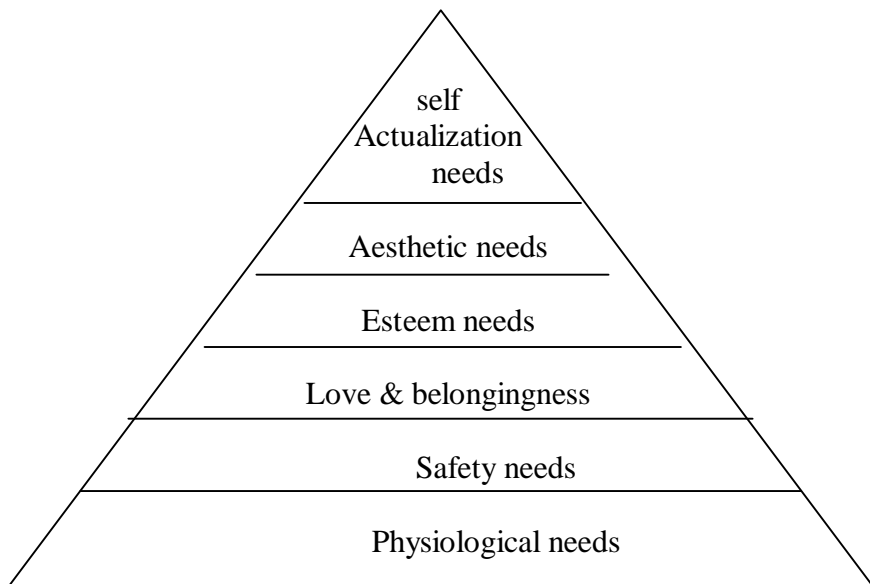
#### Physiological needs

The lowest in the motivation hierarchy includes need for water, oxygen, food, sleep, activity, sex sensory satisfaction etc. A man is never satisfied with all his needs. If one need is satisfied another need will arise and it is human tendency.

#### Safety needs

If physiological needs tend to be met consistently and more or less completely the organism expresses the next dwell i.e. the safety needs. We experience safety needs only when there is a threat to its existences.

However it is possible to perceive psychological threat, just as one may perceive physical threat. The reaction of such perceptions leads to real conditions of neurosis. Safety needs are decent housing and employment.



**Fig. 7.1 Maslow's Hierarchy theory**

According to Maslow satisfaction of these needs will open the door for expression of the next level of needs.

### **Love needs**

Love needs encompass all desire for relations with people. They include acceptance by others and achievement of some status within group by which the individual is accepted.

Maslow states that lack of satisfaction, in this area is most common source of maladjustment and consequent psychopathological conditions.

### **Esteem needs**

Each of us has need for self-respect and a need for the respect of others. The former expresses it self as a device for achievement, adequate confidence and the later recognition, attention and rewards from others.

When unsatisfied, we feel confident and while when thwarted we feel inferior and helpless. It is an expression of lack of satisfaction of esteem.

### Self actualization needs

- Ø Self-actualization goes beyond esteem because it emphasizes becoming whatever one must be. Esteem can be achieved without self-actualization.
- Ø Self-actualization means fulfilling our potential since this never occurs the need can never be satisfied. As the progress is made new possibilities are opened by ones potential and this further striving toward (self) actualization.

The five needs described above are actually broad categories each of which may contain specific expression. At whatever level, man is never completely satisfied, he is constantly needs, since some needs will be partially satisfied and others partially unsatisfied. Further there are needs of adult than those of children.

However such needs are emerging in children. So one must interpret, action in terms of relevant needs and make it possible for the child to achieve satisfaction.

If children find physiological safety, and love needs at least partially satisfied, they will evidence a need for esteem and this may find proper expression through academic achievement.

Where need for esteem is not present, that means other lower needs in the hierarchy are being insufficiently met.

The teacher must first arrange appropriate conditions for their satisfaction, whether in or out of school. Once meeting, esteem needs will be of no problem, though their satisfaction will depend upon self-group variables.

### 7.2 Motivation

“Motivation is an essential condition of Learning process,” says **Melton**.

“Motivation represents the antecedent dynamic background for both original behaviour and it’s modifications” says **Gates**.

Motivation is an art of attracting others towards oneself. In many of our activities. Whether personal, social, or national, motivation is present directly or indirectly.

Motivation has become an art of giving incentives to others for doing something; art of making appeals in order to attract others towards oneself. Needless to add that motivation is useful in nursing profession.

In the field of education ends and means are complementary to each other. When we attain something, that something becomes a means for attracting some other thing higher than that.

Thus we are continuously engaged in obtaining our goals and using the same as a means for attaining something higher end.

So what was end once becomes a means for another time. Needless to remark, that a number of small ends go to formulate a bigger end.

So we are consistently engaged in using an end as a motivation. In education this type of continuous arousal of motivation is of great importance.

There may not be any relationship necessarily between intensity and duration of motivation. If motivation is very intense, the goal is likely to be achieved sooner.

Then if duration will be shorter and if the goal of an intensive motivation is not achieved soon, its duration will be continued till the achievement of the same. Thus an intensive motivation is likely to control the human behaviour for a longer duration.

The sphere of motivation depends upon the environment. Our lives will come to an end and all our activities; will be stopped if we do not feel motivated for one thing or another.

### **Kinds of Motivation:**

Kinds of motivation are

Ø natural and artificial,



- Ø intrinsic and extrinsic.
- Ø Automatic actions and reflexes, habit, instincts, feelings, desire interests, suggestion, imitation are **natural motivation**.
- Ø To acquire knowledge, to win affection of the person we love, to obtain a post, to acquire confidence of others, to obtain leadership and popularity may be the **artificial motivations** for an individual.

These may also be regarded as natural because they are found in most of us and many of our activities are guided by them. Artificial motivation have their base in some of our natural motivation, instincts, urges, drives or natural needs.

The physical , mental and social development of the individual should be rightly understood for ascertaining what type of artificial motivation will be more appropriate.

The individual will not feel motivated, unless he has a goal to achieve. A model before him will further energize him. Thus he will feel inner striving and this striving will be purposive.

So in the presence of a goal, model and purposive striving, a student may be guided to achieve great heights.

The patient must be given a correct knowledge of his progress in order to motivate him further, when he realizes that he is progressing well he puts in greater efforts. Reward is a great motivation.

An individual is naturally desirous of obtaining reward on his successful performance. The fear of punishment goads the individual to follow the right path. Punishment serves as a powerful motivation to follow the right path.

Maslow' s proposes a comprehensive theory of need of gratification and growth motivation including fundamental physiological needs.

The main reason why disadvantaged and poor children refuse to be motivated in the classrooms to learn is that their basic bodily needs remain unsatisfied.

Under safety needs such as security routine regularity, children do need discipline within their levels of understanding in order to perceive an orderly and organized world.

Often under achievers are the resultant of lack of love and understanding. Esteem needs cover confidence, independence, recognition, attention and appreciation.

When the above needs are satisfied the classroom climate is synergetic and help the individual to actualize his inner potentialities.

### **Achievement motivation**

Just as Maslow, **Murray** gives an impressive list of

- Ø achievement,
- Ø abasement,
- Ø aggression,
- Ø exhibition,
- Ø defenses,
- Ø autonomy,
- Ø dominance,
- Ø affiliation,
- Ø occurrences,
- Ø nurturance and
- Ø sentience as human motives.

Achievement motive is a type of social motive. It appears to be a widely generalized level of aspiration, aiming at excellence in all under taken activities.

It involves an exalted self-esteem and self-image and it is a learned motive, acquired in the process of growing up and living in a society. In this motivation, the goals set by individuals themselves have energizing properties to motivate behaviour.

**McClelland**, in her study on measurement and application of the achievement motive, symbolically expressed in an arch (need for Achievement) and explained the social origins of achievement motivation and its implications for social progress.

McClelland also listed conditions for effective pupil motivation. These are,

- Ø let pupils understand reasons for developing certain motives,
- Ø let motives be realistic, link motives with activities and daily life events,
- Ø commit pupil progress give pupils honest and warm support, encourage self study and make pupil feel that he belongs to some successful group.

### 7.3 Individual differences

All the living organism differ in size, shape, appearance, speed of reaction and innumerable other aspects of behaviour.

We can see that some are healthy and jolly while others are weak and irreparable. Some learn quickly and others slowly. In this way exists there differences.

- Ø These differences between individuals that distinguish or separate them from one another and make one as unique individual in oneself are named as individual differences in psychology.
- Ø Individuals differ in height, weight, colour, structure physically and people differ in intellectual abilities like reasoning and thinking power, power of imagination ,creative, expression, concentration etc .

### Classifications

On the basis , they are usually classified as

- Ø Idiot
- Ø Imbecile
- Ø Moron

Ø Border like normal bright very superior as genius.

There exist wide differences in motor capacities such as reaction time, speed of action, steadiness, rate of muscular movement, manual dexterity and resistance to fatigue etc. Differences exist

Ø in achievement and

Ø in knowledge.

### **Factors causing individual differences:**

Heredity and environment are not two independent factors. They operate conjointly to contribute their share but they interact and are inextricably involved in their effect, making each person unique.

The complexity of the environmental influences, prenatal, postnatal, material and social cultural are some of the factors causing individual differences.

Bio chemical differences between male and female and sex role expectations incorporated into self-concept very early in life are some of the factors.

Girls display greater social and emotional maturity at each age and boys show greater vitality, independence and initiative.

Maintenance of cumulative records for each pupil helps in understanding the specific abilities, needs and interests of each pupil as well as his past history.

The fact of individual differences implies that teachers have to meet wide variety of pupil's needs such as needs of

Ø exceptional children

Ø gifted children

Ø slow learners or backward children,

Ø children with sensory and motor defects,

Ø clumsy children etc.

Teachers also face antisocial behaviour of some children in their class. Common behaviour problems are bullying, lying,

stealing, destruction of common property and adolescent sexual misbehaviour. Suitable reinforcement of acceptable conduct will generally eliminate such problem behaviours.

#### 7.4 Interest

**William James** the popular psychologist defines

“interest as a form of selective awareness of attention that produces meaning out of the mass of one’s experiences”

**Strong speaks** of interests

“as likes and labels dislikes as aversions”.

Let us look upon interests as organic conditions that result in a desire for further stimulator from a particular type of object idea or experiences.

Evidences of interests in the form of attention can be observed in the early behaviour of infants. At first this activity is permanently biological but as perceptions occurs and concepts begin to form, the psychological component becomes more important.

The child learns to avoid those activities as unsatisfying and to repeat those that have proved to be worthwhile.

Interest, in fact form an integral aspect of personality and they are not outside personality. Interest largely means the individual’s likes or the individual’s preferences to engage himself in a particular type of work, might have other preferences to another type of work. Interests are also divided into extrinsic or intrinsic interest.

- Ø Extrinsic interest are connected with activities that gives rise to satisfaction or pleasure. Intrinsic interests are those are connected with the activity itself.
- Ø An intrinsic interest centered on the activity itself is more basic or real interest. However the differentiation is not easy. Sometimes an interest may be intrinsic or sometimes it may be extrinsic.

eg Playing volleyball or basketball for sake of playing is an intrinsic interest.

The individual desires pleasure from it. Playing the same games to earn a reward or trophy or title is an extrinsic interest. Interests are not like aptitude. They are required by the individual in the course of his development.

Some interest may be present at one time and disappear at another. Rarely does an individual's interest last long. However certain basic interest seems to last long for a lifetime.

An interest is not permanent. it is acquired during the lifetime and it may be modified. At school, we expect the pupils to be interested in reading books, playing games etc.

When they grow up and enter working life, some may keep the interest of reading and some may keep the interest of playing.

Interests provide useful information for guidance in education and vocational areas. There are a number of psychological test to assess or measure interests.

The most well known highly sophisticated instrument is **Strong 's vocational interest blank**. This is in two forms one for men and another for women.

Strong approached different occupational group, such as physician, surgeon, scientists, university teachers, schoolteachers, lawyers, accountants, engineers etc.

More than three hundred occupational group were considered and from each individual be obtained a list of interests and activities the individual liked and disliked. Another tool is used to access interest is **Kuder's preference record**. (KRP).

The interests which were rated high by a particular occupational groups were called the interests on mechanical, computational, scientific, persuasive etc.

Interpretation of test result is to be made on the basis of appropriate norms provided in the concerned manual. The

highest score indicates the important interest and the lowest least important interest area.

The guidance worker with the help of this objective test information obtained from achievement , aptitude , personality and interest can help the pupil to obtain a much better and deeper understanding of his personality.

The counsellor also has a better understanding of the counsellee (pupil) and thus can guide him ( pupil) better with regard to two major areas of choice namely,

- Ø what courses they may pursue or choose or
- Ø what type of or kind of job, that they may take up.

Thus in the areas of educational , vocational guidance tests of interests are of greater value.

### 7.5 Attitude

Attitudes have been defined as ideas with emotional content important beliefs, predispositions, biases and appreciations and as state of readiness or set.

**Allport** has defined attitude

“as a mental and neural state of readiness organized through experiences exerting a directive or dynamic influence upon the individual response to all objects with which it is related”.

Attitudes have intellectual, biological, social emotional components that are derived from experiences and exercise determining influences upon behaviour.

Variety of patterns of attitudes toward health, life and death of people, new situations, music and art, work, play, government, religion and many more have been influenced by the process through planned and random experiences in creating and shaping attitudes.

In this school, family and society play vital roles.

- Ø As the growth and development occurs in the infant a changing array of needs bring new reaction to objects and situations.

- Ø An infant, gains pleasure from being helped and protected where as a child in the early period of walking is likely to and resent and reject the helping hand.
- Ø Development changes of this kind produce tremendous change in the child relationship with objects and situations.
- Ø Despite apparent incongruity, the orderly and sequential development of the total organisms, result in threads of continuity of feeling.
- Ø Ordinarily a satisfying state of affairs over and extended period of time, produces a positive feeling in the child for the object or activity involved.
- Ø As the child 's perceptual field expands, generalization of response becomes possible. An infant who has experienced general pleasure at the breast or bottle is likely to anticipate pleasure from eating other foods.
- Ø Continued dissatisfaction and unpleasantness during nursing are likely to create a negative feeling about eating.
- Ø A child attitudes authority figure, is obviously an important element of socialization and determines much of his behaviour in school
- Ø Early experiences involving the child and his parents are responsible for the beginnings of this attitude. A rebellious attitude towards authority figure teachers, Principal, leader etc.
- Ø May spring from a conflict with some one in authority, usually a parent or a parent substitute .
- Ø Another important element in the early development of the attitude toward adult is the satisfaction or dissatisfaction derived from the child's dependency upon parents particularly the mother figure.



- Ø Any separation from the family and especially from the mother is for a young child a painful and distressing experience, which is not tolerable before he has acquired the concepts of time and space.
- Ø Such an experience in children under three years of age, usually brings a change in the relationship with adults too.
- Ø Separation over a period of time accompanied by depriving of needs is likely to produce incapacity to achieve close and intimate human relationship.
- Ø The attitude of the child toward the teacher is strongly influenced by the following elements of mother child relationship.
  - 1) Satisfying experiences with mother.
  - 2) Mother 's experience and what she expected of the child.
  - 3) Mother's attitudes towards other children in the family.
- Ø The parental attitude of acceptant democratic seems to facilitate growth and development more than the others.
- Ø These children from the home atmosphere of warmth and equality have an accelerated intellectual development are more original, emotionally more secured, less excitable, popular, friendly and non aggressive.

Attitude has four dimensions intensity, direction, extensity and duration. Extensity of an attitude is evidenced by the extent to which it motivates an individual's behaviour.

Limits of interest can be determined by the nature of barriers needed to exhibit a response.

Behaviour motivated by a weak attitude can be thwarted by the obstacle that seem to have very little actual

substance, but an intense attitude is likely to find expression in behaviour despite almost over-whelming obstacles.

The dimension of an attitude is observed in behaviour as a force that repels, attracts or fails to motivate the child in any direction as in the case of an I DON' T PARTICULARLY CARE attitude.

Although behaviour in a given direction frequently indicates directly related attitude, there are numerous occasions when the opposite interpretation is in order.

An individual having a negative attitude towards a given group may join them outwardly seeming to have a positive attitude. But by the very subtle means brings about disruption and chaos in the group or divert it from its goal.

Extensivity is observed in a broad survey of pattern of attitude within the individual.

Some attitudes seem to have broad and pervading influences. The duration of an attitude is another aspect that is important to education .

A function of education is the modification of existing negative attitude and creation of new ones that are positive and enduring attitudes may endure only for a short time, because they have not been reinforced by experiences.

Infact new experiences may bring about a complete reverse of the previous attitudes. Attitudes are changed by school experiences. They may be changed by the influence of a particular teacher, another child, peer groups, a single event, curriculum material or a series of extracurricular events.

A desirable attitude toward learning will be maintained if

- 1) The thing to be learned is not too far removed from past learning' s.
- 2) The learning situations are made physically and intellectually attractive to the learner.
- 3) The knowledge of skill to be acquired is perceived as a need satisfier.

- 4) The concomitant experiences do not appear to be more immediate goal satisfiers.
- 5) Learning is accompanied by a feeling of achievement reinforced by recognition from others.

When these conditions are sustained for all learners' teachers will no longer be troubled by children, who have negative attitudes toward school.

## 7.6 Emotion

The psychologist **Kulpe** defines emotion  
“as a fusion of feeling and organic sensations”.

The psychologist **Hoffding** defines it  
“as a pleasure pain in association with the idea of its cause”.

According to psychologist **Ward**,  
“it is the complete psychosis involving cognition, pleasure-pain and conation”.

In general emotion  
“is a complex, not a simple elementary , mental state”.

### **The difference between motives and emotions are as follows:**

**Emotions** are usually aroused by external stimuli and that emotional expression is directed toward the stimuli in the environment that arouses it.

**Motives** on the other hand, are more often aroused by internal stimuli and naturally directed towards certain objects in the environment ( eg Food , Water) .

Most motivated behaviour has some affective or emotional accompaniment although we may be too preoccupied in our striving toward the goal.

Motivation is focused on the goal directed activity. Emotion is focused on the subjective, affective experiences that accompany behaviour.

Emotions are expressed by language , facial expressions and gestures.

An emotional state is characterized by

- 1) A more or less pronounced affective tone . Pleasure unpleasure – experienced in connection with some objective or situation.
- 2) A diffuse stimulation of the organic processes, involving pulse, respiration, glandular secretions which is usually called the organic resonance of the emotion but according to theory of the psychologist James Lange , it is identified with emotion itself
- 3) A narrowing and specializing of consciousness, both on the cognitive and on the curative side, the consequence of what we may call emotional disassociation.
- 4) An impulsive force

### **Physiological Changes in Emotions:**

All emotional states affect the activities of the salivary glands. The bodily effects of pain hunger fear and rage have all the emotions of characteristically, negative polarity. In such cases the secretion of saliva is diminished or inhibited.

There is a fair presumption that emotions of an opposite or positive, polarity will produce the opposite effect but practically no experimental evidence.

The emotional disturbances of a negative polarity ( that is disagreeable ) involve disturbance of the digestive functions in all its aspects.

The flow of saliva is diminished or altogether inhibited, and its chemical composition altered . The flow of gastric juices is similarly diminished or inhibited and altered chemically. The negative moments then tend to cease.

This fact suggested to psychologist **Cannon**, the possibility that emotional excitement might involve an increased secretion of adenines and that this adenine in the blood might have the effect of prolonging the inhibition of the activity of the

digestive glands after the emotional excitement itself had disappeared .

By testing the blood for adenine after a period of time for the quantity of adenine in the blood, it is greatly increased as a result of strong emotion.

Most of the physiological changes that occur during intense emotion, result from activation of the sympathetic division of the autonomic nervous system as it prepares the body for emergency action.

The sympathetic system is responsible for the following changes.

- 1) Blood pressure and heart rate increase
- 2) Respiration becomes more rapid
- 3) The pupils of the eye dilate.
- 4) Electrical resistance of the skin decreases.
- 5) Blood sugar level increases to provide more energy
- 6) The blood begins to clot more quickly in the case of wounds
- 7) Mobility of the gastro intestinal tract decreases or stops entirely. Blood is diverted from the stomach and intestines and are sent to the brain and skeletal muscles.
- 8) The hairs on the skin erect causing “Goose pimples. In emotion the sympathetic system also causes epinephrine (adrenaline) and non- epinephrine (non adrenaline). Nerve impulses with sympathetic system, which reach adrenal glands located on the top of the kidneys, trigger the secretion of hormones. They then get into the blood and circulate around the body.

## **THEORIES OF EMOTION:**

**James theory** or emotion proposes the following sequences of events in emotional state

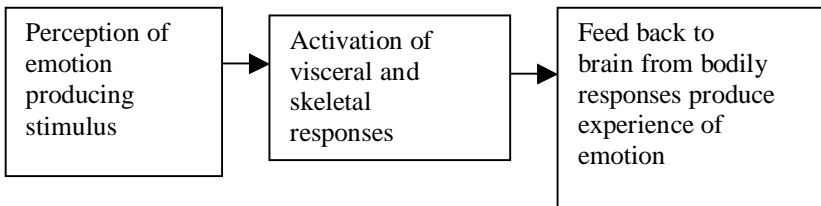
- 1) First we perceive the situation that will produce emotion. Second we react to this emotion. Third we notice our

action. The perception of the reaction is the basis of the emotion as we feel and experience it.

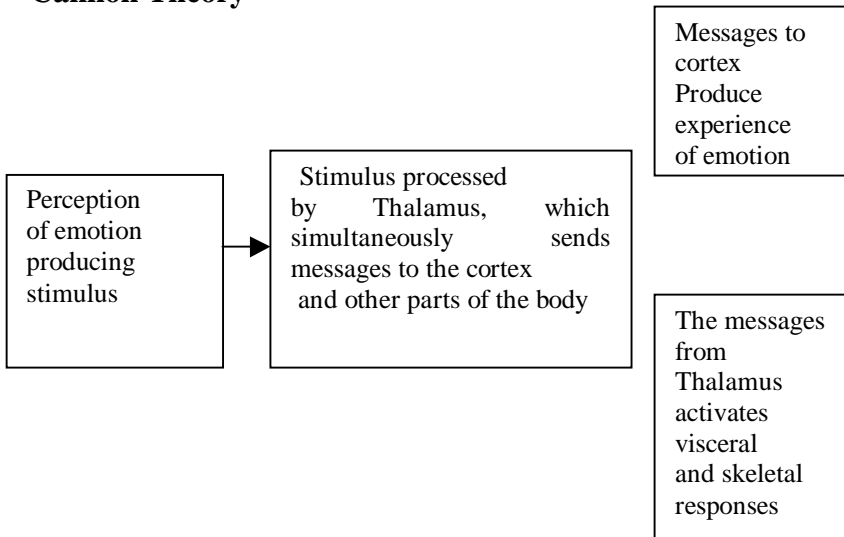
The major objection to James Lange theory came from **Cannon** Who pointed out that changes do not seem to differ very much from one emotional state to another.

- 2) The internal organs are relatively intensive structures not well supplied with nerves and internal changes occur too slowly to be a source of emotional feelings.
- 3) Artificially inducing the bodily changes associated with an emotion injecting a person with adrenaline does not produce the experience of the true emotion.

### James Langes Theory

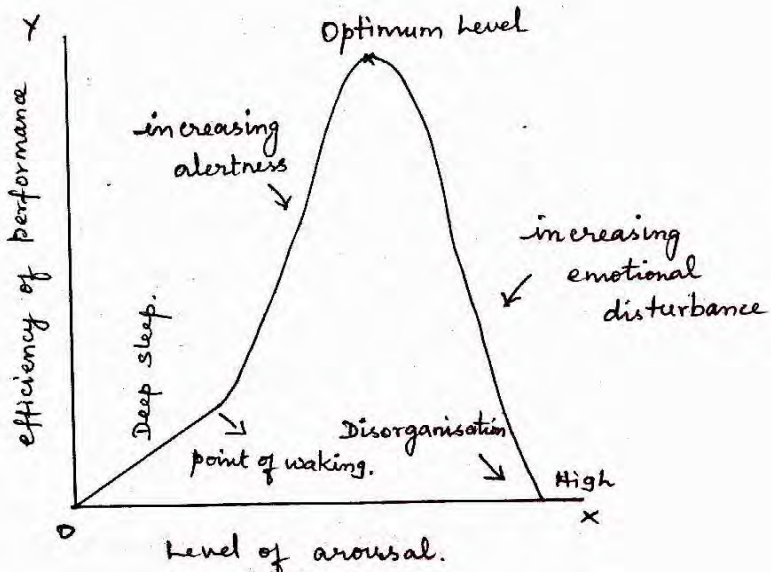


### Cannon Theory



Emotion when sufficiently intense can seriously impair the processes that control organized behaviour.

The following diagram illustrate the relationship between the level of emotional arousal and the effectiveness of performance.



**Fig. 7.1 Emotional arousal and its effectiveness of performance.**

Emotional behaviour studies in infancy and early childhood by means of direct observation. Motion pictures and recording of children's cries indicate that the infants' response to stimuli designated to arouse emotion are very diffuse and lacking in organization.

Emotional shocks and hurts suffered by individuals at an early age can handicap them as long as they live. Children sooner or later acquire the capacity for experiencing negative emotions such as anger, fear and also sorrow or grief to an intense degree.

This capacity develops, before the child is mature enough to use language, to formulate his experience in words.

For a time, the infants' expression of rage is poorly organized. Later his anger becomes more definitely directed at some thing or some body. Changes can likewise be noted in a child's expression of fear and his reactions to pain.

These improvements in the young child's ability to respond in specific ways to situations that arouse him, parallel the development of his mental and motor abilities.

As the child's intellectual and motor capacity matures, he acquires large variety of means and forms of expressions such as overt and direct to more graded covert and indirect.

The habit of concealing emotion may become especially burdensome under two conditions. If a person may mask intense feeling of anger that occurs when someone hurts his pride very sharply and then still harbouring his anger, may explode on another occasions because of a very trivial affront.

Again suppression of any show of emotion may be harmful if an individual for one reason or another has put a lid on any impulse to show affection and its awkward and even rude, when he happens to feel very affectionate toward some one and wishes that he could somehow show it in a spontaneous way.

The most important factors in a child's emotional development are the affection that he receives from his parents, peer group and society. This gives opportunity to develop wholesome affection for his fellow creatures.

The more genuine the parents love for the child, the more the child tends to feel free to love other people. More over he is likely to express all his emotions at ease.

All physiological healthy nurses are likely to feel some affection for patients in their charge or with whom they have a chance to associate even though the children are not their own.



Affection is important for an individual 's emotional welfare promoting security. The unloved person may suffer in connection with the development of positive attitudes and concepts concerning his own worth.

### 7.7.Adjustment

Adjustment is the process by which living organism maintains a balance between its needs and the circumstances that influence the satisfaction of these needs,” says **Lawrence F.Shaffer** .

Accordingly the process of adjustment has two primary main elements:

- Ø One,the needs of the living organism and
- Ø two conditions of the circumstances that influence those needs.

These needs can be biogenic, originating in society, personal or communal, On the other hand, the circumstances influencing these needs also can either be inside the individual or outside him.

Factors with in the individual that influence these needs are his physical and mental states capacity, attitudes, interests etc. For example most weakly constituted individuals cannot fulfill their own psychological motives and thus their needs are definitely affected by their lack of strength factors.

Arising within the environment are usually geographic conditions, social conditions, political and cultural influences. These conditions and circumstances can help as well as deter the fulfillment of the individual' s requirements.

In this manner, the nature of influences upon the person' s needs is of two kinds, where one is favorable and the other unfavorable. Positive or favorable influences help in the fulfillment of needs while unfavorable influences hinder their satisfactions.

These elements in adjustment are

- Ø Motive
- Ø Thwarting conditions
- Ø Varied Responses.

### **Motive:**

The very process of adjustment in the living being is set in motion by the presence of motive within him, or needs or requirement from outside.

When the environment does not present any features that tend to become obstacles in the fulfillment of these needs, then the adjustment is natural, facile and effortless and no problem result. But if circumstances create obstacles in the path of such fulfillment, then the process of adjustment progresses further.

### **Varied responses:**

Once the fulfillment of a need has been obstructed, the individual indulges in various actions, which are reaction to the obstacle. Such a reaction can be normal just as much as it can be abnormal.

### **Solution:**

As a result of these reaction and responses, the individual achieves a degree of adjustment with the circumstances. The problem of adjustment is thereby solved.

### **An EXAMPLE**

A student is actuated by a strong desire to stand in his class and to do so by scoring very well. He works extremely hard but fails to achieve his objective because he has not the necessary mental equipment i.e. lack of the requisite intelligence.

This forms an obstacle to the satisfactory of this motive and hence as a result the student condescends to lower his aim some what by aiming at securing a second division. In order to accommodate this change of objective, the student changes the mode of study.

A change of response suitable modification of the objective and the objective prevails. Such a process of adjustment in an universal phenomenon and is seen to be at every level of life, at various times and under varied conditions.

### **Motives and adjustment**

The process of adjustment can be set in motion by any motive. Physical needs do not have much importance for on the one hand they are easily satisfied.

On the other, in the event of their dissatisfaction, life itself ceases in the organism, thus obviating all further adjustment activity. Hence social motives and requirements have greater importance for the adjustment process.

Social motives are developed within a cultural environment. Individuals' of different cultures have different motives and different cultures do not generate identical motives.

Once they have been excited then can only have strong motives satisfied. Inability to satisfy them only leads to further dissatisfaction and this tension is not ended till the objectives have been attained.

### **Thwarting in adjustment**

Many of the form that thwarting can take and is known to take one form in frustration. For an example if a person fails to catch a train and reach his destination because his wristwatch was not functioning properly, then he has to face frustration that arises out of the environment.

Another form is **conflict**. A state of conflict is precipitated when the individual is actuated by more than one motive arising simultaneously.

Among the classical examples of state of conflict and indecision is the state of the mind of Arjuna as described in the Geeta, when he was divided between war and peace.

The state of conflict and tension will continue till the individual decides upon one particular motive. And if the

conflict continues the, individual shows signs of mental illness and other abnormalities of behaviour and conduct.

Frustration and conflict are closely related. If the child's normal expression of aggression and violence restricted from some frustration it becomes repression and gives rise to feelings of fear and insecurity.

The individual with an adjustment and organized personality maintains a balance and practical outlook on life. Failures and frustrations do not disturb him and he persists in looking calm and master of the situation.

His emotions, needs thinking and other mental activities are adequately balanced and systematized. On the other hand, the personality of a mal adequate person is non-integrated.

Absence of adjustment results in the increase of tension, while its presence helps in reducing tension. Adjustment can be evaluated by the assessment of intensity of tension existing in mind.

The methods of adjustment are as follows

- 1) **Constructive adjustment:** The main feature in this is that it offers a quality of facing the situation rather than running away from and of making efforts that solve the problem instead of merely postponing.

EG: When a trader is faced with some problem of his trade, he resorts to exercise economy in expenditure or some other constructive adjustment to solve that problem.

- 2) **Substitute adjustment** A large number of individuals have recourse to substitute adjustments while facing difficult situations.

EG: Failure leads to school dropouts. The students start avoiding school since he is defamed and then this obstructs his social motives. Running away ends tension created through this obstruction. Thus for these reasons

these reactions to difficult situations are called substitute reactions.

### **Defense mechanisms**

Another mode of reacting to difficulties is that of mental mechanism or defense oriented reactions to stress aims chiefly at protecting the self from hurt and disorganizations.

#### **Ego defense mechanisms**

Sl.No	EXPRESSION	MODE OF REACTIONS
1	Withdrawal	Protecting self from unpleasant, reality by refusal to perceive or face it.
2	Fantasy	Gratifying frustrated desires by imaginary achievements.
3	Repression	Preventing painful or dangerous thoughts from entering consciousness.
4	Rationalism	Attempting to prove ones' behaviour 'rational' and justifiable and thus project worthy of itself and social approval.
5	Projection	Placing blame for difficulties upon other or attributing one's own unethical desires to others.
6	Displacement	Discharging pentup feeling usually of hostility or objects less dangerous than those, which initially aroused the emotions.
7	Emotional insulation	Reducing ego involvement and withdrawing into passivity to protect self from hurt.

8	Intellectualization {isolation}	Cutting of affective charge from hurtful situations of separating incompatible attitudes by logic –tight compartment.
9	Undoing	Counteracting immoral desires or acts.
10	Regression	Retreating to earlier developments; level involving less mature responses and usually a lower level of aspiration.
11	Identification	Increasing feelings of worth by identifying oneself with person or institution
12	Introjections	Incorporating external values and standards into ego structure so that the individual is not at their mercy as external threats.
13	Compensation	Covering up weakness by emphasizing desirable trait or making up for frustration in one or by over qualifying in another.
14	Acting out	Reducing the anxiety aroused by forbidden or dangerous desires by permitting their expression.

It may be emphasized that the above defense mechanism are, learned. They are designed to deal with inner hurt, anxiety and self-devaluation.

They operate on relatively automatic and habitual levels and they typically involve some measure of self-deception and

reality distortion. The excess use of the above defense mechanism will lead to mental illness.

### 7.8. Personality

The word personality has been derived from the Latin word ‘Persona’ which was the mask which Greek actor wore while acting. This however is not the meaning taken in the modern word personality.

This personality is not fixed state but a dynamic totality, which is continuously changing due to interaction with the environment.

Personality is known by the conduct, behaviour, activities, and movements. It is the way of responding to the environment. The way in which the individual adjusts with the external environment is personality.

#### Definition of personality

In the words of **Munn**, it is the characteristic integration of an individual’s structure, modes of behaviour, interests, attitudes, capacities, abilities and attitudes. Behaviour requires integration.

In the words of **Gordon Allport**,

“personality is the dynamic organization within the individual of those psychophysical systems, that determine his unique adjustment to his environment”.

The personality is the organization of the internal and external activities. It is not a collection of traits but a particular organization of them.

Personality is the total quality of behaviour, attitudes, interests, capacities, aptitudes and behaviour patterns, which are manifested in his relation with the environment.

An integrated personality leads to organized character. Disintegrated personality leads to disorganized character.

Abnormalities in personality hamper, the organization of character. In mental patient, both character and personality are in disorder.

The basic sources of personality development are heredity and environment. However as a persons genetic inheritance interacts with and is shaped by environmental factors, there emerges a self structure that becomes an important influence in shaping further development and behaviour.

### **Trait and type approaches of personality:**

The trait approaches to personality attempts to list a number of basic personality traits and the personality of an individual can be described by its position on a scale of units in each of these traits.

A trait is an enduring and consistent characteristic of a person that is observed in a wide variety of situations. The traits are intelligence , emotional sensitivity ascendance , submission , irritable , warm etc .

In fact All port and Odbert have listed 17,953 words in English , which are adjectives standing for personality traits. He distinguished between surface traits and source traits.

**Cattell** has startrd 16 personality factors as primary or source traits. Allport distinguished cardinal traits (basic) central traits , and secondary traits .

Some of the traits mentioned by are

Genial	↔	hostile
intelligence	↔	stupid
emotionally	↔	stable chargeable ,
dominant	↔	submissive ,
cheerful	↔	unhappy ,
co-operation	↔	reserved,
hypersensitive	↔	phlegmatic ,
friendly	↔	suspicious etc



**Norman** listed 5 terms extroversion, agreeableness, conscientiousness, emotional stability and culture.

**H .J .Evsenck** speaks of three basic categories of personality .

- Ø Extroversion - introversion ,
- Ø neuroticism - stability and
- Ø psychotism - normality .

This has been ultimately reduced to stable unstable and introversion extroversion.

- 1) **Extroverts** are described as outgoing, uninhibited fond of activities, which bring them into contact with other people. Introverts have the opposite traits.
- 2) **Neurotism** stability in Evsenchk' s model ranges from stability to high anxiety. In situations of worry, panicking, stress and over emotionality a high level activity could affect performance adversely in academic work of pupils, resulting in learning disabilities.

### The type approach

It is older than the trait approach , which depends upon modern statistical procedures. **Hippocrates and Galen** have associated personalities with certain kinds of body fluids called humors.

**Galen** has spoken of four kinds of human temperaments

- Ø choleric ,
- Ø melancholic ,
- Ø phlegmatic and
- Ø sanguine.

**Krrlchmer** refers to following types of human personality based on bodily fluid. These are

- Ø aesthenic (thin, long) who are shy and sensitive, withdrawn,

- Ø pyknic (short fat) who are jovial outgoing with fluctuating moods and
- Ø athletic (strong and sturdy) .

The athletic and asthenic type of body build, go with what is known as schizothyme personality and the pyknic body goes with cyclothymic's personality. The former is basically interested in him only and the latter extroverted.

**Sheldon** speaks of three types of body build

- Ø Endomorphic (round fat and muscular)
  - Ø Mesomorphy ( hard and muscular ) and
  - Ø Ectomorphy (delicate and lean) .
- 1) Endomorphic individuals have the type of personality called viscerotonia – which implies love of leisure , desire for food and sleep .
  - 2) Mesomorphs have somatotomic personalities , who exhibit persistence in behaviour desire for adventure , courage and involvement in actions.
  - 3) Ectomorphs have cerebrotonia which implies disciplined behaviour, ready response to stimulation, lack of interest in social interaction, hypersensitivity to pain etc .

The most popular theory of **Jungs**, Extroversion and introversion also is not universally accepted since he himself saves that most persons appear to be a typical ambiverts.

### **Psychological theories of personality:**

Personality theories are grouped under three major heads

- a) Psychodynamic theories ( Freud and Jung )
- b) Social learning theories ( of Dollard and Miller)
- c) Phenomenological theories ( Rogers and Maslow )

### **Psychodynamic theories of personality:**

Psychoanalytic theories of personality are referred to as psychodynamic theory. This theory attempts to understand personality in terms of mental functions may be rational. Irrational , conscious or unconscious.

**Freud's theory** of psychoanalysis emphasizes man as dynamic system of energies and the main storehouse of such energies is unconscious. The contents of the unconscious invariably exhibit conflicts. To Freud , the structure of an individual's Personality consists of 3 separate agencies

- Ø id
- Ø ego and
- Ø super ego.

- 1) Id is the inborn reservoirs of primitive psychic energy called libido , unconscious demanding immediate satisfaction on the basis of pleasure principle regardless of external which ego and superego develops and it consists of energy thing that is inherited.
- 2) All the energy of human behaviour is provided by two inborn id instincts namely sex and aggression, which he spoke of Eros-life instincts and thantoos, death instincts.
- 3) Ego embodies a rational cognitive capacity that demands of super ego.
- 4) Id seeks pleasure ego test reality and super ego strives for perfection. From Anxiety , defense mechanism or unconscious attempts to reduce anxiety by denying or destroying reality.

The technique of **Eric Berne's** transactional refers to wholesome transaction from childhood to adulthood . Freud also emphasizes the early experiences in personality development. He speaks of psychosexual development of the individual .

- Ø The oral stage , during infancy and
- Ø the anal stage between the age 2 and 3 ,
- Ø the phallic stage 3 to 5 ,
- Ø From 5 up to early adolescence the stage of Oedipuscomplex/electracomplex. Then from 5 up to early adolescence sexual force are subordinated which marks the latency, period and finally the genital stage of heterosexuality.

- Ø Psychosexual maturity is reached by an individual as the end result of successful passage through the full sequence of stages.

**Carl Jung** differs from Freud in taking a more positive and optimistic attitude towards human nature believing that people not only try to gratify their instincts but also try to develop their potential.

Jung agreeing with Freudian view of unconsciousness, which represents the accumulated experiences, and culture of the human species throughout its evolutionary development from primitive times.

**Alfred Adler's** personality theory stress the uniqueness of one's personality looks upon aggression is more significant than sex as a motive of behaviour. He points to the innate striving for superiority.

To **Erikson**, personality is the resultant from interaction between the needs of a person and the demands of a society at a particular stage of development.

He refers to eight psychosocial stages of development. A particular type of crisis characterizes each stage. Ego identify crisis during adolescence and now an individual resolves such crises determines personality characteristics.

**H.S.Viilian** has stressed the interpersonal nature of personality and has laid on the acquisition of language as a means of normal personality development.

### **Social learning theories of personality**

These theories say that consistency of behaviour, results not only from rigid personality traits but also from other factors like environmental stability.

**Skinner and Hull's** learning theories are based on the above factors.

**Dollard and Miller** pointed fear, as an important factor in personality development as it acts as a powerful motive or drive in the promotion of learning.

The ‘role’ theory of **G.H.Mead** speaks of different roles one plays in life (a son, pupil, leader, friend etc) and gradually internalizes the associated traits to form his personality.

A person’s behaviour depends upon the specific nature of the situation, how the situation is appraised by him as well as past reinforcement of behaviour in similar situations.

### **Behvoirists theories of personality:**

BEHAVOIRISTS is such a skinner emphasize that conditioning alone is not adequate to explain human character and personality.

### **Phenomenological theories of personality:**

This includes humanistic conceptions of personality. These theories emphasize the existence of positive growth promoting forces in personality beyond more conflict resolution or tension reduction and also stresses present rather than past experiences.

Maslow’s theory emphasizes inherent potentialities to seek self-actualization. Maslow & CarlRoger both dealt on humanistic and psychoanalytic theories on growth and self actualisation.

**Roger’s** client centered on non-directive counselling is popular. The most important concept is self. An individual with a strong positive self-concept seek growth and have pleasant productive relation with others.

**G.Kelly’s** cognitive theory of personality consists of personal constructs that is the ways a person has of evaluating himself and his circumstances.

### **Assessment of personality:**

The oldest methods of measuring personality are

- Ø Astrology,
- Ø Palmistry,
- Ø Phrenology etc.

More scientific techniques have been evolved to measure personality, which is very helpful in the field of education, employment and medicine.

In the field of education , to provide suitable courses , in the field of employment to select suitable person as per the requirements of a job and in the field of medicine to diagnose the mental diseases of patients for giving proper treatments.

Some of them are

- 1) Observation
- 2) Case Study
- 3) Rating Scale
- 4) Questionnaire
- 5) Interview
- 6) Projective techniques

### **1-Observation:**

There are two types of observation

- 1) Participant
- 2) non-participant

To make observation more effective the observation can make use of tape recorders. Cameras and binoculars. Carefully intelligent and scientific observation is needed in observation method.

### **2-Case study:**

**P.V.Young** says case study is a method of exploring and analyzing the life of a social unit be that a person, a family an institution cultural group or even entire community.

### **Characteristics of good case study**

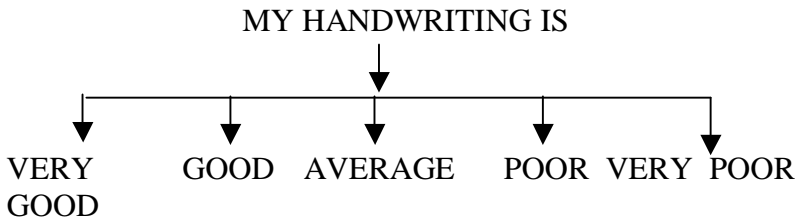
- 1) Adequacy
- 2) Validity
- 3) Continuity
- 4) Confidentiality
- 5) Feed back

**Steps in Case Study:**

- 1) Initial status
- 2) Collection of exploratory data
- 3) Diagnosis of causal factors
- 4) Looking forward to remedial development.
- 5) Follow up process.

**3- Rating scale:**

Rating scale is used to quantify an observation. In this method a number of questions are asked to enable a person to rate himself or to enable others to do so. Teacher can use rating scales to categorize their students on a specific trait. Example for self-rating



2) In spite of faulty logic error , central tendency error and generosity error, it is used for rating students well in scholarship and the quality or leadership sincerity punctuality and honesty.

**4. Questionnaire:**

It is most popular method useful in collecting quantitative and qualitative information.

A questionnaire should collect information which is normally not available from others sources . It should be arranged in categories to ensure accurate responses. It should provide complete and clear direction, simplicity, familiarity, singularity, should be used.

The questionnaire should avoid questions of ambiguity, variety it should not be too lengthy. It should be printed Both the

methods of mailing and personal contact of administering the questionnaire have their own advantages and disadvantages.

### 5 Interview:

Interview is a technique of getting information directly from the subject. It is subjective in nature hence its findings should be supplemented with other methods.

### 6. Projective techniques:

Projective techniques are used to study the unconscious aspect of behaviour, it permits or encourages wide variety of responses and it is highly multidimensional.

**Drever** defines, a projective technique is interpretations of situations and events by reading into them their own experiences and feelings.

A Projective techniques is used for

1. Clinical settings for diagnostic use with the mental patients
2. important projective tests are Rorschach ink blot test
3. The maticc apperception test
4. the world association test
5. sentence completion test.

**Rorschach ink blot test:** is made up of ten ink blot patterns. 5 are in black and white, two are black and red and 3 are multicolored.

While administering the test encouragements is given when there is no response from the individual.

All the responses are taken down verbatim. It does not impose time limits. The scoring categories are named as

- 1) Location
- 2) Content
- 3) Timing
- 4) Determinants
- 5) Originality.



Thematic Apperception test developed Murray and Morgan consists of 30 pictures which portray human beings in a variety of actual life situations and 1 black card 10 for male, 10 for female and 10 for both. The maximum number of pictures used with any subject is 20.

The system of scoring taken into account of the following.

- 1) Hero of the story
- 2) Needs and conflicts of the hero
- 3) Theme of story: the global view should be based upon, the responses of all the 20 pictures shown to the subject and the experiences of the examiner.

**Word association test** are of two types

- 1) Controlled
- 2) Uncontrolled

In controlled word association, the subject is given the word and is asked to give the antonym or synonym.

In uncontrolled word association, the subject is given a word and asked to reply and the first word that comes to his mind spontaneously is taken into account .

The interpretation of the tests depends on two factors (i.e.) the response word and reaction time. Inability to make any response or mere repetition of the stimulus word indicates one's emotional blocking.

**Sentence completion tests** consists of a list of incomplete sentences, generally open at the end and requires completion by the subject who is asked to go through the list and answer as quickly as possible.

On the basis of these responses, the psychologist's records observation, which indicate unhealthy or conflicting, healthy or positive attitude etc. Stimulus in the form of the following words may be represented.

- (1) I wish to become-----
- (2) My Mother-----

### (3) My Teacher-----

The above-mentioned incomplete sentences can be completed in many ways. From these answers, we can assess the personality of an individual.

#### Summary

- Ø The knowledge of basic principles of psychology play a vital role in nursing since the word ‘nursing ‘ itself denotes empathetic care of the individual , who lacks physical and mental well being.
- Ø To Maslow, the motivational psychologist satisfaction of the basic needs will open the door of next level of needs such as love and belongingness. The fulfillment of ‘ love’ needs will open the door for expression of the next level needs namely esteem needs.
- Ø The knowledge of individual differences is essential in day to day life of nurse since they deal with patients, differing in height, weight, structure, physical and mental immunity
- Ø The nurses should develop the skill in developing desirable interest and positive attitude in her/his own self and also in patients whom he /she is dealing with.
- Ø Most of the physiological changes such as increase in blood pressure and heart rate, rapid respiratory and papillary movements, result from activation of the sympathetic division of the autonomic nervous system. Hence the right knowledge and understanding of the emotional behaviour is essential in ‘Nursing’ for the quick recovery of the patient.
- Ø The knowledge of process of adjustment in individuals and in elements of adjustment such as needs and conditions that influence those needs, leads to successful nursing.

- Ø Personality is not a fixed state but a dynamic totality, which is continuously changing due to interaction with the environment.
- Ø Hence the knowledge of personality is essential in nurses in interacting with patients who lack physical and mental well being.

## Questions

### Part - A

#### Fill in the blanks

1. In \_\_\_\_\_ 5 types of needs are proposed by \_\_\_\_\_.
2. The reaction of \_\_\_\_\_, \_\_\_\_\_ leads to real conditions of neurosis.
3. In the field of education \_\_\_\_\_ and \_\_\_\_\_ are complimentary to each other.
4. The social origin of achievement motivation is explained by \_\_\_\_\_ and it is symbolically expressed by \_\_\_\_\_.
5. Attitudes have been defined as \_\_\_\_\_ with \_\_\_\_\_ content, important beliefs etc.
6. A \_\_\_\_\_ attitude towards teachers may spring from a \_\_\_\_\_ with some one in authority usually a \_\_\_\_\_.
7. The attitude of the child toward the teacher is strongly influenced by the \_\_\_\_\_ experiences with mother.
8. Any \_\_\_\_\_ experience in children under three years of age usually brings a change in the relationship with adults.
9. The dimensions of an attitude is \_\_\_\_\_ in behaviour as a force that \_\_\_\_\_, \_\_\_\_\_ fails to motivate a child.
10. Three important elements in the adjustment are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

11. The process of adjustment can be set in \_\_\_\_\_ by any motive.
12. \_\_\_\_\_ and \_\_\_\_\_ are closely related.
13. Aggression restricted from frustration becomes \_\_\_\_\_.
14. The personality of an adequate person is \_\_\_\_\_, where as the personality of an inadequate person is \_\_\_\_\_.
15. To Allport personality is the \_\_\_\_\_ organization with in the individual of those psychophysical system.
16. An integrated personality leads to \_\_\_\_\_ character.
17. Eysenck speaks of extroversion Vs \_\_\_\_\_, neuroticism Vs \_\_\_\_\_, Psychositsm Vs \_\_\_\_\_.
18. Erick burne's theory of \_\_\_\_\_ explains the etiology of behaviour problems.
19. Freud's theory of \_\_\_\_\_ explains three different stages namely oral, anal, phallic stages in children.
20. The oldest methods of measuring personality are \_\_\_\_\_ and \_\_\_\_\_.

### Say true or false

1. Heredity and environment are not two independent factors.
2. Girls display greater social and emotional maturity.
3. Boys show greater vitality independence and initiative.
4. Undesirable behaviour cannot be modified into desirable behaviour.
5. Suitable reinforcement of acceptable conduct will not eliminate problem behaviour.
6. Most of the physiological changes during intense emotion result from activation of Sympathetic division of the autonomic nervous system.

7. Electrical resistance of the skin increases during increase in emotional intensity.
8. Emotional hurts and shocks suffered by individuals at an early age cannot handicap them as long as they live.
9. Motivations and emotions differ in large.
10. Characteristics of good case study are invalidity and inadequacy.
11. Questionnaire method is useful in collecting quantitative and qualitative information.
12. Interview is a technique of getting information indirectly from the subject.
13. A projective technique is used for clinical settings for diagnostic use with mental patients.
14. Word associations test of two types namely controlled and uncontrolled indicate one's emotional blocking.
15. Thematic consists of 20 pictures.

### Match the following

1.

1. Ward defines emotion as	The stimuli in the environment, that arouses it. External stimuli
2. Kulpe defines emotion as	A fusion of feeling and organic sensations
3. Emotions are aroused by	As a pleasure pain in association with the idea of cause
4. Emotional expression is directed toward	The complete psychosis involving cognition, affection and conation
5. Hofding defines emotion as	

2.

1. Projection	Increasing feeling of worth by identifying oneself with person or institution.
2. Displacement	

3. Repression	Protecting self from unpleasant reality by refusal to face it.
4. Regression	Retreating to earlier developmental stages, usually a lower level of aspiration.
5. Identification	Preventing painful thoughts from entering consciousness.
6. With drawl	Placing blame for difficulties Discharging pent up feeling usually of hostility or objects less dangerous than those , which initially aroused the emotions.

## Part - B

### Write Detailed answers

- 1) What are the basic needs of human life and explain its importance in achievement?
- 2) What are the intrinsic and extrinsic factors of motivation?
- 3) Describe Maslow's theory of 'Motivation'
- 4) What is achievement motivation?
- 5) Examine the nature of individual differences found among pupils in your class.
- 6) Differentiate the gifted and backward children.
- 7) How will you modify an undesirable behaviour of an individual in your peer group?
- 8) How do interests emerge?
- 9) What are the factors that influence the development of interests?
- 10) Attitudes have intellectual biological, social, emotional components illustrate?

- 11) What are the four dimensions of the attitudes – explain?
- 12) Differentiate motives and emotions
- 13) Explain physiological changes in emotions.
- 14) What are the theories of emotions
- 15) Write a short note on positive and negative emotions.
- 16) Define adjustments.
- 17) What are the three elements in the process of adjustments?
- 18) Differentiate constructive and substitute adjustment.
- 19) What is a defense mechanism?
- 20) Explain the different forms of defense mechanism and their role in adjustment process.
- 21) What is personality?
- 22) Describe the factors affecting personality?
- 23) Explain the theories of personality?
- 24) What are the characteristics of projective techniques?
- 25) How will you use Rorschach inkblot test to access the personality of any individual?
- 26) Prepare case study and submit a project report.

## 8. HYGIENE – PATIENT AND HIS ENVIRONMENT

Patient and his environment including the bed comprises of patients unit, which needs to be maintained facilitating hygienic environment helping the cure process.

### Definition

The word **hygiene** refers to “the science of health and its maintenance, the prevention of disease, and sanitary practices”.

**Personal Hygiene** is the activity of self-care, including bathing and grooming. Care of the skin, hair, nails, mouth, teeth, eyes, ears, nasal cavities, and perineal and genital areas.

### Factors influencing personal hygiene practices

1. **Development level** : Children learn most of their hygiene practices at home and in their personal environment. They modify their behaviour with other family members. Many of these behaviours stick with them throughout life. The advancing age, hormonal levels and changes in the integumentary system often require hygienic practices.
2. **Cultural background** : Norms related to hygiene practices differ from culture to culture. For example, North American culture places a high value on personal cleanliness and people have a habit of bathing daily where as people from other culture may not consider bathing as a daily practice.
3. **Socio economic status** : Financial status often affects a person’s ability to purchase hygiene products.
4. **Religion**: Some religions observe specific rules related to personal hygiene.



5. **Health status:** Persons who are ill are often unable to attend to personal hygienic activities, either because they have a low energy supply or a specific physical deficit.

## **Patient and his bed**

### **Bed Making**

Bed making is an art. Skillful bed making contributes materially to the patient's comfort. Clean and comfortable bed includes the patient's unit in the hospital.

#### **Purpose:**

1. To provide clean and comfortable bed to the patient
2. To observe and prevent patient's complications
3. To save time, effort and material
4. To provide a neat appearance of the ward/ unit
5. To adapt the needs of the patient

### **Equipments**

#### **Open (Simple) Bed**

1. Bed
2. Duster
3. Chair and stool
4. Protective sheet
5. Bed linen, i.e. mattress, mattress cover, bottom sheet one, draw sheet one, pillow, pillow cover, top sheet one, one or more blankets with blanket covers or one counterpane or bedspread in winter.

#### **Closed (Unoccupied) Bed**

- Supplies as above

#### **Occupied Bed**

1. Chair
2. Duster
3. Cover sheet
4. Fresh linen as necessary.

### **Admission Bed**

1. Supplies as in open bed

**Post-operative Bed**

1. Supplies as in open bed except pillow.
2. Extra supplies
  - a. A tray containing, bowl of gauze pieces, forceps, mouth guard or tongue forceps, airway, small towel, small protective sheet and anaesthetic sheet and towel.
  - b. Kidney tray, paper bag, safety pins.
  - c. Shock blocks, intravenous stand.
  - d. Sterile drainage bag with rubber tubing and a glass connection if patient comes with urinary catheter.
  - e. 2-3 hot water bottles with covers or other means of warming the bed in winter.

**Fracture Bed**

1. Supplies as in open bed.
2. Extra supplies, i.e. fracture boards, bed cradle, sand bags, cover sheet, hot water bottles with covers, if required.

**Plaster Bed**

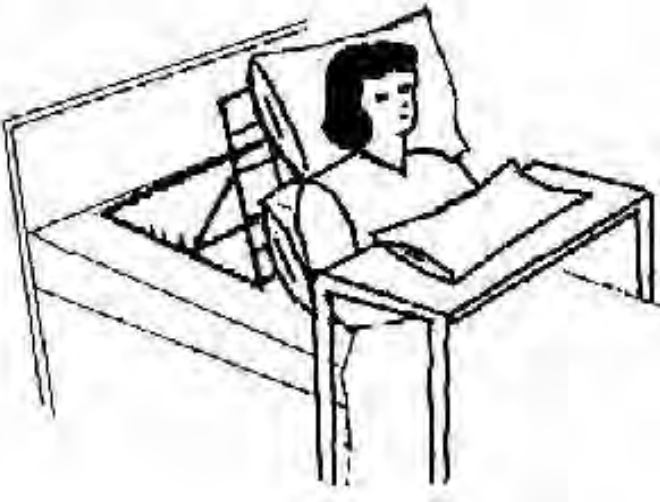
1. Supplies as in fracture bed.
2. Extra supplies, i.e., protective sheet and draw sheet, sand bags and draw sheet heat cradle or electric heater or hot water bottles with covers if required.

**Amputation or Stump Bed**

1. Supplies as in plaster bed.
2. Extra supplies i.e. extra set of top clothes, a pillow covered with protective cover and cotton cover, tourniquet and shock blocks.

**Cardiac Bed**

1. Supplies as in open bed.
2. Extra supplies, i.e., back rest, pillows 4-5, foot rest board, cardiac table.



### **Blanket (Rheumatism or Renal ) Bed**

1. Supplies as open bed
2. Extra supplies
  - a. Long protective sheet one, bath sheets two, electric blanket or ordinary woolen blankets-two or more.
  - b. Bed cradle or hot water bottles with covers.
  - c. Pillows or sand bags.

### **Guidelines**

1. The beds are of two types, ordinary and special beds.

#### **Ordinary Bed**

- a. Open (simple) bed: This is prepared for an ambulatory patient.

- Indication

- i. Provide a clean smooth comfortable bed to the patient.
- b. Closed (unoccupied) bed: This is an empty bed in which the top covers are arranged in such a way that all linen beneath the counterpane or bedspread is fully protected

from dust and dirt until the admission of new patient. On arrival of the patient, this bed is converted into open bed.

- Indication
  - i. Keep the bed ready for receiving the new patient.
- c. Occupied bed: This bed is prepared for bed-ridden patient, lying in the bed.
  - Indication
    - i. Provide a clean and comfortable bed with the least disturbance of the patient in it.

### **Special Beds**

a. Admission bed This is prepared for the newly admitted patient.

- Indications
  - i. Provide minimum disturbance to the patient during admission bath and physical examination.
  - ii. Protect bed linen during admission bath and leave a fresh bed immediately ready for the use.
- b. Post-operative bed. This is prepared for the patient who has undergone surgery.

- Indications
  - i. Protect bed linen from vomiting, bleeding, drainage and discharges.
  - ii. Provide warmth and comfort to the patient to prevent shock.
- c. Fracture bed This is a hard firm bed designed for the patient with fracture particularly of spine, pelvis or femur.

- Indications
  - i. Aid in immobilizing the fracture.
  - ii. Prevent unnecessary pain.
  - iii. Provide warmth and comfort to the patient.
  - iv. Prevent undue sagging of the mattress.
- d. Plaster bed This is a hard bed designed for the patient with plaster.

- Indications

- i. Aid in immobilizing the part until the plaster dries.
  - ii. Aid in drying the plaster in correct position and shape.
  - iii. Provide warmth to dry the plaster and keep the patient comfortable.
- e. Amputation or stump bed : In this type of bed the top bed clothes are divided or split. This is known as amputation or stump bed when it is used for the patient with amputation of legs.
  - Indications
    - i. Avoid disturbance to the patient during constant observation, repeated applications or treatments are necessary for abdomen or lower limbs.
    - ii Take the weight of the clothes off the side of the amputated limb or stump.
    - iii Keep the stump in good position.
    - iv Watch stump for hemorrhage constantly and apply a tourniquet instantly if necessary.
- f. Cardiac bed This is prepared for a patient with heart disease.
  - Indications
    - i. Relieve dyspnoea.
    - ii. Assist in recovery of the patient.
    - iii. Provide comfort to the patient.
    - iv. Prevent complications.
- g. Rheumatism or renal bed: This is prepared to provide extra warmth to the patient.
  - Indications
    - i. Provide extra warmth to the body incase of general debility and shock.
    - ii Provide comfort to the aching joints in patients with acute rheumatism.
    - iii. Improve perspiration for excretion of waste products incase of nephritis.

- h. Burns bed This is prepared for a patient with burns.
  - Indications
    - i. Prevent infection to the burnt area.
    - ii. Help in healing of the burnt area.
    - iii. Provide comfort to the patient.
    - iv. Prevent the patient from sticking to the sheet as a result of exudates oozing from the burnt area.
2. The beds must be versatile and adaptable to different needs of the patients with following arrangements.
  - a. Siderails These are used to
    - Prevent the patient from falling out of bed.
    - Protect the restless patient.
    - Provide the patient support to grasp and hold when moving about.
  - b. Handcranks These are located at the foot of bed and used to:
    - Adjust the height of bed.
    - Raise or lower the head, foot or knee sections in order to maintain various bed positions for treatment or comfort.
  - c. Special attachments The attachments of various poles, frames and equipment for traction are used to modify the beds to meet various needs of the patient for treatment and comfort.
3. Collect all the supplies which are likely to be required, place on the stool or bedside table.
4. Use a damp duster for enamel painted iron bed and dry one for the varnished bed. Dust mattress and sheets with dry duster and furniture with damp duster.
5. When stripping the bed, strip in the following manner:
  - a. Loosen the bedding all around starting from the head end and proceed to the foot end. Lift the mattress while loosening it.
  - b. Pick up gently, do not pull with force, shake gently and fold the clean linen which can be used again.

- Fold the counterpane or bed spread twice bringing the top end to the bottom end and then pick up from the center.
  - Fold the other top clothes the same manner.
  - Fold the draw sheet in two.
  - Roll the protective sheet to prevent creases on it.
  - Fold the other bottom clothes as top clothes.
  - Place the folded clean linen which can be used again, over the back of the chair and those, which cannot be used, again should be thrown in the dirty linen receptacle. Never throw the soiled linen on the floor to prevent spread of microorganisms.
  - Turn the mattress top to bottom or from side to side.
  - Turn the pillow.
  - Air the cotton mattress and pillow to keep them fresh and soft. Most of the dunlop mattresses are smooth on one side only.
6. When the patient is incontinent or has profuse drainage, use protective sheet under the patient.
  7. Two nurses should work together to make the bed for helpless patient opposite to one another or at each side of the bed.
  8. Modify the bed according to the weather, needs and habits of the patient.
  9. When tucking the bed linen under the mattress, pull the sheets with both hands and the palms face down in order to protect your knuckles from bed springs.
  10. Never discard woolen blankets in the receptacle along with the soiled clothes. If soiled, treat them separately.
  11. Make the bed firm, smooth and free of wrinkles.
  12. After completing the bed making, arrange the locker, bed and bedside furniture properly.

13. When making an occupied bed, make every effort to minimize the discomfort to the patient.
14. When the patient is in traction, the bed is made without disturbing the traction weights.
15. Inspect bed and bedding for vermin and treat accordingly, if present.
16. Do not let your uniform touch the bed and bed linen.
17. Observe patient's physical condition to assess patient's ability for self care.
18. Develop relationship ( nurse-patient ) with the patient.
19. The following are the principles of bed making which need to be kept in mind while making bed.
  - a. Barrier nursing to prevent cross infection.
  - b. Clean and comfortable bed to ensure rest and sleep and prevent complications.
  - c. Appropriate body mechanics to maintain body alignment and prevent fatigue.
  - d. Organised functioning to save time, effort and material.
20. Keep in mind the nursing principles while making bed.

### **Nursing activity**

1. Collect and take the supplies to the bed side.
2. Place the supplies on the stools.
3. Tidy the shelves and move the locker a little away.
4. Explain the patient that you are going to make his or her bed.
5. Maintain patient's privacy by using screen.
6. Wash your hands.
7. Make the bed as mentioned below accordingly

### **Open Bed**

- a. Assist the patient out of bed as necessary and offer chair to sit.
- b. Remove any equipment attached to the bed linen.
- c. Adjust the bed in flat position to a comfortable height to prevent straining your back.



- d. Strip the bed clothes, fold them one by one and place on the back of a chair, incase to be reused. Remove the mattress cover and bed cover, fold and keep them also
- e. Dust the bed with damp duster and mattress with dry duster. Turn the mattress
- f. Spread the bed cover on the bedsprings to protect the under surface of the mattress. Put on the mattress cover, if it is loose the excess can be tucked under the mattress. Pull the mattress to the top.
- g. Place the bottom sheet at the foot of bed, seam side down with the lower hem even with the edge of the mattress and the centerfold on the center of the bed. Then, unfold the upper layer onto the head of bed.
- h. Tuck in excess sheet at the head of the bed
- i. Miter the corner as below at the head end of bed, making smooth and neat corner.
  - Pick up the side edge of the sheet, so that the sheet forms a triangle with the head of bed and the side edge perpendicular to the bed.
  - Hold the sheet against the side of mattress using the palm of your hand and tuck the excess sheet under the mattress.
  - Drop the sheet from your top hand to the side of mattress.
- j. Miter the corner as above at the foot end of bed.
- k. Tuck the sheet under the mattress from head to foot of bed on one side.
- l. Place a protective sheet and drawsheet in the middle of the bed with the centerfold on the center of bed and unfold. Then tuck in on one side.
- m. Place the top sheet at the head of bed, seam side up with the top hem even with the head of mattress and the centerfold on the center of bed, then unfold the upper layer on to the foot of the bed.

- n. In winter, placed the blanket and bedspread over the top sheet as under.
  - Place the blanket over the top sheet, at the head of bed, about 6-8 inches below the top sheet with the centerfold of the blanket on the center of bed. Unfold the blanket on the center of bed. Then unfold the upper layer onto the foot of the bed.
  - Place the bedspread on the blanket
- o. Make a vertical or horizontal toe pleat as under while tucking the top bedclothes at the foot of the bed.
  - Vertical pleat-Fold a six inches pleat lengthwise in the top clothes from the center to the foot end, at the center of mattress.
  - Horizontal pleat-Fold a two inches pleat across the top clothes at the center of foot of the mattress.
- p. Tuck in the excess sheet, blanket and bedspread together at the foot of the bed.
- q. Miter the corner of top clothes at the foot of bed as in step i allowing the top linen to hang over the side of the bed.
- r. Repeat the procedure on the opposite side, if you do not have other nurse to help you on the other side. Pull the linen tight and smooth out any wrinkles.
- s. Fold back the top sheet at the head of the bed to the shoulder height. If blanket and bedspread are used, fold back the top sheet over the edge of blanket and bedspread.
- t. Put a clean pillow cover on pillow and place the pillow at the center of the head of bed, with open end of the cover away from the door of the room.
- u. Fanfold the top clothes toward the foot of the bed or pie fold them as under for easy entering.
  - Fanfold Fold the half of the top clothes toward the foot of the bed which is further folded into 2-3

accordianpleats so that the top clothes are at the foot end of the bed.

- Pie fold Place one finger at the center of the top clothes facing the head of bed. Lift the edge of the top clothes and fold it back toward the center of the bed, making a triangle.

### **Closed Bed**

- a. The procedure is the same as in open bed except for the bedspread.
  - Place the bedspread, keeping seam side down with its centerfold on the center of the bed.
  - Unfold the spread on to the head side of bed, adjust the top edge of spread even with the edge of mattress, tuck in and miter the corners.
  - Unfold the spread onto the foot side of bed, tuck in and miter the corners.
- b. Follow the steps as mentioned above to convert this bed into an open bed, on the arrival of the new patient.

### **Occupied Bed**

- a. Lower the siderails. Strip the bed and replace the top clothes by a cover sheet (top sheet can be used, incase it is not soiled).
- b. Fold top clothes one by one to remove and place on the back of the chair in case to be reused.
  - Bedspread Fold it in half, top edge to bottom edge or longitudinally with side edge to side edge. Grasp the center and fold in half, then in half one more time.
  - Blanket Fold it as above.
  - Top sheet Fold it as above.
- c. Move the patient and mattress well up in the bed.
- d. Turn the patient towards you.
- e. Fold or roll the unclean draw sheet, protective sheet, bottom

sheet, one by one as close to the patient's back as possible, soiled side inward, on the far side of the bed.

- f. Dust the mattress thoroughly. Place the clean bottom sheet, protective sheet, draw sheet on the far side and fold or roll the excess bottom clothes one by one close to the patient.
- g. Raise the far side rail. Turn the patient away from you. Patient may hold the far side rail for support.
- h. Roll the unclean bottom clothes on the near side towards you and remove.
- i. Dust the mattress and unroll the clean bottom clothes towards you.
- j. Straighten the bottom clothes tight and smooth out wrinkles, tuck these one by one firmly under the mattress and miter the corners.
- k. Replace the cover sheet by top clothes.
- l. Repeat the steps as mentioned in preparing the open bed.

N.B: If the patient cannot be turned, the bottom clothes are changed from head to foot. The bed linen is changed after giving bath to the patient.

### **Admission Bed**

- a. Prepare the bed as an open bed.
- b. Fanfold the top clothes neatly to the foot end of the bed.
- c. Cover the bed with long protective sheet and two bath sheets. Turn down the top bath sheet to the shoulder height and fanfold it lengthwise towards the locker. Place hot water bottles between the blankets to warm the bed in winter.
- d. Adjust the height of bed to the level of stretcher, if necessary.

N.B: After giving bath, turn the patient towards you, roll the bath sheet and protective sheet and keep close to the patient's back. Turn the patient to the other side, remove bath sheet and protective sheet and cover the patient with top clothes.

### **Surgical Bed**

- a. Prepare the bottom of the bed as in open bed.

- b. Place top clothes on the bed but do not tuck in. Fold them using any one of the following methods.
    - Fold the sides to the middle, then top and bottom to the middle, thus making a packet in the center of the bed which can be easily moved for the reception of the patient. Place this packet over the hot water bottles in winter.
    - Turn down the top clothes to the shoulder height and then fanfold toward the locker, having the other side clear for receiving the patient. Place hot water bottles in the middle of the bed under the fanfolded top clothes in winter.
  - c. Instead of pillow, place a small protective sheet and a towel on the head end of bed.
  - d. Keep the tray (mentioned in supplies) on the locker or table nearby and shock blocks on floor near the foot end of the bed ready incase of necessity.
  - e. Adjust the height of the bed to the level of the stretcher.
- N.B: When the patient is received in bed, place kidney tray on the bed near the mouth and pin up the paper bag with the bottom sheet on the side.

### **Fracture Bed**

- a. Place the fracture board directly over the bedsprings.
- b. Make the bed as in open bed and spread cover sheet between the bottom and top clothes. Place hot water bottles in between, to warm the bed in winter.
- c. Place the sand bags to support the part in order to maintain the position.
- d. When the patient is received in bed, place the bed cradle over the fractured part between the cover sheet and top clothes to take off the weight of the clothes.

### **Plaster Bed**

1. Prepare the bed as fracture bed.

2. Put on protective sheet and draw sheet where the plaster parts are to be placed to protect the bed linen.
  - c. Keep the sand bags covered with draw sheet to support the part so that the plaster dries in correct position and shape.
  - d. When the patient is received in the bed, keep bed cradle over the plastered part between the cover sheet and top clothes to take the weight of the clothes off the plastered part.
  - e. If possible, the patient may be exposed to the sun rays and if not, then use heat cradle or electric heater. If this is also not possible or available, use hot water bottles to dry the plaster.
- N.B: Any part of the patient, not covered by the plaster, must be kept warm with a blanket and if the feet are exposed, they may be covered with warm woolen socks.

### **Divided Bed**

- 1) Prepare the bottom of bed as in plaster bed.
- 2) Arrange two sets of top clothes in such a fashion that they are divided in the middle so that the gap will come where it is required.
- 3) Place a pillow covered with protective cover and cotton cover under the stump for support. Sand bags covered in a draw sheet are also placed on the sides to support the limb in order to keep the stump in good position.
- 4) Tie the tourniquet to the bed loosely to apply instantly when hemorrhage is detected. Keep shock blocks near the foot end of the bed ready in case of necessity. When the patient is received in bed, cover with cover sheet except at the site where it must be folded back. Place a bed cradle over the stump to relieve the pressure of the top clothes. Use hot water bottles or radiant heat (heat cradle) to supply warmth to the limb.

**Cardiac Bed.**

- 1) Prepare the bed as open bed.
- 2) Place back rest at the patient's back making it comfortable with pillows and adjust according to the need of the patient
- 3) Keep air cushion under the buttocks, a pillow under the knees and support the feet with foot rest board.
- 4) Place the cardiac table in front of the patient with a pillow on it so that he or she can lean forward to rest his or her head and arms on it when gets tired in upright position.

N.B: In acute heart disease, the patient is best nursed in flat position and in a chronic heart disease if there is difficulty in breathing the patient must be nursed in an upright position.

**Blanket Bed**

- a. Prepare the bottom of bed as open bed.
- b. Place long protective sheet and bed sheet over the bottom sheet and then arrange a small protective sheet and draw sheet in the usual manner.
- c. Arrange the electric blanket as per direction on the product, allow it to warm. If electric blanket is not available, arrange two or more ordinary woolen blankets on bed sheet and then arrange the top clothes.
- d. Arrange pillows or sand bags covered with drawsheets after receiving the patient in bed (dressed in woolen clothes) to support the limbs steadily in case of arthritis for providing a comfortable position.
- e. Place bed cradle to take the weight of the top clothes off the painful joints.
- f. Provides extra warmth by using hot water bottles or radiant heat (heat cradle) to warm the patient, if necessary.

## **Burn Bed**

- a. Repeat the steps as mentioned above in the preparation of open bed. Cover the mattress completely with long protective sheet. If mattress is without protective cover and then place sterile bottom sheet.
- b. Place three sterile draw sheets (top, middle and bottom) over the sterile bottom sheet and nicely tuck them under the mattress. These are helpful to permit changing by the nurse with minimal discomfort to the patient. In well established institutions microdon (3 M.co.) sheeting is used over the sterile bottom sheet. This prevents the patient from sticking to the sheet as a result of the exudate's oozing from the burn area.
- c. Place the bed cradle over the burn area after receiving the patient in bed. Place a sterile sheet on the top and then cover with top clothes as in plaster bed. This prevents the patient from sticking to the sheets and helps to take the weight of top clothes off the burn area.
8. Discard dirty and soiled linen in the dirty linen receptacle.
9. Replace the locker. Dust the chair and stool and replace them also. Wash the duster, dry and replace it.
10. Wash your hands.

## **CARE OF THE SKIN**

The skin is an active organ with the functions of protection, secretion, excretion, temperature regulation and sensation. The skin has three primary layers; epidermis, dermis and subcutaneous.

Bacteria commonly reside on the skin's outer surface.

### **Normal skin Characteristics**

- 1) Skin is smooth and dry.
- 2) Skin is intact and has no abrasion.
- 3) Skin feels warm when palpated.
- 4) The skin is soft and flexible.



- 5) The skin is generally smooth and soft with good turgor (Elastic and Firm).
- 6) Skin colour varies from deep brown to light pink

### **The purposes of bathing**

1. To keep the patient clean and comfortable and refreshed.
2. To give a sense of well-being.
3. To promote rest and sleep
4. To keep the skin dry, active and healthy

### **Risk factors for skin impairment**

- 1) Immobilization
- 2) Reduced sensation
- 3) Poor nutrition
- 4) Dehydration or oedema
- 5) Excessive secretions and excretions on the skin.
- 6) Vascular insufficiency.
- 7) Use of external devices eg. cast, bandage or orthopedic devices.

### **Common Skin Problems**

- 1) Dry skin (flaky, rough, texture on exposed areas such as hands, arms, legs or face)
- 2) Skin rashes results from overexposure to sunlight or moisture or from allergic reaction.
- 3) Contact dermatitis: inflammation of the skin with scaly oozing lesions.
- 4) Abrasion scrapping away of epidermis results in localized bleeding.
- 5) Bacterial breakdown of sebum appears on face, neck, shoulders and back.

## **BED BATH**

### **Definition**

Bathing the patient while he is in bed.

**Purpose**

1. To cleanse the skin and thus increase elimination through it.
2. To stimulate circulation through slightly active or entirely passive exercise
3. To refresh the patient by relieving fatigue and discomfort.

**General Instructions**

1. The temperature of the water should be 105° - 110°F (40° - 44°C)
2. The water should be changed when it is cool or soapy.
3. Be sure to remove all the soap as it is irritating to the skin
4. Do not expose the patient unnecessarily
5. Observe the patient's skin while bathing. Particularly if it is the first bath after admission. It offers an opportunity for the nurse to observe any rashes or pressure sores.

**Equipment**

1. Mackintosh (long) and two bed sheets
2. Soap in a soap tray
3. Two sponging pads
4. Towel - one
5. Linen to change (Gown)
6. Two jugs containing hot and cold water
7. Basin
8. Bucket
9. Screen
10. Urinal and bed pan

**Procedure:**

- 1) Close the window or door and screen the bed to prevent draught and to avoid exposure.
- 2) To collect the equipment next to the patients bed.
- 3) And arrange the items conveniently at the bedside.

- 4) Explain the procedure to the patient and get his cooperation
- 5) Protect the bed with mackintosh and sheet
- 6) Remove the patients linen and cover the patient
- 7) Take water in the basin and feel with the back of your hand. The temperature should be comfortably hot.
- 8) With wet sponge pad, moisten the patient's face first.
- 9) Apply soap. Carefully wash patient's face, ears, and front of the neck. Dry with the towel.
- 10) Wash the left hand first and the right hand. Support patient's arm by holding the wrist. Wash well between fingers if desired. The patient may place hands in basin.
- 11) Remove the sheet up to the waist, ask the patients to keep the arms above his head. It will be easy to clean the axillae in this position. Clean chest and abdomen.
- 12) Change water and turn the patient to the side and sponge his back. Give long firm strokes from back of neck to the buttocks. Watch for any redness over the pressure areas.
- 13) Do the left leg first and then the right. Have the patient's knee flexed so to facilitate washing. Give the bedpan and ask the patient to clean the genitals. If the patient is unable to do help to do it for him. Patient should be given privacy during this.
- 14) The back care is done by applying alcohol, massage back, use long firm strokes starting from back of the neck out over the shoulders and down to the buttocks. Use also rotatory motion to increase the blood circulation. Extra attention to be given to the pressure areas
- 15) Apply powder if indicated. This depends upon the condition of the skin. If the skin is wrinkled the application of powder is not advisable.

- 16) If the patient is having dribbling of urine, zinc cream is applied.
- 17) Roll up the mackintosh and sheet when the patient is on the side. Then remove it from the other side. Put the soiled linen in the receptacle.
- 18) Dress up the patient and remove the top sheet.
- 19) The bed is tidied.
- 20) The patient is given a warm drink
- 21) Remove the articles from the bedside.
- 22) Clean and replace in respective places.
- 23) Send soiled linen for wash

### **Types of Therapeutic baths**

- 1) Hot water tub bath: Immersion in hot water helps relieve muscle soreness and spasm. Water temperature should be 45° to 46° C.
- 2) Warm water tub bath: Bathing in warm water relieves muscle tension. Water temperature should be 43° C.
- 3) Cool water bath: Bathing in tepid water helps to lower body temperature when the body temperature is over 40° C (104° F).

Water temperature should be 37 °C.

- 4) Sitz Bath:

**Sitz bath** : Cleanses and reduces inflammation of the perineal and anal areas of a patient who has undergone rectal or perineal surgery or in hemorrhoids or fissures. Water temperature should be 43° C to 45° C.

**Cold sitz bath:** Cold sitz bath is more effective in relieving pain in the postoperative period.

- 5) Back rub or back massage promotes relaxation, relieves, muscular tension and stimulates skin circulation. An effective back rub takes 3-5 minutes.

### **Care of pressure points and prevention of decubitus ulcer**

Prevention of decubitus ulcer in their patients who are bedridden is a major responsibility of nurses working in a hospital.

When we walk or stand on our two feet, the weight of our body is borne by our feet. But when an individual is confined to bed, the weight of his body has to be borne by his back or sides. The skin of the soles of our feet is very tough and thick and it does not break easily in spite of the entire weight of the body being supported by it. The nature has designed the sole of the skin for weight bearing whereas the skin over the back of the body is not. When there is pressure on the skin of the back because of the weight of the body, the skin breaks and an ulcer develops.

### **Definition of Decubitus ulcer**

A decubitus ulcer is a pressure sore resulting from prolonged confinement in bed.

Areas which are likely to be affected.

When a patient lies in supine position, the following areas are vulnerable to pressure sores.

Back of head

Shoulder blades

Elbows

Base of the spine

Buttocks

Heels

When a patient is in lateral position the following areas will be affected.

Edge of ear

Shoulders

Knees

Ankles

All or any of the protuberant parts of a bedridden patient may become liable to pressure sores.

### **Causes of decubitus ulcer**

Local or external causes

- (a) Pressure : When any body prominence presses upon the bed, the tissues lying between them, get reduced blood supply - If this condition prolongs, the superficial tissues necrosed, skin breaks down and formation of an ulcer takes place.

**The following conditions cause prolonged pressure**

1. Leaving a patient in one position for a long time.
2. Leaving a patient on a bedpan for a long while.
3. Hard and lumpy mattress
4. Pressure exerted by splints and plaster casts.

**b. Friction :**

1. Friction from bedclothes or any other cause irritates the skin leading to inflammation.
2. If you lie on a bed sheet, which has a rough seam in the middle of it, for a while, you will notice the impression of the seam on your back.
3. You will also experience burning sensation and the part will be red in colour.

**The following factors cause friction in a patient :**

1. Careless pulling of patient and his linen
2. Giving and removing bed pan carelessly
3. Leaving bread crumbs, orange seeds and food particles on the bed
4. Creases in the bottom sheet
5. General restlessness of patient
6. Rubbing two skin surfaces together

- c. Moisture : Moisture makes the skin swollen, unhealthy and easily breakable.

**1. The following reasons result in moisture over the pressure areas:**

- Incontinence of faces and urine
- Severe perspiration

Leaving a patient in wet linen

- d. Heat : Leaving a patient in one position for a long time, the part gets heated.
- e. Lack of cleanliness and irritating substances on the skin.  
e.g. perspiration, faeces, urine and vaginal discharge.

## 2. **Predisposing factor for decubitus ulcer**

- a. Unconscious, helpless or acutely ill patients  
These patients are unable to appreciate the weight of pressure and change their positions
- b. Paralysed patients (Paraplegic and quadriplegic patients). They have lost motor and sensory functions.
- c. Patients with incontinence (spinal injuries)
- d. Old people
- e. Very emaciated and malnourished people
- f. Patients with dehydration or oedema  
g. Very fat people
- h. Patients with disease affecting circulation e.g. heart diseases and anemia
- i. Patients with debilitating diseases such as cancer and tuberculosis
- j. Patients with metabolic disorders. eg. Diabetes

## **Prevention of decubitus ulcers**

### 1. Prevent Pressure :

- a. Establish a turning schedule for bedridden patients; turn hourly.
- b. Have a firm cot and foam mattress for bed-ridden patients - use extra pillows, pads and air rings to reduce pressure.

### 2. Prevent friction :

- a. When changing position of your patient lift him and do not drag him on to bed.

- b. Keep sheets without wrinkles and seams.
  - c. Keep bed clean and free from crumbs.
  - d. If patient is restless, protect pressure points with soft pads.
- 3. Prevent moisture : a. Keep dressings and bed dry and clean. b. Clean and dry the incontinent patients promptly.
- 4. Prevent predisposing causes: a. Improve patient's health by means of good food, ventilation, sunlight and exercises. b. Encourage circulation through massage. c. Have patient to ambulate early.
- 5. Observe early signs and symptoms of decubitus ulcers : a. Redness b. Dark discoloration. c. Bruising, d. Tenderness of the area. e. Burning sensation.
- 6. Give good care to pressure points : Careful cleaning and massage should be carried out 3 or 4 times a day for all bedridden patients. For some patients, it is necessary to give care as often as every two hours.

#### **A. Equipment**

A bowl of warm water

Sponge cloth

Soap

Towel

Dusting powder

Spirit

#### **B. Procedure**

Explain procedure to patient - Arrange articles at the bedside.

Screen the bed

Wet the part with soapy hand massage the area in circular movements, so that the tissues under the skin gets increased circulation



Remove soap by washing

Dry the areas

Apply spirit over the area and massage well. Spirit helps to harden the skin.

Apply lightly dusting powder to keep the part thoroughly dry. Do this treatment to all pressure points.

If patient is incontinent, apply zinc cream instead of spirit and powder. This protects the skin from moisture. Leave patient comfortable after the procedure.

### **Treatment of decubitus ulcer**

1. Clean ulcers with aseptic precautions - Use antiseptics such as eusole or hydrogen peroxide.
2. Apply medication ordered by the doctor. eg. Antibiotic ointment, shark liver oil, zinc oxide, or any other topical applications.
3. Cover with sterile dressings and bandage
4. Surgical fermentation, ultraviolet rays or heat lamp are helpful in healing
5. Provide good nutrition
6. Prevent secondary infections.

### **CARE OF THE FEET AND NAILS**

The feet and nails require special attention to prevent infection, odors, and an injury to tissue. People are unaware of foot or nail problems until pain or discomfort occurs. Problems may result from poor care of the feet and nails such as biting nails or trimming them improperly, exposure to chemicals and wearing poorly fitted shoes.

#### **Purposes of care of the nails**

1. To keep nails harmless
2. To prevent accumulation of dirt under the nails and reduce occurrence of infection

### **Characteristics of a healthy nail:**

A normal healthy nail is transparent, smooth and convex with pink nail beds and translucent white tips.

### **Care of nail and foot**

- 1) Inspect the feet daily including the tops and soles of the feet and the area between the toes.
- 2) Wash and soak the feet daily using luke warm water (37° C).
- 3) If the feet perspire, apply a bland foot powder.
- 4) If dryness is noted along the feet, apply soft oil and rub gently into the skin.
- 5) File the toe nails straight across and square.
- 6) Avoid wearing elastic stockings.
- 7) Wear clean socks daily.
- 8) Do not walk barefoot.
- 9) Wear properly fitted shoes.
- 10) Exercise regularly to improve circulation to the lower extremities.
- 11) Immediately wash minor cuts and dry them thoroughly. Mild antiseptics may be applied to the skin,

### **Risk factors for foot and nail ailments**

- 1) Patients with peripheral vascular disease eg. Diabetes mellitus.
- 2) Patients with neuropathy (degeneration of peripheral nerves characterized by loss of sensation)
- 3) Poor ill fitting foot wear
- 4) Poor knowledge of foot and nail care

### **Common foot and nail problems**

- 1) **Callus:** is a thickened portion of epidermis caused by local friction or pressure.
- 2) **Corns:** is caused by friction and pressure from shoes. It is seen mainly on toes, over bony prominence.

- 3) **Plantar warts** are fungating lesions, appearing on sole of foot and is caused by Papilloma virus.
- 4) **Athlete's foot (Tinea pedis)** is the fungal infection of foot mainly induced by wearing of constricting footwear.
- 5) **Ingrown nails:** Toenails or finger nails grow inward into soft tissue around nail resulting from improper nail trimming.
- 6) **Paronychia** is the inflammation of tissue surrounding nails following an injury. It is common among diabetic patients.
- 7) **Foot odor** or result of excessive perspiration promoting micro organism growth.

### Equipment :

A tray containing

1. A pair of scissors or a nail clipper
2. Wet swabs in a small bowl
3. A jug with water for washing hands
4. A kidney tray with dettol 1 in 40 solution
5. Soft nail brush
6. A paper bag
7. A towel.

### Procedure

1. Assemble articles at the bed side of the patient.
2. Explain the procedure to the patient and get his co-operation.
3. Place towel under the hands.
4. Wash hands of patient with soap and water. Use brush if the nails are very dirty. Soak nails in water to cut them easily.
5. Cut finger nails to the shape of the nails. Cut toe nails straight across to prevent in- growing toe nails. Take care not to injure the flesh.

6. Receive soiled wipers in the paper bag.
7. Wash hands and dry.
8. Clean and sterilize nail clipper/scissors and replace in their proper place.
9. Dispose off soiled wipers with the paper bag.

## **ORAL HYGIENE**

The Oral cavity is lined with mucous membrane continuous with the skin. The mucous membrane is an epithelial tissue that lines and protects organs, secretes mucous to keep passageways of digestive system moist and lubricated, and absorbs nutrition.

### **Purposes of Oral Hygiene:**

- 1) Oral Hygiene helps maintain the healthy state of the mouth, teeth, gums and lips.
- 2) Brushing cleanses the teeth of food articles, plaque and bacteria.
- 3) Brushing massages the gums.
- 4) Brushing relieves discomfort resulting from unpleasant odours and tastes.
- 5) Flossing helps remove plaque and tartar from between teeth to reduce the gum inflammation and infection.
- 6) Oral hygiene gives a sense of well being.
- 7) Proper Oral hygiene stimulates appetite.
- 8) To improve taste

### **Proper Oral Hygiene**

- 1) Good oral hygiene involves cleanliness, comfort and the moisturizing the mouth structures. Proper care prevents oral disease and tooth destruction.
- 2) Brushing, flossing and irrigation are necessary for proper cleansing.
- 3) To prevent tooth decay, reduces the intake of carbohydrates, especially sweet snacks between meals.

- 4) Brushing of the teeth atleast four times a day is a basic to an effective oral hygiene(after meals and at bed time)
- 5) Tooth brushes should be replaced every three months
- 6) After brushing,thorough rinsing is important to remove dislodged food particles

### **Risk factors for Oral problems**

- 1) Patients who are paralyzed or seriously ill.
- 2) Unconscious patients
- 3) Diabetic patients
- 4) Patients undergoing radiation therapy
- 5) Patients receiving chemotherapy
- 6) Patients having oral surgery, trauma
- 7) Patients with immunosuppression drug eg HIV patients

### **Common Oral problems**

The two major types of oral problems are dental caries (cavities) and periodontal disease ( Pyorrhea)

- 1) Dental caries is the most common oral problem of younger people. The development of the cavities involve the destruction of tooth enamel through decalcification. Decalcification is a result of an accumulation of mucin, carbohydrates and lactic acid bacilli in the saliva normally found in the mouth, which forms a coating on the teeth called plaque. Plaque is transparent and adheres to the teeth near the base of the crown at the gum margins. The plaque prevents normal acid dilution and neutralization, preventing the dissolution of bacteria in the oral cavity. The acid eventually destroys the tooth enamel and in severe cases, the pulp, or inner sponge tissue of the teeth.
- 2) Periodontal disease is the disease of the tissue around the tooth. It is an inflammation of the periodontal

membrane. It is the most common problem of people over 35 years of age.

The calculus deposit on teeth at the gum line. The gingivae become swollen and tender. Then the inflammation spreads, pockets develop between gums and gingivae. The alveolar bone is destroyed and the teeth loosen.

- 3) Halitosis (Bad breath) is a common problem of the oral cavity.

Causes : (i) poor oral hygiene  
 (ii) inspection of the oral cavity  
 (iii) liver disease  
 (iv) diabetes

- 4) Cheilosis is the disorder involves cracking of the lips especially at the angle of the mouth.

Causes (i) Riboflavin deficiency  
 (ii) Mouth breathing  
 (iii) Excess salivation

- 5) Stomatitis is an inflammatory condition of the mouth.

causes (i) contact with irritants such as tobacco  
 (ii) Vitamin deficiency  
 (iii) infection by bacteria, viruses or fungi  
 (iv) Use of Chemotherapeutic drugs

- 6) Glossitis is an inflammation of the tongue resulting from an infectious disease or injury such as burn or bite.

- 7) Gingivitis is a inflammation of the gums usually resulting from poor oral hygiene.

- 8) Oral malignancies: lumps are ulcer appears in or around the mouth. The most common site is at the base of the tongue.

causes (i) pipe smoking  
 (ii) tobacco chewing

**Equipments:**

A tray containing

1. Cotton swab or clean linen pieces in a bowl
2. Forceps ( artery and dissecting forceps)
3. Gallicups 2 nos. ( one for Glycering borax another for salt solution)
4. Feeding cup with salt solution
5. Kidney trays 2
6. Swabs sticks
7. Rubber sheet
8. Towel
9. Wash towel

**Procedure:**

- a. Place all the articles at conveniently on the bedside table.
- b. Explain the procedure to the patient
- c. Put the rubber sheet (mackintosh) with towel and kidney tray under the chin
- d. Have the patient rinsed his mouth with salt solution form the feeding cup
- e. Turn the patient' s head to one side
- f. Take the artery forceps, wrap a piece of linen around the tip of the forceps
- g. Dip it inside the saline water and clean the teeth with up and down movements.
- h. Pay special attention to inside the mouth, gums, inside the cheeks, tongue and the roof of the mouth
- i. Change linen pieces as often as necessary.
- j. Discard used cotton in the other kidney tray
- k. Allow the patient to gargle as much as necessary
- l. Dip the swap stick in glycerin borax, swab gums, root and sides of the mouth.

**After care of Equipments:**

1. Clean kidney trays and feeding cups with soap and water.
2. Boil forceps, and gallicups after cleaning
3. Place all articles in their places after cleaning and boiling.

**Care of Dentures**

If the patient has dentures, care should be taken to keep the dentures clean. If the patient is unable to do so, the nurse has to remove the dentures by grasping it with gauze pieces, place them in a tumbler or cup containing water. Dentures are washed carefully using brush, toothpaste and cool water. Water, which is too hot, may injure the composition of dentures. If the patient is to do by himself, he may be assisted. Remove dentures of patients who are unconscious, mentally ill and who have vomiting or cough spasm

**CARE OF THE HAIR**

Care of the hair is a part of daily hygiene. A person's appearance and a feeling of well-being depend on the way the hair looks and feels, hair growth, distribution and pattern can be indicators of general health status.

**Proper hair care:**

1. Frequent brushing helps keep hair clean and distributes oil evenly along hair shafts
2. Short-tooth combs are adequate for short hairs
3. Large-tooth combs are preferable for curly hair
4. Avoid using combs with sharp and irregular teeth

**Factors that affect the character of hair**

1. Hormonal changes
2. Emotional and physical stress
3. Ageing
4. Infection



5. Certain diseases like cancer
6. Certain drugs like chemotherapy.

### **Common hair and scalp problems:**

- i. Dandruff: dandruff is the scaling of scalp accompanied by itching. In severe cases, dandruff is found on eye-brows
- ii. Pediculosis (lice): tiny grayish-white parasite insects infest human beings
  - pediculosis capitis(head lice): parasite is found on scalp attached to hair strands
  - pediculosis corporis(body lice): parasites cling to clothing and sucks blood
  - pediculosis pubis(crab lice): parasites are found in pubic hair
- iii. Hair loss (alopecia)

### **Purposes**

1. To maintain cleanliness
2. To prevent matting
3. To promote comfort
4. To remove dirt and dandruff by combing and brushing
5. To give exercise to scalp
6. To get an opportunity to examine the scalp and the hair of patients who are acutely ill
7. To soothen the patient and to help induce sleep.

### **Equipment**

A tray containing the following articles to be taken to the bedside.

1. Brush and comb
2. A little oil in a small bottle
3. Kidney tray with 1 in 40 dettol solution
4. Cotton swabs (wet)
5. Ribbon
6. Towel

**Procedure**

- 1) Arrange articles at the right side of the patient
- 2) Explain the procedure to the patient and get her co-operation
- 3) Get the patient to sit up if her condition permits
- 4) Place a towel around the shoulders to prevent soiling her bed clothes
- 5) Smear your finger with oil and apply on the scalp and hair
- 6) Massage scalp in a circular movement to promote good circulation
- 7) Brush and comb hair free from tangles. Take a few strands of hair at a time. Hold it with your left hand tightly at the root of the hair to prevent pulling of hair and comb it from top to downwards. Wipe the comb with a wet swab and examine for pediculi. Dispose of soiled swabs in a paper bag.
- 8) Braid the hair and tie with ribbon.
- 9) Keep patient comfortable and clean and put away the equipment.

**ATTENDING HAIR CARE - WASHING****Purpose**

1. To keep the hair clean and healthy.
2. To prevent itching , infection infestation.
3. To provide a sense of well being.
4. To destroy pediculi.

**Supplies**

1. Combing – hair oil, comb and paper bag.
2. Washing
  - a. A tray containing
    - Hot and cold water in jugs.
    - A basin and a mug.

- Protective sheets- two, one large and one small.
- A piece of bandage.
- Soap/shampoo.
- Little cotton in bowl.
- Wash cloth.
- Bath towel.
- Hot water bottle with cover.

b. Bucket – one

N.B. Make a trough of large protective sheet with a piece of bandage rolled in it.

### 3. Treating pediculosis

a. Pediculosis capitis (Head louse)

- A gown for the nurse.
- A tray containing
  - i. Fine tooth comb
  - ii. Parasiticide
  - iii. Antiseptic lotion in a kidney tray and paper bag.
  - iv. Supplies for washing hair in bed (as above) in case patient is bedridden.

b. Pediculosis corporis or vestimenti (Body louse) – Refer Antiseptic Bath in procedure “Applying Hot Applications”.

c. Pediculosis pubis (Crab louse)

- A tray containing
  - i. Protective sheet and towel.
  - ii. Bowl of warm water.
  - iii. Razor and blade.
  - iv. Soap and brush.
  - v. Antiseptic lotion in a kidney tray and paper bag.

4. Forceps to pick up lice from eye brows and eyelashes.

## Guidelines

1. **Combing** Hair are combed and arranged in the style the patient prefers at least twice a day.
2. When washing the hair, follow as under
  - a. The patients are given hair wash at least once a week and bedridden patients are given hair wash in bed.
  - b. Avoid hair wash for the patient who has just taken meals atleast for an hour.
  - c. Avoid exposure and chilling by
    - Keeping the patient covered with top clothes.
    - Closing the windows and doors of the room.
    - Keeping the room warm.
    - Finishing the hair wash quickly.
  - d. If the patient is very sick, note pulse before and after the hair wash.
  - e. Do not let the patient exert. Try to avoid exertion to the patient as far as possible.
3. When treating pediculosis , nurse must have following information.
  - a. The pediculi are small, grey coloured, blood sucking parasites which live for several days in the hair. The female lays about 50 eggs/nits which are grey or white in colour, cling to hair and hatch in about one week.
  - b. The symptoms of pediculi are
    - Itching
      1. Scalp, neck and behind ears in head louse.
      2. All over the body in body louse.
      3. On and around the part affected in crab louse.

- Rash
  1. Neck and behind ears in head louse
  2. All over the body in body louse.
  3. On and around the part affected in crab louse.
- Sores
  1. Scalp in head louse.
  2. Body in body louse.
  3. On the part affected in crab louse.
- Restlessness and irritability
- c. The common parasitocides used are
  - Mediker
  - Cyban

### **Nursing Activity**

1. Wash your hands and put on gown.
2. Take supplies to the bedside.
3. Maintain privacy by using screen.
4. Explain the procedure to the patient.
5. Give hair care.
  - a. Combing
    - Loosen the hair.
    - Apply oil to hair if necessary.
    - Comb and arrange the hair in the style the patient prefers.
    - If hair are braided, secure the end of braid.
    - Replace the supplies.
  - b. Washing
    - Position the patient bringing head on the edge of bed and shoulders raised on a pillow so that head is slightly down.
    - Place the protective sheet and bath towel under the head.

- Place the trough in the patient's neck and direct it into the bucket.
- Place cotton in patient's ears and wash cloth over eyes.
- Loosen the hair and remove hair pins
- Mix hot and cold water and check the temperature of water at the back of hand.
- Wet the hair, apply soap and shampoo and work up the lather.
- Start cleaning at the hairline and work towards the back of the head and then to the front of head symmetrically. Massage the scalp first and then the hair with the finger tips. Add water as necessary to work up the lather.
- Rinse thoroughly. Squeeze off water from the hair.
- Wrap bath towel around the hair.
- Remove the trough and slip the pillow under the head by raising head and shoulder. Place patient's head on protective sheet over the pillow and rub the head gently with towel. Spread the hair out on bath towel with hot water bottle underneath to dry in winter.
- When it is dry, apply oil, comb it and arrange in the style the patient prefers.
- Remove, clean, dry, and replace the supplies.

#### c. Treating pediculosis

- Pediculosis capitis (head louse)
  - i. put on gown and follow first five steps of washing.
  - ii. Wet the hair, pour medicament on hair, massage the scalp first and then the hair with finger tips working from the hairline

towards the back and then the front of the head symmetrically. Add water as necessary to work up the lather. Leave the hair in lather for five minutes and rinse.

- iii. Follow the procedure mentioned above.
  - iv. Repeat the treatment within few days.
  - v. Remove the supplies, wash and boil the supplies . soak gown , clothes and linen in carbolic solution 1:20 for four hours before sending to laundry.
  - vi. Soak comb and protective sheet in above solution for hours, then wash and dry.
- Pediculosis corporis/ vestimenti  
(Body louse)
    1. give a disinfectant bath.
    2. apply antiseptic ointment to heal any injuries produced by scatching.
    3. follow steps iv and v as above.
  - Pediculosis pubes (crab louse)
    1. the hair of affected areas (pubes or axillae) shaved and burnt.
    2. apply disinfectant into the areas and after some hours patient given bath.
    3. in case eyebrows and eyelashes are affected, pick up lice with forceps and apply two percent of yellow oxide of mercury.
    4. Follow step iii as above.
    5. wash your hands thoroughly.

### Recording

Record in the nurse's notes as under.

1. **Combing** any dandruff, pediculosis or anyother abnormal condition regarding hair or scalp.
2. **Washing** time of giving hair wash, soap, shampoo used, patients reaction.

3. **Treating pediculosis** The time, parasiticide used and the effect of treatment.

## **CARE OF EYES,EARS AND NOSE:**

### **EYES**

Normally no special care is required for the eyes because they are continually cleansed by tears, and the eyelids and the lashes prevent the entrance of foreign particles. a person needs only to remove any dried secretions that have collected on the inner canthus or the eyelashes.

Unconscious clients are at risk for eye injury because the blink reflex may be absent. In these clients, excessive drainage frequently collects along eyelid margins.

Special attentions are also needed for clients who have had eye surgery or an eye infection that can result in increased discharge or drainage. The nurse often assists clients in the care of eyeglasses, contact lenses, or artificial eyes.

### **EARS**

Hygiene of the ears has implications for hearing acuity when wax or foreign substances collect in the external ear canal, and they interfere with sound conduction. Older adults are particularly susceptible to this problem.

The nurse should be sensitive to any behavioral cues that might indicate a hearing impairment. When caring for a client with the hearing aid the nurse instructs the client on proper cleansing and maintenance as well as communication techniques, that promote hearing the spoken words.

### **NOSE**

- 1) The nose provides for the sense. It also controls the temperature and humidity of inhaled air. It also prevents entrance of foreign particles into the respiratory system.
- 2) The accumulation of encrusted secretions within the nose can impair olfactory sensation and breathing. Irritation of



nasal mucosa can cause swelling leading to obstruction.  
Hygiene care of the nose is simple.

### **Clients who need special care**

- 1) Patients with naso gastric tube feeding
- 2) Patients with the endotracheal tubes

### **SUMMARY**

- Hygiene refers to the science of health and its maintenance, the prevention of disease and sanitary practices.
- Personal hygiene is the activity of self-care, including bathing and grooming.
- Factors that influence personal hygiene practices are developmental level, cultural background, economic status, religion, personal habits and health status.
- Bed making is an art. Skillful bed making contributes materially to the patient's comfort.
- Common types of bed are simple bed, closed bed and occupied bed.
- Special types of beds are surgical bed, fracture bed, plaster bed, cardiac bed, blanket bed, Burns bed etc.
- Normal skin is smooth and dry; infant, feels warm and soft and flexible
- The risk factors for skin impairment are immobilization, reduced sensation, poor nutrition, vascular insufficiency and constrictive casts and bandages.
- Common skin problems are dry skin, skin rashes contact dermatitis, abrasion and acne.
- A decubitus ulcer is a pressure sore resulting from prolonged confinement in bed.
- The measures used to prevent decubitus ulcer are avoid pressure, friction and moisture and give good care to pressure points.
- A normal healthy nail is transparent, smooth and convex with pink nail beds.

- Common foot and nail problems are callus, corns plantar warts, athlete's foot, ingrown nails and paronychia.
- Oral hygiene helps to maintain the healthy state of the mouth, teeth, gums and lips.
- Common oral problems are dental caries and periodontal disease.
- Hormonal changes, emotional and physical stress aging, infection, disease conditions and taking chemo therapeutic drugs affect the character of hair.
- Dandruff and pediculosis are the common hair and scalp problems.

## QUESTIONS

### Part A

#### Fill up the blanks

1. ----- is the activity of self-care, including bathing and grooming.
2. Cardiac bed is prepared to patients with heart disease to relieve -----
3. Blanket bed is prepared to patients with acute -----
4. ----- are used to prevent the patient from falling out of bed.
5. ----- cleans and reduces inflammation of the perineal and areas of a patient.
6. Risk factor for skin impairment
  1. Immobilization
  2. Reduced sensation
  3. Poor nutrition
  4. All of the above
7. Purpose of bed bath
  1. To cleanse the skin
  2. To refresh the patient
  3. To stimulate circulation
  4. All of the above
8. Sitz bath is more effective in relieving pain in
  1. Post operative period
  2. Postpartum period
  3. Convalescent period
  4. All of the above
9. Causes of bed sore
  1. Pressure
  2. Friction
  3. All of the above
  4. None
10. Fungetting lesions appearing on sole of foot
  1. Callus
  2. Corns
  3. Plantar warts
  4. Athlete's foot.

**Match the following**

- |                 |   |                 |
|-----------------|---|-----------------|
| 1. Fracture bed | - | sand bags       |
| 2. Cardiac bed  | - | fracture boards |
| 3. Surgical bed | - | back rest       |
| 4. Plaster bed  | - | bed cradle      |
| 5. Burns bed    | - | airway          |

**Part B**

1. Define hygiene.
2. What is personal hygiene.
3. What is bed bath?
4. What are the common oral problems?
5. What are the common hair and scalp problems?

**Part C**

1. What are the factors that influence personal hygiene practices?
2. What are the types of therapeutic bath?
3. What are the common skin problems?
4. What are the points to be kept in mind before giving bed bath?
5. What are the factors that cause friction in a patient?
6. Write about the predisposing factors for decubitus ulcer.
7. How will you maintain proper oral hygiene.

**Part D**

1. Write about preparing an admission bed.
2. Write in detail about decubitus ulcer, predisposing factors and prevention of decubitus ulcer.
3. Write about the risk factors and common foot and nail problems.

**Part E    Practicals**

Making simple bed

Making Unoccupied bed

Occupied bed

Divided bed

1. Making Surgical bed

2. Making blanket bed

3. Making burns bed

4. Making fracture bed

5. Making cardiac bed

6. Making plaster bed

Bed bath, Back care, Oral care, Nail care