Central Board of Secondary Education

Class - XII

Health Education, Public Relations and Public Health

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Preface

In an increasingly globalised world and the changing paradigm of urbanized living, the demand for quality health services has increased manifolds the world over. India too has witnessed a phenomenal growth of multi-specialty hospitals during the last decade. In this ever expanding sector of medical service, it has become an urgent need to provide competency based vocational education in healthcare at + 2 level. It is in this context that the CBSE has launched a new course in Healthcare Sciences under vocational stream.

The course in Healthcare Sciences has been designed keeping in mind the objective of creating a multi-skilled workforce for the growing health industry. This course consists of three core subjects of vocational nature, a language and a fifth subject Biology or Biotechnology from the academic subjects. A student may also choose a sixth academic elective (other than the above two) as an additional subject. Keeping in mind the stupendous rate of growth of the medical industry in India and the non-availability of such courses, this innovative course in Healthcare Sciences is a great beginning for attempting to support the healthcare personnel by generating employability skills as assistants, coordinators, health workers, marketing sales executives in healthcare and other functionaries in this field.

The textbook of one of the three core vocational subjects, 'Health education, Public Relations and Public Health' attempts to describe the concepts of health education, communication for health, sexuality and family life education, public relations in healthcare service institutions, public health and organizational behaviour. It briefly deals with patient education for common acute diseases and chronic diseases. The book also includes the essentials of personal hygiene and environmental sanitation. All these topics are very contemporaneous and are important in modern healthcare management.

It has been a deliberate effort to keep the language used in the textbook as simple as possible. Necessary charts, pictorial illustrations and tables have been included to help the students understand the concepts without any difficulty.

Practicing professionals from the fields of medicine, public health and health education/health promotion comprised the team of authors for this book. The Board thankfully acknowledges their contribution in completing the book in record time. I hope this book will serve as a useful resource in this subject.

Comments and suggestions are welcome for further improvement of the textbook.

VINEET JOSHI, IAS
CHAIRMAN, CBSE

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CBSE ADVISORS

Shri Vineet Joshi, Chairman, CBSE, Delhi

Shri Shashi Bhushan, Former Director (Vocational Education & Edusat) CBSE, Delhi

Authors

1. Dr. P.V. Prakasa Rao

Prof. & Head, Health & Pramedical Division, PSSCIVE, Bhopal

2. Dr. Veena Sabherwal

Health Education Specialist (Ex Health Education Officer MHFW) New Delhi

3. Dr. Pragati Chhabra

Prof. in Deptt. of Community Medicine, University College of Medical Sciences, Delhi

4. Dr. S. Raghavan

Head of the Deptt. of Neurology, Safdarjung Hospital, New Delhi

5. Dr. Siddharth V. Paluvadi

Resident Doctor, Department of Orthopedics, Ram Manohar Lohia Hospital, New Delhi

Health Education, Public Relations and Public Health

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Introduction

Health education is an effective tool that helps improve **health of the nation.** It conditions ideas that shape the everyday habits of people, to enable them develop **healthy lifestyles.** Future generations will also benefit from such properly cultivated life styles that are likely to promote people's health. Health education is the job of all the health care personnel.

This chapter includes definition of health education, its aims and objectives, importance and principles of health education. The approaches to health education, process of behaviour change, factors influencing health and concept of health promotion have also been covered.

Objectives

After reading this chapter you will be able to:

- Define health education and health promotion
- Know the aims and objectives of health education
- Appreciate the importance of health education
- List principles of health education
- Describe the stages of behavioral change
- Compare health education and counseling
- Enumerate the factors that influence health
- Explain the steps in planning of health education programme
- List the core competencies for doing health promotion work

1.1 Definition of Health Education

Health education deals with individuals and groups of people to make them learn how to behave in a manner conducive to the promotion, maintenance, or restoration of health. Health education is the process of educating people about health. The Joint Committee on Health Education and Promotion Terminology (2001) defined Health Education as "any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions."

The **World Health Organization** defined Health Education as "comprising of consciously constructed opportunities for learning, involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health".

1.2 Aims and Objectives of Health Education

Education for health aims to motivate people to **improve their living conditions**. It aims to develop **a sense of responsibility for health** as an individual, as a member of a family and as a member of a community. Educating individuals and groups of people about health related matters enables them to behave in a manner conducive to:

- promotion of health,
- maintenance of health, and
- restoration of health, whenever it is spoiled.

The main aims and objectives of health education are to help people to:

- **Prevent diseases**; by informing and educating them the principles of healthy living and modifying their health behaviour(s).
- **Maintain health**; by providing knowledge and skills and, motivating them to practice desirable health practices.
- **Promote health**; through adoption of healthy lifestyle.
- **Utilize health services**; encourage them to use medical and health services provided for their benefit.

1.3 Importance of Health Education

The **importance of our health** is the importance of life itself. Without health, life is no more than a pitiful existence. So, we should study it more and learn how to be healthy and how to avoid illness. **Health Education** increases people's awareness to health issues. It favourably influences the people's attitudes to the improvement of health. Health education is important because it is needed for **changing people's health related behaviour** (change towards health and away from disease inducing things).

Health Education plays a crucial role in the development of a healthy, inclusive and equitable society. It relates to all settings, parts and levels of the society (including schools, colleges, universities, the health services, the community and the workplace). Health education is becoming increasingly important due to the following reasons:

(1) Now we say that **"Your Health is in your Hands!"**. The government's health departments can not deliver health at the people's door steps. Health is some thing that people have to achieve themselves. The **health care persons can only 'enable' them** to achieve it.

(2) **Disease pattern in the society is changing**. Communicable diseases are being slowly replaced by **non-communicable diseases**. Many of these do not have a cure.They need long term management i.e. people should learn how to manage their diseases over years and years (e.g. diabetes, hypertension, coronary artery disease, etc.). That means, the **patients need health education**.

(3) **Democracy** is becoming not only a political system, but also a social process. **Participatory decision making** is being increasingly resorted to. If the decisions are to be taken by people who take health related decisions, **all the decision makers have to learn about health!** People who work in local, state and national governments, people who run hospital committees, etc. have to gain health related knowledge!

(4) **De-professionalization of healthcare** is being emphasized now. People may go to professionals for expert advice and service; but the basic responsibility for health lies with individuals, families and communities. If they do not want to be healthy, **they may even spend money to spoil their health** (e.g. spending on tobacco, alcohol, addictive drugs, high speed vehicles, etc.). How can health care persons deliver them health on a platter? They have to learn how to be healthy. That is, they need health education.

(5) These are the days of **health promotion** and we need to have **health promoting public policies**. That means all policy makers in the country working in different areas of public life (at different levels of the society) need to learn about health!

(6) The national governments and the United Nations Agencies are setting very **lofty goals related to health sector** (eradication of a disease, control of an ailment, universal coverage of a service, etc.). Often the coverage of health services needs to be achieved in a time-bound manner. Their achievement needs very high levels of health knowledge and awareness in the society. Naturally health education becomes important!

1.4 Comparison of Health Education and Counseling

Health education is somewhat like the counseling that we do in clinics. But they are somewhat different. Let us consider how they are similar and how they are different.

Their Similarities: -

1. Both **aim at changing people's behaviours**, in order to reduce risk to health.
2. Both use **two-way interactions** between the provider and the receiver of health information.
3. Both rely on **communication skills.**

Their Differences: -

1. Health Education is usually **initiated by the educator**. Counseling is **usually initiated on the request of a distressed client.**
2. Health Education aims to **disseminate information by discussion**. Counseling aims to **reduce stress by dialogue.**
3. Health Education is usually for a group or for a mass audience. **Counseling is usually on one-to-one basis or involves a small group.**
4. **Health Education** is primarily a **'learning process'**. Counseling is primarily a **'coping process' meeting the demands of the disease.**

1.5 Principles of Health Education

Some of the principles of health education are listed below:

- Strive to make 'Real-needs' the 'Felt-needs'.
- Guide people from the known to the un-known. Start by telling about something they know already. And relate the new thing that you intend to tell, to things they already know.
- **Reinforcement** (repetition at intervals) leads to comprehension. Telling once is not enough. It is not easy for people to change their behaviour. We should not expect that we tell them once and they will change once for all! We have to keep repeating the same thing. If possible, make others tell the same thing at some other time or place. This reinforces our health message; and helps them in comprehension.
- Tell in a **planned sequence** (for cumulative learning). If we have to tell them something complicated, let us tell it little by little in a sequential manner (means we don't tell everything at one sitting).
- Understand that people change their behaviour only after serious consideration. People do not get ready to change their behaviour unless they think that not changing will really lead them into problems.
- Frightening people a little may be useful. We may have to at times frighten them about the disease producing condition! But frightening too much is also not good. We have to be truthful and realistic.
- Use multiple methods to promote learning.
- Utilize both individual approach and group approach for convincing people.
- Use locally available resources.
- Set up intermediate targets (changing the knowledge, beliefs, attitudes and practices). For example, you want that your diabetic patient should take insulin injections by himself. First you give him knowledge that insulin is more effective than oral drugs. Then tell him that as the oral drugs are not giving full control of the blood glucose, he is more likely to get complications of diabetes in kidneys, eyes, peripheral nerves etc. (this may change his attitude towards insulin). Later, introduce him to some diabetic who is injecting insulin himself (demonstration). Then he may believe that after all, self-injection of insulin may not be so difficult (belief). Then, one day, under your and the old patient's supervision, let him try injecting himself (trial). If he succeeds, he may adopt the new practice on regular basis (adoption of the new method).

- Ensure comprehension – e.g. language.
- Motivate the people – Don't just impart knowledge; appeal to their emotions! Fear appeal is one method.
- Ensure participation of the person/ community.
- Utilise the services of change agents in the society – e.g. leader, teachers.
- Make sure that you have exemplary behaviour.
- Make educational diagnosis – to know situational specification.

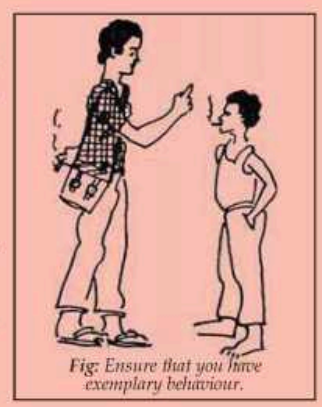


Fig: Ensure that you have exemplary behaviour.

- Make strategies for sub-population – e.g. by age, sex.
- Aim at health promotion – not just at health education.
- Help people in decision making process. 'Significant people' of the person have a lot of influence in his decision making for health.
- Enhance the self-esteem of your clients - Try to increase your clients' self respect. Those who have high level of self respect are likely to follow your advice better.
- Utilize peer-teaching - People like to learn from their peers (people who are like themselves). A diabetic is more likely to accept injection treatment, if other diabetics advise him. Self help groups like Diabetics associations, Alcoholics anonymous work by utilizing peer teaching.
- Understand that a new idea spreads in a community slowly - When we introduce a new idea into a community (e.g. use condom to protect from HIV), it does not spread so fast in the society. It takes some time. First it is adopted by people who are adventurous and creative. They are the ones who adopt the new idea first. When mass media advertisements come, the idea becomes a social fashion. People who are conservative in nature, who are afraid of adopting something new (unknown thing) and people who are bound to customs and traditions would not like to adopt the new idea.

Fig: Influence of significant persons in decision making for health.

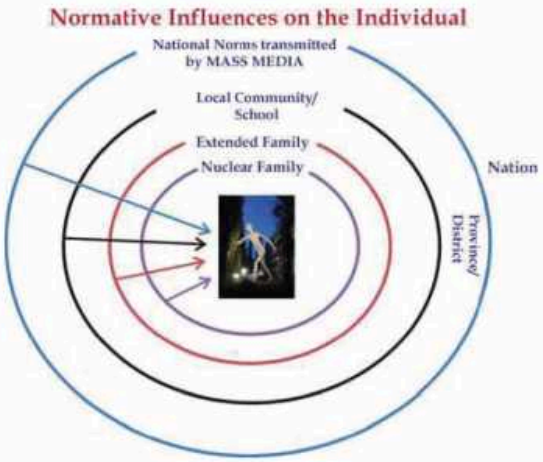


***Fig: 'Rippple effect' of social influence** on the individual (nearer ripples have more influence on the person).*

1.6 Important Areas for Health Education

These include:

- Environmental health,
- Physical health,
- Mental health,
- Social health,
- Emotional health,
- Intellectual health, and
- Spiritual health.

1.7 Behaviours that Promote Health

Here are mentioned some behaviours that promote people's health:

- **Adoption of health promoting behaviours**: e.g. breast feeding, weaning, oral rehydration, latrines, child spacing, hygiene practices, tooth brushing, taking malaria prophylaxis, etc.
- **Reduction of health damaging behaviours**: e.g. smoking, bottle feeding, alcohol consumption, accident prone kind of risk taking driving.
- **Utilization of health services**: e.g. ante-natal services, child health services, immunization, family planning, participating in screening programmes.
- **Recognition of early symptoms and prompt self-referral for treatment**: e.g. cancer, tuberculosis.
- **Following of drug regimes**: e.g. six months DOTS treatment for tuberculosis.
- **Action for rehabilitation for minimizing further disability**.
- **Action to improve sanitation and hygiene**: e.g. washing hands with soap, not eating unhygienic food on road side.

The above mentioned behaviours should be promoted by all healthcare workers, utilizing different health education principles/ techniques.

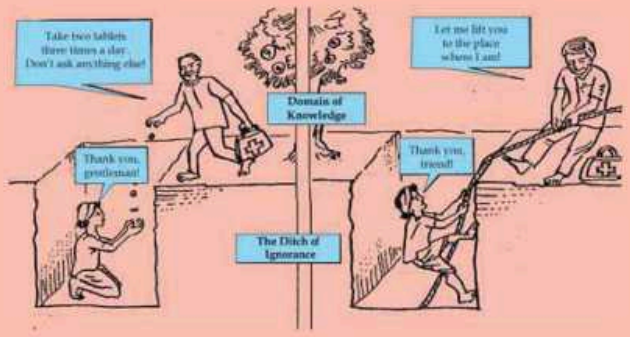


Fig: *If you give food, it quenches the person's hunger for a day. But if you teach him how to earn, you will quench his hunger for life!!!*

1.8 Stages of Behavioural Change

Changing people's behavior is a slow process. It involves the following stages:

1. **Stage of Awareness**: The person gets very general information about the new issue. As a result of this, he/she may develop interest in the issue.
2. **Stage of Interest**: The person seeks more information.
3. **Stage of Evaluation**: In the light of new information obtained, the person considers pros and cons; and evaluates its usefulness to him. This evaluation results in a decision.
4. **Stage of Trial**: The person may like to try the method. At this stage, as facilitators, we have to support the individual in implementing the decision effectively and ensure success.
5. **Stage of Adoption**: If the individual is satisfied with the outcome of the trial, he/she may adopt the material/process permanently.

1.9 Approaches to Health Education

(A) Individual approach

Health education is provided either in the hospital, school, workplace or at the home of the patient. Providing health education has traditionally been the prerogative of the treating physicians and nurses. But now we feel that **health education is the job of all the health care personnel. General Healthcare Assistants (GHAs)** have more contact and thus more opportunity to disseminate the health related information. So, a GHA has to prepare himself/herself for **playing the role of Health Educator**.

Fig: Inter personal communication and attaining empathy.

The health educator must first **create an atmosphere of friendship** and allow the individual to talk as much as possible. Being good listener is important. The advantage of the individual approach lies in the fact that the educator can **discuss, argue and persuade** the individual to change his/her health related behaviour for the better.

(B) Group Approach

The educator talks to a group of people. This can be of many types:

- **Lecture**: This is the traditional method of teaching as happens in the classroom. It is usually defined as an **oral presentation of relevant information** by a qualified person to an audience. Lectures can be made more effective by exhibits.

- **Group Discussion:** A very effective method, where a group of people (usually peers) freely express their views, share information and influence each other. They ultimately **reach a consensus**, or a course of action to be followed. Groups usually consist of 5 - 15 members for maximum effectiveness. A group leader or **'moderator'** indicates and steps in the discussion during crucial or decisive moments.

Fig: Group Health Communication: Proper seating arrangements and appropriate physical environment are needed.

- **Demonstration of skills**: Here, procedures or skills are demonstrated by qualified persons. This is usually done step by step and with explanation for each step. The aim is to teach the audience how to perform the same procedures or skills.

Other methods for group communication include symposiums, workshops, panel discussions and role-playing.

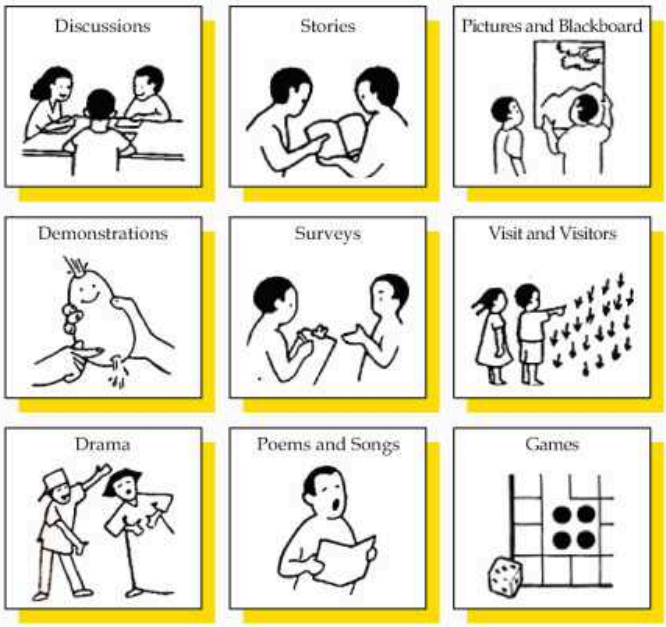


Fig: Nine active methods for teaching and learning about health.

(C). Mass Approach

Radio, television, internet and print media reach and communicate the masses, and cover large population in short time. Mass media is most cost effective. It is primarily used to generate awareness and disseminate facts among masses. It needs to be supplemented with individual and group approach to facilitate adoption of healthy practices. It must also be supported by quality health services to achieve the desirable success.

1.10 Types of Appeals in Health Education

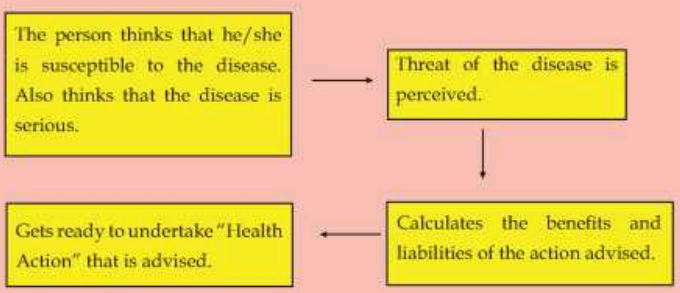
The Appeal: The way the content of the **message** is organized to persuade/convince people.

1. Logical/Factual Appeal:

- Conveying need for action by giving facts and figures.

2. **Fear Appeal:**

   - Frightening people by emphasizing serious outcomes of not taking an action.



3. **Emotional Appeal:**

   - Arousing emotions, images and feelings.

4. **Humour Appeal:**

   - Conveying message in a funny way (e.g. cartoon).

5. **Positive Appeal:**

   - Asking to do something (e.g. breast feeding).

6. **Negative Appeal:**

   - Asking not to do something (e.g. Don't spit around).

1.11 Factors that Influence Our Health

We can not achieve health just by distributing medicines or by doing surgical operations. We have to understand that health is the result of achieving an equilibrium between a number of factors. Our genes, our environment, our behaviour and the health care services we avail, all have influence on the status of our health. We have to remember this while educating people.

Fig: Influences on health.

Fig: If we tell a child or her parents (by health education) that she should change her health related behaviour, she may not be able to change. Especially in case her social, physical, biological and inherited environment is not supportive. Health promotion intends to ensure that such environment of her is conductive to her health.

1.12 Process of Behaviour Change

Educating people so as to influence and change their health related behaviour is a time consuming process. We should not expect that people will change soon after a health education session. We have to remember that the behaviour change is a slow process. It involves the following steps.

Fig: Process of behaviour change.

The example of quitting smoking illustrates the different stages of the model shown.

Initially the individual may be **unaware** about the risks involved in a particular behaviour (smoking, in this example). The first step in a behaviour change program is to make him **aware** (about ill effects of smoking). Information should be given in such a way that the person feels it is relevant to him. Then he becomes **concerned**.

Once concerned, he/she may acquire more **knowledge and skills** by talking to friends, healthcare providers, etc. He now is serious about giving up smoking. This is when he is **motivated and is ready to change** (i.e. to quit smoking). **Readiness to change** involves preparing to cope with the negative effects of new behavior (e.g. ridicule from peers). Now he **tries** the new behaviour, with some anxiety about its success. Based on the response to this new behaviour, he finally decides to **adopt the new behaviour** (i.e. to quit smoking).

1.13 Steps in Planning of Health Education Programme

1. Find out the needs and background of the target group; their age, sex, knowledge, skills and education, socioeconomic condition, language they speak, beliefs, values, attitude, their media habits, health problems, felt needs, their common health practices, etc.
2. Know the locally available resources; meet influential people, community leaders.
3. Identify the topic; prepare the contents.
4. Decide where the health education programme should take place; it could be at a primary health centre, in the hospital ward, at home, in a community centre etc.
5. Decide what method to use; one-to-one, small group or large meeting, demonstration, exhibition, drama etc.
6. Decide what audio-visual aids would be needed to support the programme; leaflets, models, slides, film, real objects etc.
7. Involve the community in the planning process.
8. Decide how you will evaluate the outcome of the health education (short and long term evaluation).

1.14 Health Promotion

Health education is a means for promoting health in the community. **Health promotion** is the process of enabling people to increase control over, and to improve their health. **Seven key principles promote health** among people, which are:

1. **Equity:** The attainment of health depends substantially on remedying inequalities within and between nations.

2. **Empowerment**: An empowered and actively participating community is essential for the attainment of health.

3. **Healthy Public Policy**: Building healthy public policy and creating supportive environments are needed to facilitate healthy choices.

4. **Reorientation of Health Services**: Medical services must be made more accessible and relevant to population needs; the notion of health service must be redefined and expanded.

5. **Inter-sectoral Collaboration**: Collaboration between institutions and organisations is necessary to achieve health promotion goals.

6. **Development of Skills that Empower**: Individuals need to acquire a range of health, life and social skills. Such skills facilitate community action. Also they enable individuals to decide empowered choice.

7. **Internationalism**: Health promotion requires an international perspective. If countries are isolated, they find it difficult to achieve Millennium Development Goals (MDGs).

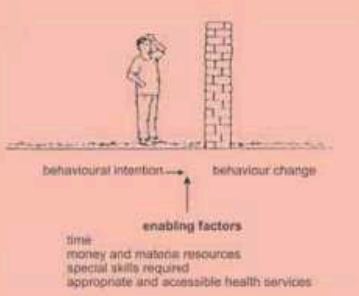


Fig: Enabling factors.

1.15 Basic Strategies for Health Promotion

Three basic strategies for health promotion are to:

1. **Advocate**: To create an environment in which a positive health choice can be made.

2. **Enable**: To encourage positive lifestyle changes by explaining the benefits of change.

3. **Mediate**: To try to mediate between two parties with opposing interests to come to a compromise for the promotion of health.

1.16 Relation between Communication, Health Education and Health Promotion

Let us now understand the relation between communication, health education and health promotion. The flow chart depicted below summarises the relation between them. We need to communicate with people if we have to educate them about health (health education). Health promotion is achieved through communication and heatlh education; by doing the five things listed in the figure below.

- We can help people develop personal skills (e.g. teaching sex workers say 'no' to customers that do not use condoms).
- We can strive to see that health services are reoriented (e.g. make them give more preventive and promotive care).
- We can ask the governments to build healthy public policy (e.g. build sanitary latrines in all market places).
- We can strive to create supportive environment (e.g. by making it easy not to smoke and make smoking difficult).
- We can strengthen community action (e.g. by forming hospital advisory committees).

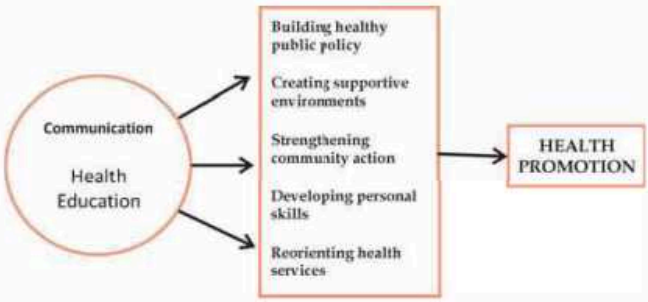


Fig: Relation between communication, health education and health promotion.

Communication skills are very important if we have to achieve the objective of educating people about health. Health Education is an instrument for promoting health. **Health promotion is the ultimate goal of health education.**

1.17 Conducting Health Education and Health Promotion in Different Settings

The Four Settings for Health Education and Health Promotion

Health can be promoted at four different settings: **school, hospital, community and work place**. These four settings provide the opportunities to reach key groups. These are depicted in the pictures below.

Fig: Four common settings for health promotion: School, Workplace, Hospital and Community. We should learn how to provide health education to people in all these four settings.

1. **The School**: School health services include screening for health problems, first aid, referral for health services and counseling.

Health Promoting School

2. **The workplace**: Health can be promoted in the workplace through workplace related health policies, health education for the workers and employers, and implementation of safety standards.

Fig: *Screening the School Children, for detection of diseases and disabilities. This is an important Health Promotion Activity.*

3. **The Hospital**: Health can be promoted in hospitals by education of patients, health promotion policies (examples: healthy food, balance between prevention and cure, referral links with primary health care institutions, provision of support for health care workers).

4. **The Community:** Improvement in health can be achieved through community involvement and participation. The term community is used to describe a group of people sharing some interest or a social network of relationship at a local level. It means more than just people who live close together; it implies sharing and working together in some way. Various need based activities may be planned and implemented in community settings to promote their health.

Fig: *Conducting a hygiene education procession.*

1.18 Concept of Health Promoting Hospitals (HPHs)

A health promoting hospital recognises the importance of preventing illness and promoting health. It incorporates the principles of health promotion into its work.

A health promoting hospital 'integrates health promotion into the role of staff and reorients its role in the community to improve the health of the population. It also has an organisational commitment to the health and wellbeing of patients and their families, and staff. The staff of a HPH work collaboratively with others with the aim of improving the health of patients and their families, and the wider community.'

According to WHO, the principles of a health promoting hospital are:

- The hospital facilitates the health of patients, staff and the community.
- It promotes human dignity and equity.
- Is oriented towards quality improvement.
- It focuses on health in its broader sense, not only disease and curative treatment.
- Contributes to empowerment of patients/clients.
- Forms partnerships with others in health care and the community.
- Uses resources efficiently and effectively.

The term health promoting hospitals may seem contradictory and some hospital staff may argue that health promotion is not their job. But the concept of a health promoting hospital goes much further than traditional health promotion. In addition, hospitals:

- as providers of expert information to patients/clients and the community, can encourage prevention, self management and foster empowerment.
- as institutions with a large number of workers and service users, can reach a large section of the population (personnel, patients and relatives).
- as centres of modern medicine, research and education that accumulate much knowledge and experience, they can influence health promotion practices and programs.

- as producers of large amounts of waste, they can contribute to the reduction of environmental pollution and, as large-scale consumers, they can favour healthy products and environmental safety.

Health promoting hospitals also support staff to incorporate the principles of health promotion into their every day work, making health promotion everybody's business.

Health promotion is considered a core quality dimension of hospital services as well as patient safety and clinical effectiveness. Against the rising incidence of chronic diseases, the provision of health promotion services is an important factor for sustained health, quality of life and efficiency.

The health care staff have to link the hospital to its community. This can be done by changing the culture of hospital care towards interdisciplinary working, transparent decision-making and with active involvement of patients and partners.

1.19 Core Competencies for doing Health Promotion Work

To do health promotion work, we need to have some **competencies**. They are depicted in the figure below:

Fig: *Core Competencies in health promotion.*

A **health educator** is "a professionally prepared individual who serves in a variety of roles and is specifically trained to **use appropriate educational strategies and methods** to facilitate the development of policies, procedures, interventions, and systems conducive to the health of individuals, groups, and communities" (Joint Committee on Terminology, 2001). As a Health Educator you are here to help and enhance the health of others.

1.20 Responsibilities of HEHP Personnel

Fig: *Seven responsibilities of a Health Education & Health Promotion (HEHP) Officer.*

Questions

1. Define health education and health promotion.
2. List the aims and objectives of health education.
3. Explain the importance of health education.
4. Mention five principles of health education.
5. Describe the process of behavioral change with example.
6. Differentiate between health education and counseling.
7. List the factors that influence health.
8. What information would you collect for planning a health education programme?
9. Mention the steps in planning of health education programme.
10. Explain the relation between health education and health promotion.
11. List the core competencies for doing health promotion work.

CHAPTER 2

COMMUNICATION FOR HEALTH

Introduction

Today's patients want to play an active role in their treatment. How can we help to encourage their participation and improve our relationship with them? The answer is simple - we need to learn to communicat with our patients! Communication is an art which needs to be learned, and then practiced repeatedly to be perfected.

People who can communicate well have better relationships, higher self-esteem and are happier individuals in their lives. This is why learning how to improve our communication skills is one of the most important investments of our time and energy. This chapter deals with communication, process of communication, types of communication and the methods & media of communication. It also includes the concept of IEC for health, health ethics and the values of general health assistants.

Objectives

After reading this chapter you will be able to:

- Define communication
- Explain the process of communication
- Describe types of communication
- Describe the methods and media of communication
- Explain the concept of information, education and communication for health
- Mention health ethics

2.1 Communication

Communication is a process by which we convey our message to someone or a group of people. It can be described as a ***two way process*** of exchanging information, ideas, emotions, knowledge and skills. If the message is conveyed clearly and unambiguously, then it is known as **effective communication**.

Improper perception or wrong interpretation of the message (due to ambiguous language or incoherence) results in **miscommunication**. The purpose of communication is to change people's behaviour. It aims at promoting and adopting behaviours that improve and maintain health and, avoiding/discontinuing undesirable health behaviour(s).

2.2 The Process of Communication

Communication is a complex process having the following components:

Source – Receiver – Message – Channel – Feedback. The flow chart given below shows their relation to each other.

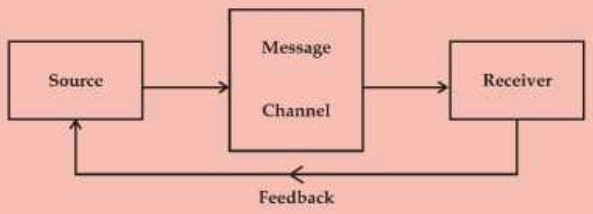


Fig: The Communication Process.

1. **Source (sender):** The source is where the **message originates.** It could be a person or an organization. People are more likely to believe a communication from the source that they trust (i.e. has **high source credibility). For effective communication,** the sender has to have the special qualities that make the community/receiver (audience) trust him.

   The **trust and source credibility** could come from:

   - The natural position of the person in the community;
   - His personal qualities or actions (e.g. a volunteer/social worker who always comes out to help people even at odd hours);

- Educational status and training;
- Communication skills;
- The common characteristics (such as age, culture, education, experience) shared by the source and the receiver. **People who share similar background** communicate better with each other.

Besides being a credible source, the sender must also know his objectives, his audience, the message to be communicated and the channels of communication.

***Fig: Be a good role model**; not a bad role model like the one shown in this picture. He is smoking, indulging in alcohol and having a pot belly (he does not do physical exercise). He is **not a credible source** of health information!*

2. **Receiver (audience):** In any communication, the audience could be a single individual or a group of individuals who receives the message e.g. a group of pregnant women. A method that is effective with one audience may not work with another. Different individuals may see the same poster or hear the same health talk but interpret them quite differently. While planning any communication, **we have to know about the intended audience;** their education, visual literacy, culture, age and sex, interests, attitudes, prejudices, media habits, their openness to new ideas, etc. Further, we should also know **the purpose that the receiver has** in engaging in communication.

3. **Message (content):** The message is the **information that the sender transmits** to the audience, to get the ideas across. It includes the actual appeals, words, pictures and sounds that the sender uses. The message helps the audience to understand the ideas, accept them and act upon.

   Effective communication involves conveying the right message to the right audience at the right time. **A good message has the following qualities**:

   - ✓ It is according to objective, relevant
   - ✓ Meaningful and clear,
   - ✓ Based on needs,
   - ✓ Acceptable to the audience,
   - ✓ Simple and understandable,
   - ✓ Specific and accurate,
   - ✓ Interesting to the audience, and
   - ✓ Adequate and timely.

4. **Channel:** The communication channel is the means or vehicle that carries the message from the sender to the receiver. The important channels of communication include radio, television, films, newspapers and other print media, person-to-person, telephone, internet, etc. The communication channel should be carefully selected. More than one channel may be used to convey the message effectively and to cover maximum audience.

5. **Feedback:** It is the reaction or response of **the audience to the source**. Feedback gives opportunity for the source to improve or modify the message and make it more effective and acceptable to the target audience. Without feedback, the communication is one way communication.There are **four types of Feedback**:

   i. **Clarifying**: The listener **restates the instructions** (repeats the key words). This makes the source of the message sure that the listener has listened properly and repeated the key words. This is to ensure that there is no confusion.

   ii. **Interpretive**: This involves making an observation of the receiver's behavior; and interpreting it.

   iii. **Judgment**: This involves drawing conclusion in form of audience's judgment.

   iv. **Personal Reaction**: The receiver of information informs his/her personal feelings (in writing or orally).

2.3 Verbal and Non-verbal Communication

Communication can broadly be divided into verbal and non-verbal communication. Contrary to popular perception, human communication relies more on the non-verbal form (especially on facial expressions and body movements).

(A) Verbal Communication

The verbal communication is divided into oral and written communication. The ***oral communication*** refers to the spoken words in the communication process. It can either be face-to-face communication or a conversation over the phone or on the voice chat over the internet. Spoken conversations or dialogues are influenced by voice modulation, pitch, volume and even the speed and clarity of speaking.

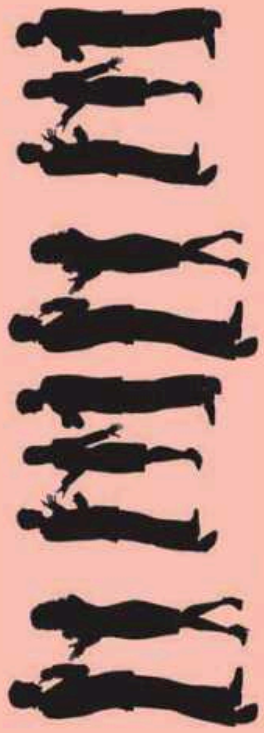
Written communication can be either via post or email. The effectiveness of written communication depends on the style of writing, vocabulary used, grammar, clarity and precision of language.

(B) Non-verbal Communication

Communication is more than just spoken words. It is estimated that only 7% of any message is the spoken words; 38 % is voice quality (tone, tempo, intonation); and 55% is body language. This means that most of what we communicate is non-verbal. Therefore we need to be aware of our non-verbal communication cues – and those of our patients as well, so that we can appropreately respond to them.

The non-verbal communication includes body language, facial expressions and visuals/diagrams/pictures used for communication. The body language of the person who is speaking, includes the body posture, the hand gestures, and overall body movements. The facial expressions also play a major role while communication since the expressions on a person's face say a lot about his/her mood. **Gestures** like a handshake, a smile or a hug can independently convey emotions.

Non verbal communication can also be in the form of pictorial representations, signboards, or even photographs, diagrams, sketches and paintings.



Since we communicate 55 percent of the time without even saying a word, we must pay attention to what our non verbal signals are saying to patients. We can begin to perfect our non verbal communication by using a simple formula **'SOFTEN'**:

S is for smile. A smile helps set the other person at ease and generates positive feelings about us. This, in turn, breaks down barriers so we can uncover issues more quickly and openly.

O is for open posture. Open posture means no crossed legs, arms or hands. It says we are approachable and willing to interact. Arms drawn together across our chest, on the other hand, can be intimidating or even condescending to patients.

F is for forward lean. A slight forward lean toward the speaker helps. It says, "I'm trying to get closer because I really want to hear what you have to say."

T is for touch. As we introduce ourself, we can shake our patient's hand in a warm and friendly manner. In addition to the nonverbal message the handshake sends, we can learn a lot about the patient's psychological state. Is the hand warm, cold, jittery, sweaty? All those are clues that may save our time.

E is for eye contact. Eye contact is an important nonverbal communicator. It conveys that we are paying attention to the individual, not being distracted by something else on our mind.

N is for nod. Nodding occassionaly when the other person is speaking means that we are listening and understand, not that we necessarily agree. It helps the other person to talk freely.

2.4 Formal and Informal Communication

Based on the style of communication, there can be two broad categories of communication - **formal and informal communication** that have their own set of characteristic features.

(A) Formal Communication

- It includes all the instances where communication has to occur in a set formal format. Typically this can include all sorts of official communication.

- The style of communication in this form is very formal and official.
- Official conferences, meetings and written memos and corporate letters are used for communication.
- Formal communication can also occur between **two strangers when they meet for the first time**.
- Formal communication is straightforward. It has to be always precise. It has a stringent and rigid tone to it.

(B) Informal Communication

- It includes instances of **free unrestrained communication** between people who share a **casual rapport** with each other.
- It requires two people to have a similar outlook to life and hence occurs between friends and family.
- Informal communication **does not have any rigid rules and guidelines**.
- Informal conversations need not necessarily have boundaries of time, place or even subjects for that matter since we all know that friendly chats with our loved ones can simply go on and on.

2.5 One-way and Two-way Communication

(A) One-way Communication: Here, the flow of information is from the educator to the audience. This is similar to lectures in classrooms. The educator is a qualified and experienced teacher or speaker. One-way communication is **authoritarian**. It does not encourage audience participation or feedback. So, its effectiveness is relatively limited. The **resistance of the audience to new ideas** in such a setting is considerable. Mass media is mostly one-way communication.

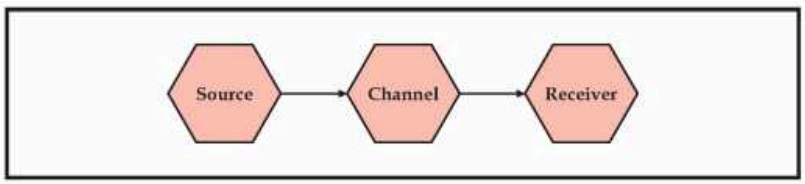


Fig: One Way Communication.

(B) **Two-way Communication**: When there is feedback from the receiver/audience, it is two way communication. This was introduced by the Greek philosopher Socrates. So, it is also called the **'Socratic method of teaching'**. If the educator is qualified and experienced; if he/she is also friendly and brings about a **'democratic touch'** to the lectures, it encourages the audience to raise questions and actively **participate in a debate-like process.** The audience is more receptive in such a two-way communication environment. Thus, the Socratic method is generally more accepted than one-way communication. Interpersonal communication is two way communication.

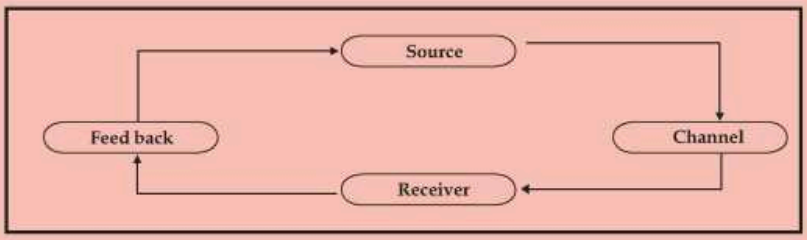


Fig: *Two Way Communication.*

2.6 Methods of Communication

There are two main groups of communication methods, as described below:

(A) Face-to-face (Interpersonal) Methods

These methods include all those forms of communication which involve direct interaction between the source and receiver ***(two way communication)***. Face-to-face methods include:

- One-to-one counseling
- Group discussion
- Community meetings
- Street plays
- Public meetings
- Patient education
- Home visiting
- Self help groups
- Demonstrations
- Exhibitions

Fig: One to one communication.

Fig: House visits.

The ***advantages*** of interpersonal methods include:

- Learning is active.
- More effective in bringing about **changes in attitudes and behaviour**, as they involve direct participation of the audience.
- Opportunities for questions, discussions and participation.
- Direct feedback; possible to clear doubts.
- Possible to check misunderstandings and give clarification/explanation.
- Possible to **contact specific focus groups** and give information/advice relevant to their specific needs/situations.

However, interpersonal methods have the following ***disadvantages:***

- They are slower in spreading information in a population.
- They need sufficient number of workers to travel to different communities to hold meetings.
- Message can get distorted.
- As the size of the group increases, it becomes difficult to have discussion and feedback.
- More resources are required (people, money, equipment, etc.).
- Difficult to reach all people, especially in remote areas.
- Limited participation and feed back; people may feel shy speaking out.

(B) Mass Media Methods

It is type of ***one way communication*** and includes radio, television, books, newspapers, pamphlets, posters, billboards, exhibition etc. and internet. Mass media method has the following ***advantages***:

- It reaches many people; rapid spread of simple information to a large population in short time.
- Effective in increasing knowledge/ awareness.
- Reaches remote areas.
- Does not require an infrastructure of field staff, low cost.

Although face-to-face communication is preferred by most people, lack of time, shortage of field staff and difficulties of transport make mass media the only realistic way of working in many situations. However, the ***disadvantages*** of mass media include:

- There is no direct audience participation; opportunities for discussion mostly missing.
- Messages tend to be general; are not always relevant to the needs of individual community. It is difficult to make the message appropriate to the local needs of specific communities.
- Knowledge imposed; not effective in changing human behaviour.
- Difficult to select and target one age-group/specific groups, e.g. adolescents, pregnant women.
- Direct feedback may not be possible; only indirect feedback through surveys, e-mail possible.

Table: Characteristics of face to face and mass media methods of communication

Characteristics	Face-to-face Methods	Mass Media Methods
Speed to cover large population	Slow process	Rapid process
Ability to select particular audience	Can be highly selective	Difficult to select audience
Direction	Two way process	One way process
Accuracy and lack of distortion	Message may get distorted	**High accuracy** in transmission of the message
Ability to respond to **local needs** of specific communities	Can fit to the local needs of the community	Only provides non-specific information
Feedback.	Direct feedback possible from audience	Only indirect feedback through surveys
Main effect	Brings about changes in **attitudes and behaviour.**	Provides increased **knowledge/awareness.**

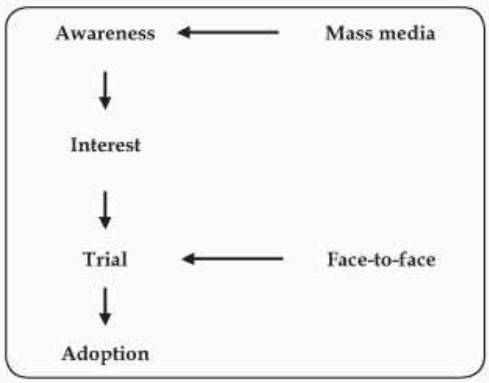


Fig: Effect of communication methods on adoption of innovations.

2.7 Media of Communication

The various media of communication can be grouped under the following four categories:

(1) Written Communication

Letters	Handbills
Newsletters	Pamphlets
Reports	Brochures
Circulars	Manuals

(2) Oral Communication

Radio	Meetings
Telephones	Conferences
Talks, Lectures	Workshops

(3) Visual Communication

Charts	Tables
Posters	Maps
Banners	Pictograms
Slides	Product display

'A picture is worth a thousand words', says the old adage. Charts, posters, tables, maps, pictograms, etc. are effective to disseminate health information.

(4) Audio-visual Communication

Television

Films

Documentaries

Traditional media available in our villages involve face-to-face communication. These include **folk arts, skits, drama, singing, dancing, storytelling, street plays, etc.** that exist in traditional communities. Community meetings, religious gatherings and ceremonies can provide opportunities for health communication. All these make the traditional media use the approach of **'starting where people are'** rather than imposing the types of communication which may be unfamiliar to the community.

2.8 Concept of IEC for Health

Information, Education and Communication (IEC) is a term which is often used to denote **educational activities directed at improving health**. It refers to the use of educational activities to bring about a change in people's health behaviours. Although the most visible component of IEC is often production and use of the **"educational materials"**, which are also called **"IEC materials"** (such as posters, pamphlets), materials are only one component. Effective IEC makes use of a range of approaches and activities which help in **bringing about a desirable change in people's health behavior**.

IEC involves informal, community education and principles of formal education to provide instruction to people through traditional means as well as mass communication. While goals vary depending on the situation, audience, or program, specific objectives are **to educate** people and **to bring about a change** in their prevailing attitudes, beliefs and health practices.

IEC activities help people to take active control over their own health and over the various factors influencing it. In this process, they **increase people's self esteem**. People having high self esteem are generally known to be ready to adopt health promoting behaviours.

IEC activities not only provide knowledge but also help people to **explore their own attitudes and values**, make **"informed decisions"** (making decisions consequent to their gaining insight into the issue; rather than just blindly following somebody else's advice) and **undertake "health promoting actions"**. **IEC strategies** thus **empower people in taking care of their own health** and their community's health.

Now, let us consider what exactly are the terms information, education and communication.

Information

Knowledge is power. Without sound understanding and knowledge about health, people are powerless to change their health themselves. They often do not have adequate information on alternatives available to them; and so cannot make informed health choices.

Information is the first step of a communication process. Correct and scientific information needs to be provided to people about health problems and how to maintain and promote health. This would help in **removing misconceptions** people might have about health matters. It would help increase their health awareness.

The primary function of IEC is to **provide correct information** to people about how to prevent diseases and promote health. Once an individual is equipped with the right kind of information, he is likely to **become aware of the need to change**. However, information alone may not be sufficient to bring about a change in behavior.

Education

Education is the **learning process** to help people gain knowledge and skills. This is likely to bring about a change in their behavior. Information and education provide the base for making informed choices. Adequate supportive system and facilities are also needed to lead people to action.

Communication

Communication is the basis of all education. It is a process of trying to bring about behavioral change in people through **exchange of information**.

Health promoters need to use effective communication in providing the relevant skills to people to create the public pressure for healthy policy. Communication is an essential element of any health promotion activity. The purpose of communication is not just to deliver a message but to effect a change in person's knowledge, attitudes and finally in his/her behaviour. Health promoters need to understand the importance of communication; what is involved in successful communication and how in the educational process, it helps to promote learning, decision making and empowered health actions.

Awareness building and effective communication leads to **attitudinal change**. This brings a **change in the person's beliefs** and finally motivates him/her to take steps towards changing behavior.

Planning IEC Activities

It has to be done in systematic way. This would include careful consideration of the following steps:

- Problem identification
- Collection of relevant information, selection of content
- Deciding what approaches to use
- Selection of the methods and strategies to be used
- Monitoring and Evaluation

IEC Methods for Each Level

Different IEC methods and strategies are used at different levels. For instance,

- **At individual and family level**, one to one interaction is used.
- **At community and district level**, group teaching, exhibitions and demonstrations are used.
- **At national level**, mass media such as television, cinema and radio are used.

IEC Activities

The IEC activities that we conduct for each health program may include :

- **Training the communicators**, so that they can be sent to work at appropriate time.
- **Knowing the audiences**, to determine what information they need and which is the most effective way of delivering it,
- Designing and producing **IEC materials** that are needed for the IEC activities, and
- **Managing and implementing** the IEC component of the health programme (e.g. TB control, HIV/AIDS control).

For managing any health program effectively, **IEC activities should be integrated with health services** of that health programme. For instance, promotion of STD treatment among individuals with high risk behavior will be effective only if **STD treatment services** are easily accessible and are not stigmatizing.

To summarize, **IEC is like an engine** which **empowers** people. It helps them to make informed health choices. It also enables them to use the health services effectively.

2.9 Health Ethics

Health ethics means a **system of moral principles or values,** that governs the conduct of the members of healthcare services. It provides a framework of shared values within which healthcare is practiced. The study of **ethics**, or **moral philosophy,** helps us to make decisions based on the values and morals of our profession.

These principles serve as guidelines for all healthcare providers regardless of job title or work setting. They help in upholding the standards of the profession. They provide a framework for professional behavior, for doing what is right in the profession.

The healthcare providers have responsibility of upholding a **code of ethics** that underline all healthcare services. We must be aware of what constitutes **ethical behavior in our profession**.

Fundamental Principles behind Code of Ethics

The code of ethics is based on the following fundamental principles:

1. **Respect for autonomy (Personal freedom):** All healthcare providers must **respect people's rights**. Sick people deserve the same **dignity and human rights** as any other person. People have the right to choose and act. When freedom is overridden to prevent harm, it is called **'paternalism'**.

2. **Avoidance of harm (Non-malificence):** Healthcare providers must **not harm anybody** under any circumstances.

3. **Doing good (Beneficence):** We should **help others**. Or, at least remove harm.

4. **Informed consent:** We must ensure that before any medical test/procedure, the client understands the procedure very clearly. They should know what it involves; and what its possible consequences are. **Written informed consent** from the client is a must for certain medical procedures.

5. **Justice:** Every individual should be **treated fairly and equally**. There should be no discrimination on the basis of caste, culture, religion, language, socio-economic status etc.

6. **Confidentiality:** The relationship between the healthcare provider and the client must be based on the understanding that whatever is discussed will remain confidential. This should be so until the client decides to share that information with someone else. A **breach of confidentiality is unethical**. However, there may be some instances where confidentiality may need to be broken. For example, we may **inform the sexual partner of an HIV infected person**, when the client refuses to do so (and continues with high risk behaviour). In such cases, we have to make a decision that is consistent with the **legal and ethical rules**.

7. **Professional accountability**: Healthcare provider is accountable to self, clients, employers, profession and society.

Health Educators use their professional knowledge and skills to bring in the desired change in the attitude and behavior of the people towards health. It is their responsibility to **apply their knowledge and skills in an ethical way**. Only ethical application upholds the standards of their profession.

2.10 Values necessary for General Healthcare Assistant

A General Healthcare Assistant (GHA) is personally accountable for what he/she does in the hospital. In caring for patients and clients, you have to:

- **Respect** the patient/client as an individual,
- Obtain **consent** before you give any treatment or care,
- Protect the client's confidential information,
- Co-operate with members of your health team,

- Make efforts to update your professional knowledge and competence,
- Be trustworthy,
- Identify and make efforts to **minimize risks** to patients/clients,
- **Communicate positively** with patients/relatives; deliver **faster, friendlier and respectful treatment**.

Questions

1. Define communication.
2. Mention the advantages of one way communication.
3. State the disadvantages of one way communication.
4. List the advantages and disadvantages of two way communication.
5. Describe the process of communication with the help of diagram.
6. Explain the concept of IEC.
7. Describe health ethics.

CHAPTER 3

MAKING HEALTH COMMUNICATION EFFECTIVE

Introduction

Communication is an inevitable part of our social life. It is very important for us to be effective in our communication if we have to succeed in our personal, social and professional lives. **Communication is especially important to General Health Assistants (GHAs)**, as they have to communicate with different kinds of people (with patients and their attendants, doctors and para-medical staff) on a range of matters, so as to ensure smooth running of the hospital. This chapter is about effective health communication. It includes skills for effective communication, interpersonal methods and mass media methods of communication, equipment for mass media communication and barriers to effective communication. Some tips of effective communication have also been included.

Objectives

After completion of this chapter you should be able to:

- **Communicate with a range of people** in a form that is appropriate to them and to the situation
- Improve the effectiveness of communication through the use of appropriate **communication skills**
- Constructively manage to overcome the **barriers to communication**
- Keep accurate and complete **records** in a manner that is consistent with legislation, policies and procedures
- Undertake **effective communication with patients** in specific clinical situations

3.1 Effective Communication

Communication is a process by which we convey our message to a person or a group of people. It can be described as a **2-way process** of exchanging information, ideas, feelings; and of shaping perceptions. In **effective communication**, the message we send reaches the receiver with very little distortion. If the message is conveyed clearly and unambiguously, then it is known as **"effective communication"**.

Communicating effectively is something that all of us can achieve. It requires self-confidence, good articulation and knowledge of how communication can be made more effective. A **communication is successful** only if the receiver understands what the sender is trying to convey. When the message is not clearly understood, it means that there is a **"barrier to communication"**.

Effective health communication is the cornerstone of the healthcare delivery system. **Health communication** takes place in many different settings. People read, talk, and write informally about health in their homes, at work, and at school. They also discuss health issues with their healthcare providers. Health communication helps individuals become more **aware of the health risks they face**, understand preventive measures they can use to lower these risks, and identify avenues, where from to obtain help. Overall, the ability to communicate about health improves people's attitudes toward their health.

3.2 Skills for Effective Communication

Good communication can take place only if both parties feel at ease and understand one another. **To communicate effectively**, a person has to try to see and feel **as the other person sees and feels**. People may not always agree. **They have to understand the other's point of view**. They have to listen to one another. Effectiveness of communication is related to: timing of the message, choice of the channel, message structure, delivery style of the message and mode of communication. Development of the following skills helps us in communicating effectively:-

- **Talking and Presenting Clearly**: Ensure that people see, hear and understand the message that is shared with them. We have to talk or write in a **simple and clear language** that they understand. Prevent communication barriers. Make effective use of audiovisual aids.
- **Listening and Paying Attention**: Communication involves both giving and receiving. We should be good listeners. **Body language should convey that we are indeed hearing** what the other person is saying. Maintain direct eye contact, but not constantly.
- **Attaining Empathy**: Empathy is one of the most important life skills required for effective communication. Empathy means the **ability to understand things from the other person's perspective**. That is, putting one's feet in the other person's shoes. Empathy helps us to understand and accept others (they may be from a

very different background than ours). This improves our interaction with people and **helps in building relationships**.

- **Interpersonal Relationships**: Capacity to develop relationship is an important life skill. We should develop the capacity to make and maintain healthy relationships. We may have to end relationships constructively, whenever needed.

3.3 Interpersonal Methods of Communication

Interpersonal communication or face-to-face communication is the most common form of communication used in our day-to-day life. Interpersonal communication is usually more effective than mass communication, which is rather impersonal. It is easier to convince and deliver the message in person, in a face-to-face talk. We can improve our skill at interpersonal communication. This would help us in achieving **successful work relationships**. We should remember some of the **realities underlying interpersonal communication:-**

(a) Interpersonal communication is inescapable

We can't avoid communicating. The very attempt not to communicate communicates something. Not only by words, but by tone of voice, gesture, posture, facial expression, etc., we constantly communicate to those around us. Through these channels, we constantly receive communication from others.

(b) Interpersonal communication is irreversible

You can't really take back something once it has been said. The effect would inevitably remain. That is why we talk carefully.

(c) Interpersonal communication is complicated

Because of the number of variables involved, in fact, every form of communication is complicated.

(d) Interpersonal communication is contextual

Context refers to the conditions that precede or surround the communication. It consists of **present or past events** from which the meaning of the message is derived. Communication does not happen in isolation. It always happens in different contexts:

- Psychological context,
- Relational context,
- Situational context,
- Environmental context,
- Cultural context.

Things to remember while talking: The following things should be kept in mind, when we talk:-

- **Tone of Voice** - The tone should be soothing. It should not show up wild emotions.
- **Audibility** - We should not be too loud as loud talking irritates. Our voice should not be too soft; it cannot be heard accurately.
- **Language** - Use appropriate language, according to the socio-cultural context. Use common terms and phrases.

Fig: *House visit: love the child and get to the mother's heart!*

3.4 Mass Media Methods of Communication

Mass media is a term used to denote a section of the media specifically designed to **reach a very large audience**, such as the population of a state/country. This word was coined in the 1920s with the advent of **nationwide radio networks**, mass-circulation newspapers and magazines.

Mass Communication is delivered through **'mass media'**, viz. methods of communication which deliver the message quickly and effectively to a large population (or **'the masses'**). The concept of mass media includes **internet media** (like blogs, message boards, podcasts & video sharing). The individuals now have a means to the exposure that is comparable in scale to that **previously restricted to a select group of mass media producers**.

Newspapers were developed from 1612. The first English newspaper came in 1620. But it was only in nineteenth century that they could reach a mass-audience directly. During the 20th century, technology allowed **massive duplication of materials**. Physical duplication technologies such as printing, record pressing and film duplication allowed the duplication of books, newspapers and movies. They allowed us to reach huge audiences. Radio and television allowed the **electronic duplication of information** for the first time.

Types of Mass Media

Electronic media and print media include:

- **Broadcasting** (including radio & television),
- Various types of **discs or tapes** (used for music, video & computer),
- **Films** (for entertainment & documentaries),
- **Internet and Blogs** (used for news, music & video), and
- **Mobile phones** (used for news, jokes, games, music and advertising).

Uses of Mass Media

Mass Media can be used for various purposes:

- **Advocacy:** for business and social concerns (e.g. advertising, marketing, public relations).
- **Entertainment:** light reading, films, music and sports. Also through video and computer games.
- **Public service announcements:** e.g. pulse polio campaign.

Mass media can be effectively utilized for purposes of educating people about health. Mass media health education can do a lot of things. They:-

1. Can do **agenda setting**; bringing an issue to the public's attention.
2. Can improve **awareness** to health issues; by providing specific knowledge about issues.
3. Can build up a **favourable opinion**; will convert real needs of the community into felt needs.
4. Can tell people about **new ideas**; new discoveries or innovations (e.g. ORS).
5. May bring about **behaviour change**; especially if it is **'one-time behaviour'** (e.g. attending an immunization clinic) or **simple to perform behaviours** (e.g. buying iodized salt).
6. Encourages the acceptance of **norms of behaviour** e.g. adopting family planning is the social norm.
7. Can influence people's **belief system**; especially if information is given through **attractive and credible models**.

Coverage of health issues by mass media may be planned or unplanned:

- **Unplanned (or incidental) coverage** of health issues:

- In news and current affairs.
- Portrayal of life-styles in fiction and entertainment (showing smoking, drinking, unhealthy eating, promiscuity & violence) – negative role of media.

- **Planned and purposeful coverage** of health issues:

- Documentaries and features (through Health correspondents). e.g. on tobacco, iodized salt, child labour.
- Health education through **social marketing** (by National Health Programmes).

Strengths and Weaknesses of Various Mass Media Methods

Radio, television and print media can take health messages to thousands/millions of people. For example, if you hand over pamphlets/brochures on HIV/AIDS/STD prevention **at a clinic**, you can reach persons coming into the clinic. But, if you announce the information in **radio, television or news paper**, you can reach thousands of people who may never come to a clinic. This is why we call it **'mass'** media. It **reaches the masses!**

Mass media communication is very helpful to increase awareness, disseminate facts, sustain positive norms, create social norms, give legitimacy to prevention activities, influence policy makers, and sustain motivation of individuals and community workers.

Each mass media method has some strengths and weaknesses. Let us consider:

A. Radio

Strengths: Radio production is relatively inexpensive. Radios are relatively inexpensive and so are available to many people. Radio can reach both literate and illiterate audiences with messages in their own language. A radio can work on batteries, so it is **useful in areas without electricity**. The radio broadcasts can be repeated many times during the day, to reinforce the message.

Weakness: Radio is not useful for teaching people about how to perform an **activity that requires a demonstration**.

B. Television

Strengths: One need not be educated to see and listen the television; and understand. Television allows us to **show and demonstrate to people** how to do something. People can see and hear **'role models'** acting out positive behaviour on television.

Weaknesses: Television may not be available in all areas of the country (e.g. places where electricity is not available for most of the day). Televisions are too expensive for many people. Producing a TV program can be expensive. If listener does not understand the communication, opportunity is not available to ask for clarification.

C. Print Media

Strengths: Readers **can read many times** at their convenience, until they have understood. Single newspaper/pamphlet/magazine can be passed on to several people. Many people believe that printed materials are more reliable. We can keep a newspaper or magazine for **future reference**.

Weaknesses: Print media are useful only for **people who can read** and who can afford to buy. People may not have **proper storing place** in their homes, where printed materials can be kept safely.

Alternative Mass Media

Apart from the three mass media mentioned above, there are some alternative mass media methods. They include:

A. Drama, Songs and Music

Drama, songs and music enhance an IEC campaign. They make messages easy to understand, interesting and fun. Use popular local groups to communicate your message through the media.

B. Contests

Contests are a good way to take messages to the public. They get publicity also at the same time. **Sponsored contests** can be conducted at local, regional or national level. Contests can be held for drawings & paintings, songs, skits, posters, etc.

Characteristics of Some Effective Mass Media Materials

All the materials that people pass through the mass media may not be actually effective. They have to be carefully designed. The following points may be kept in mind:-

An Effective Radio Spot:

- Presents one idea and not many ideas,
- Begins with an attention getter,
- Is direct and explicit ,
- Repeats the key idea at least two or three times,
- Asks listeners to take action, and
- Makes the audience feel part of the situation.

An Effective Public poster:

- Dramatizes a single idea,
- Attracts attention from at least ten metres away,
- Uses visuals to carry messages,
- Is memorable,
- Models the intended behaviour (whenever possible).

A Useful flyer visual aid or clinic poster:

- Uses visuals to tell the story, not only words,
- Shows people doing key behaviours,

- Uses images attractive to the audience,
- Is organized in a logical and action sequence,
- Is designed for easy use as a visual aid, and
- Matches graphic AND language skills of targeted audience.

The concept of mass media includes **Internet media** (like blogs, message boards, podcasts, and video sharing).

Electronic Media

Electronic media include:

- **Broadcasting:** radio and television.
- **Various types of discs:** These were mainly used for music. They are now being used in video and computers also.
- **Films:** Most often used for entertainment. Also used for documentaries.
- **Internet:** It has many uses. It presents both opportunities and challenges.
- **Mobile phones:** They have features like breaking news & **short clips of entertainment** (e.g. jokes, horoscopes, alerts, games, music, etc.).
- **Video games:** They developed into a mass form of media, since cutting-edge devices like **Play Station** broadened their use.

The Internet

Internet is a **more interactive medium of mass media**. It is **"a network of networks"**. It is the worldwide, publicly accessible network of interconnected computer networks. It transmits data by packet switching, using the standard **Internet Protocol** (IP).

Internet and the World Wide Web are not synonymous. **The Internet** is the system of interconnected computer networks. They are linked by copper wires, fibre-optic cables, wireless connections etc. **The Web** is the contents or the interconnected documents. They are **linked by hyperlinks and URLs**. We access World Wide Web through the Internet, along with many other services (e-mail, file sharing, etc.).

Advent of the **World Wide Web** (www) started the era in which **any individual having a web site can address a global audience**. A vast amount of **"content"** (information, imagery & commentary) has been made available. But it is often difficult to determine the

authenticity and reliability of information contained in web pages (in many cases, self-published).

Internet is quickly becoming the **centre of mass media. Everything is becoming accessible via the internet**. Instead of picking up a newspaper, or watching news on television, people are logging on to the internet to get the news they want. And whenever they want during the 24 hours!

Teachers can contact the entire class by sending one e-mail. They can have web pages, through which students can get copy of the class outline and assignments. Some institutions have **class blogs**, where students can post their contributions.

Internet allowed breaking news stories to reach around the globe within minutes. This rapid growth of instantaneous, decentralized communication is **changing the mass media and its relationship to society**.

Some Terminology related to the Modern Mass Media

CD-ROMs: Computer disks that can contain a large amount of information, including sound, video clips and interactive devices.

Chat rooms: Places on the internet where users hold **live typed conversations**. The "chats" typically involve a general topic. To begin chatting, users need chat software. This can be downloaded from the internet for free.

Electronic mail (e-mail): A technology that allows users to send and receive messages on a computer, via the internet.

Interactive television: It allows television viewers to access **new dimensions of information** through their television (e.g. link to websites, order materials, view additional background information, play interactive games, etc.).

Intranets: Electronic information sources with limited access (e.g. websites available only to members of an organization or employees of a company). Intranets can be used **to send an online newsletter**, with instant distribution. Intranet provides instant messages or links, to sources of information within an organization.

Kiosks: Displays containing a computer that is programmed with related information. Users can follow simple instructions to access personally tailored **information of interest**. Print out of what they find can be taken. **Kiosks can be placed in pharmacies** to provide information about medicines.

Mailing lists (list serves): E-mail-based discussions on a specific topic. All the subscribers to a list can elect to receive a copy of every message sent to the list. Or, they may receive a regular "digest", disseminated via e-mail.

Newsgroups: Collections of e-mail messages on related topics. The major difference between newsgroups and list serves is that the newsgroup host does not disseminate all the messages the host sends or receives to all subscribers.

Websites: Documents on the World Wide Web that provide information from an organization (or individual) and provide links to other sources of internet information. Websites give users access to text, graphics, sound, video, and databases. A website can consist of one webpage or thousands of web pages. Many health-related organizations have their own websites.

3.5 Equipment for Mass Media Communication

The mass media equipment has to be chosen, keeping in mind its durability and capability to perform under difficult circumstances. Resistance of the equipment to changes in temperature, humidity and vibrations have to be ascertained before buying the product. Buying **products of reliable brands** is better. Reputed companies make their equipment undergo rigorous testing and quality control. This ensures that the machines function properly, even in demanding circumstances.

We may have to deploy the equipment in the field. In such case, equipment need be packed in transit cases, loaded onto the vehicles, and transported to the field. The machinery has to be **reliable and trust worthy**.

Sound recording and reproduction equipment

This is the electrical or mechanical re-creation of sound (often as music). This involves the use of **audio equipment** such as microphones, recording devices and loudspeakers.

From early beginnings with the invention of the phonograph using purely mechanical techniques, the field has advanced with the invention of **electrical recording**. The mass production of the 78 record, the magnetic write recorder followed by the tape recorder, the vinyl LP record. The invention of the **compact cassette** in the 1960s, followed by Sony's Walkman, gave a major boost to the mass distribution of music recordings. The invention of digital recording and the **compact disc** in 1983 brought massive improvements in ruggedness and quality. The most recent developments have been in **digital audio players.**

Mass media communication equipment includes:

- Television, Video Cassette Player-Recorder (VCR),
- Tape recorder sets,
- Liquid Cristal Display (LCD) projector,
- Power generators,
- Slide projectors,
- Over-head Projector (OHP) for transparencies,
- Camera,
- Public Address (PA) system,
- Laptop Computer, etc.

Fig: Public address system: *it includes microphone(s), amplifier, etc.*

Fig: Modern mass media equipment: *it is very useful, but expensive. It needs to be cared for, through preventive maintenance.*

Fig: Plasma television: *it takes less space and clarity of the picture is high.*

Fig: LCD Projector: *it displays on the screen, what ever is visible on our computer screen (colour pictures, text, flow charts etc.).*

Fig: *Conference hall with good acoustics and public address system.*

Fig: Video camera with tripod.

3.6 Barriers to Communication

Many people think that communicating is easy. It is after all something we've done all our lives. There is some truth in this simplistic view. Communicating is straightforward. What makes it complex, difficult, and frustrating are the **barriers that come in the way**.

Barriers to effective communication can cause roadblocks in both our personal and professional life. Barriers to effective communication are one of the problems faced in our hospitals. Usually some amount of loss of meaning occurs while conveying messages from a sender to a receiver. The different types of barriers are:-

1. Physiological barriers,
2. Perceptual barriers,
3. Physical barriers,
4. Language barriers,
5. Emotional barriers,
6. Gender barriers,
7. Cultural barriers, and
8. Lack of subject knowledge.

1. **Physiological barriers -** One of the major barriers to any communication e.g. difficulty in hearing or in expression.

2. **Perceptual barriers** - The problem with communicating with others is that we all see the world differently. We may see the same poster or a TV spot, but interpret it quite differently. This is known as perceptual barrier to communication.

3. **Physical barriers -** Physical barriers include **large working areas** that physically separate people from other working units. **Noise in the background** is another barrier. The physical barriers in our workplace include **marked out territories** ('strangers are not allowed'), closed office doors, barrier screens, separate areas for people of different status.

   Research shows that one of the most important factors in building cohesive teams is **proximity. Nearness to others** aids communication. It helps us get to know one another better.

4. **Language barriers** - Inability to converse in a language that is known by both the sender and receiver is the greatest barrier in our hospitals. We are a country with a lot of languages (17 official languages and about five hundred dialects). In fact, within a state, the dialect may change from one district to the other; and people may not understand each other.

   Others may not be familiar with our **expressions, buzz-words and jargon**. When we use such language, it is **a way of excluding others**. Even if they know the language, **people often use inappropriate words** while conversing or writing. They think they have written down what they wanted to say. They may not have actually written what is in their mind. This leads to **misunderstanding**.

   In an increasingly globalizing world, when we want to develop India as a centre for **'Medical Tourism'**, the greatest compliment we can pay to another person is, **to talk in their language!**

5. **Emotional barriers** - Our emotions could be a barrier to communication. In emotional situations (when we are angry or worried about our own problems), we may not properly listen to others. And even if we listen, we may not understand the message conveyed to us.

   Emotions include hostility, anger, resentfulness, mistrust, suspicion and fear. The roots of our **emotional mistrust of others** lie in our childhood, when we were taught to be careful about what we say to others ("Don't speak until you're spoken to"). As a result, we hold back from communicating our thoughts to others. **Excessive fear of what others might think of us** can reduce our effectiveness as communicators and our **ability to form meaningful relationships**.

6. **Gender barriers -** There are distinct differences in the speech pattern of a man and of a woman. In one day, a woman tends to speak two to three times more words than a man. In childhood also, girls start speaking earlier than boys.

These differences between men and women are due to the fact that the wiring of a man's brain is different from that of a woman's brain.

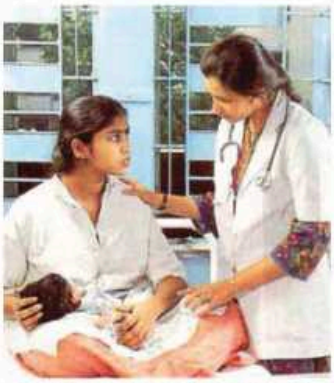


Fig: Overcoming gender barrier: a lady health attendant can attain empathy with a female patient better!

- When a man talks, **his speech is located in the left side of the brain**, but in no specific area.
- **When a woman talks**, the speech is located in both the hemispheres of the brain (the left and the right) and in two specific locations.
- **Men** tend to talk in a linear, logical and compartmentalised way. They use features of left side of the brain, which has **more of the thinking elements**.
- **Women** talk more freely, **mixing the logic and the emotions**; and using the features of both sides of the brain. Thus a female health worker can empathise with a female patient better.

7. **Cultural barriers** - We may not understand enough the persons from other cultures. In such case, it would be difficult to communicate with them effectively. Even worse, we may have a **cultural bias!** While working in hospitals, we should overcome our cultural biases.

Also we should **develop a positive attitude** towards dealing with persons from other cultures (e.g. tribals, people speaking other languages, people from foreign countries). Try to understand their language (even speaking a few words makes a lot of difference) and their mannerisms. Do not laugh at them or ridicule them. Pay **extra attention and time** for people from other cultures. Keep up your smile. Thus, we can acquire **intercultural skills.** That means, we possess the **ability to successfully communicate with people from other cultures**. Inter-cultural skills help us in the hospitals.

We have to understand one another better, so as **to avoid confusion and misunderstandings**. A person who has such skills understands them and captures their specific concepts in perception, thinking, feeling and acting. Such people appreciate different approaches to life. In essence, they are able to work effectively out of their cultural comfort-zone.

Inter-cultural skills are of importance to anyone working internationally. Need for acquiring **intercultural communication skills** is increasing as globalization continues. Thus, there is a growing need for health care personnel to **learn about foreign cultures**.

8. **Lack of subject knowledge** - If a person who sends a message lacks subject knowledge then he may not be able to convey his message clearly. The receiver could misunderstand his message, and this could be a barrier to effective communication.

3.7 Barriers in Communicating with PWDs

Persons with disabilities (PWDs) those with minor or major disabilities - in the community constitute up to 10% of the population. They need the hospital services even more than the normal people. **Visually disabled persons** cannot see our body language. Also they cannot read books/pamphlets. They cannot look at the instructions written on the walls. Health care persons should understand them and try to communicate with them appropriately. **Braile** language involves perforating the papers, so that the raised edges of the perforations are perceived by **visually disabled persons**. Braile enables them read the communication materials. Some of the communication materials in the hospital (e.g. some pamphlets in Ophthalmology Dept.) may be developed in Braile for the benefit of the visually disabled. Also **sign language** can be learned by people working in ENT departments, so that they can communicate with hearing disabled persons.

Fig: *The visually disabled can read books or pamphlets written in Braile format.*

The above-mentioned barriers to effective communication are considered as **filters of communication**. You can overcome the barriers to communication through **effective and active listening**.

3.8 Some Tips for Achieving Effective Communication

- **Be succinct, to the point, but do not be abrupt**: People do not have time for too many details. Keep details for back-up purposes. Give them only what they need, at a particular moment during your interaction.

- **Avoid tag questions, apologies and disclaimers:** Instead of saying "This is a good report, don't you think?", say "Good report!" We need to give clear, direct and yet gentle communication to be effective. People do not respond to indirect or weak communication.
- **Take credit for your accomplishments:** If you do not take credit, some one else might! If you don't communicate your successes to the powers at- be, no one else will do it. Your skills may be overlooked or underestimated!
- **Handle conflict directly, politely and with empathy:** Be clear, to the point, but not rude or abrupt. If you are nervous about an upcoming confrontation, write out your thoughts to clarify and focus them. Just tell them like what it is. Say with clarity, with gentle firmness, and with love in your heart.
- **When interrupted, be direct and courteous:** "wait for a second please, thanks." Put your hand up to signal "stop" if you have to, while speaking in a friendly yet firm voice.
- **Don't think that a softer style means being less competent:** It's just a different style!
- **Maintain direct eye contact, but not constantly:** Women often perceive lack of eye contact as intentional avoidance and disinterest in listening.
- **Avoid strong displays of emotion:** No one likes to be on the receiving end of heavy emotion (Don't resort to lots of tears, yelling and slamming the doors).
- **Use active listening skills:** Demonstrate with body language that you are indeed hearing what she/he is saying.
- **Be flexible and keep a positive attitude to differences:** Different is not right, wrong, bad, or good. It is just different!

Questions

1. Define effective communication.
2. Explain the importance of effective communication.
3. Describe the skills for effective communication.
4. List the barriers to effective communication.
5. Explain how one can overcome the barriers to effective communication.

Chapter 4

Patient Education for Acute Diseases

Introduction

The health care persons (like General Healthcare Assistants-GHAs) come in contact with patients and their friends/attendants/relatives in their day to day working. Often, we have to interact with them and guide them. That means, we have to provide education for the patients (**patient education**) about the health problems they are having. This helps them manage their problem better. To enable this, we need to have **some elementary knowledge of common diseases**. This chapter deals with some common acute diseases namely, dental diseases, diarrhoea, vomiting, upper respiratory tract infection, swine flu, acute bronchitis, skin diseases, jaundice, stroke, typhoid and malaria. The causes, symptoms, treatment and preventive measures of these diseases have been discussed.

Objectives

After reading this chapter you will be able to:

- Know about causes, symptoms, prevention and control of common acute diseases
- Provide patient education for these diseases

4.1 Patient Education

Patient education is a continuous process and can not be completed in one or two sessions. Education should be provided to patients of all age groups and to the parents of very young children. Sufficient time and dedication is essential for each patient. Patients and parents should be actively involved in the programme and should be encouraged to express their expectations, fears and concerns. All their queries must be answered in a sympathetic manner at every visit.

All topics to be dealt should be covered in a stepwise manner keeping in mind the patient's learning capacity, educational and socio-economic status. Patients should not be choked with too much information at one sitting only. Education should be tailored according to the patient's needs and should be relevant, realistic and repetitive. A number of studies have emphasised the importance of reinforcement of spoken messages with audio-visual support for better results. In addition to doctor-patient interaction, every effort should be made for patient-patient interaction during the education sessions.

4.2 Dental Diseases

Dental diseases are a group of diseases involving teeth and their surrounding structures. It's important to take care of our mouth and teeth, starting from our childhood. If we don't, we could have problems with our teeth and gums - like cavities in our teeth or even loss of teeth.

Causes of Dental Diseases

- Lack of proper dental hygiene.
- Not brushing teeth after eating sticky sweets.
- Improper brushing of teeth.
- Frequent use of sugary snacks.
- Smoking tobacco or use of tobacco in any other form.
- Lack of flourine in drinking water.

Symptoms of Dental Diseases

- Pain in teeth/gums
- Difficulty in chewing food
- Foul smell in mouth
- Swelling of the gums
- Cavities in teeth/food particles get stuck.
- Bleeding from the gums
- Loosening of teeth
- Deformity of teeth
- Brown spots in teeth

Types of Dental Diseases

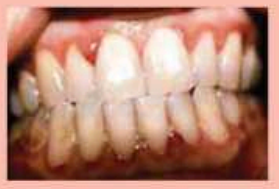


Fig: Scurvy: it causes bleeding from gums and swollen gums.

Tooth decay (cavities in the teeth or **dental caries**) is a common problem among people of all ages. For children, **untreated cavities** can cause pain in teeth leading to inability to attend the school, difficulty in concentrating on learning, etc. These are problems that greatly affect the quality of our life and our ability to succeed in life.

Periodontal (gum) disease affects gums, commonly due to infection caused by bacteria that enter the gum tissue. This destroys the gums and jaw bone. Teeth become loose and chewing becomes difficult. Teeth may need to be extracted by the dentist.

Scurvy is a disorder caused by deficiency of vitamin C. It can cause swollen and bleeding gums, loosening of the teeth, and stiffness of the joints. It can also lead to slow wound healing and anemia.

Management of Dental Problems

Dental diseases need early diagnosis and management, if we have to prevent loss of teeth and their associated problems. Pain in teeth can be controlled by use of pain killers. **Dental infection** can be controlled by use of antibiotics. Tooth decay is managed by **filling up of cavities** or removal of loose teeth. **Scurvy** is treated or prevented by consuming enough Vitamin C, which is present in fruits and vegetables. Dental hygiene is very important. Proper brushing of teeth is essential for dental health. Periodic checkup by dental surgeon is useful.

Prevention of Dental Diseases

Here's how to keep your mouth and teeth healthy :

- Brush your teeth twice daily (preferably after every meal); use soft brush with rounded bristles.
- Rinse mouth well after every meal.
- Limit sugary snacks (especially sticky ones).
- Get enough calcium/milk.
- Don't smoke or chew tobacco.
- Take balanced diet.
- Drink milk.
- Regular dental check up.

4.3 Diarrhoea

Diarrhoea is the passage of 3 or more loose or liquid stools per day, or more frequently than is normal for the individual.

Acute diarrhoea is an abrupt onset of increased fluid content of stool above 10 ml/kg/day and increased frequency. Diarrhoea is considered **chronic** when it lasts longer than 14 days.

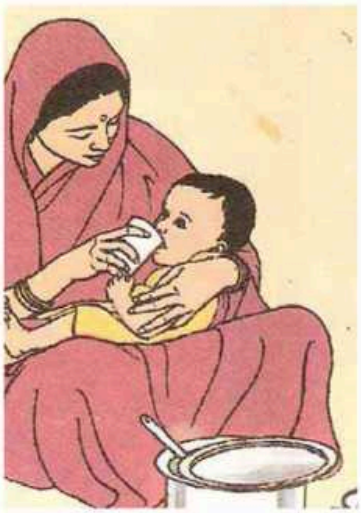


Fig: Feeding ORS to a baby in diarrhoea.

Fig: Proper mixing of ORS is important.

Causes of Diarrhoea

Acute diarrhoea is usually a symptom of **gastrointestinal infection**. Infection can be caused by a variety of bacterial, viral and parasitic organisms. Rotavirus is a common cause in children under the age of five years. Various bacteria like Salmonella (Typhoid bacilli), Vibrio cholerae, E. coli can cause diarrhoea. Parasites like amoebae, round worms can also cause diarrhoea. **Campylobacter** are a common cause of bacterial diarrhoea. Infection spreads through contaminated food or water, or from person to person as a result of poor hygiene. In some persons, acute diarrhoea can be due to use of some medicines.

Chronic diarrhoea is often due to non-infectious causes (e.g. ulcerative colitis, malabsorption etc.).

Classification of Diarrhoea

Diarrhoea may be classified as:

1. **Secretory diarrhoea**

   Secretory diarrhoea means that there is an increase in the active secretion, or there is an inhibition of absorption. There is little or no structural damage. The most common cause of this type of diarrhoea is a cholera toxin that stimulates the secretion of anions, especially chloride ions. Therefore, to maintain a charge balance in the lumen, sodium is carried with it, along with water. Secretory diarrhoea is characterized by the absence of fever and prominent nausea/vomiting with watery stools that persist when fasting.

2. **Osmotic diarrhoea**

   Osmotic diarrhoea occurs when too much water is drawn into the bowels. This can be the result of maldigestion (e.g. pancreatic disease or coeliac disease) in which the nutrients are left in the lumen to pull in water. Osmotic diarrhoea can also be caused by osmotic laxatives (which work to alleviate constipation by drawing water into the bowels). In healthy individuals, too much magnesium or vitamin C or undigested lactose can produce osmotic diarrhoea and distention of the bowel.

3. **Exudative diarrhoea**

   Exudative diarrhoea occurs with the presence of blood and pus in the stool. This occurs with inflammatory bowel diseases, such as Crohn's disease or ulcerative colitis, and other severe infections.

4. **Inflammatory diarrhoea**

   Inflammatory diarrhoea occurs when there is damage to the mucosal lining of intestines which leads to a passive loss of protein-rich fluids, and a decreased ability to absorb these lost fluids. Features of all three of the other types of diarrhoea can be found in this type of diarrhoea. It can be caused by bacterial infections, viral infections, parasitic infections, or autoimmune problems such as inflammatory bowel diseases. It can also be caused by tuberculosis and colon cancer.

Symptoms and Signs of Diarrhoea

Increase in the frequency of stools as described above is the main symptom. Viral gastroenteritis symptoms begin abruptly with diarrhoea, nausea, vomiting, headache, low-grade fever and abdominal cramps. The abdomen is diffusely mildly tender, and bowel sounds are hyperactive. Small bowel diarrhoea is characterized by passage of large loose stools, and with periumbilical pain. Large bowel diarrhoea has frequent passage of small stools, with tenesmus (cramping pain around anal region).

Severe diarrhoea may be life-threatening, particularly in young children and in people who are malnourished. In severe cases, loss of fluid and salts like sodium and potassium can cause convulsions, paralysis of limbs and can interfere with normal functioning of heart. With dehydration, eyes can be sunken, pulse may be feeble. Patient may pass less and less urine and the urine flow may be suppressed totally. If some of these signs are present, it indicates that the patient needs special care.

Symptoms that begin within 6 hours of eating suspect food suggest a preformed toxin of Staphylococcus aureus. Classic food poisoning develops, with acute nausea, vomiting, cramps, and diarrhoea 2 to 6 hours after eating food that has spoiled due to lack of refrigeration. Symptoms starting from 8 to 14 hours after taking contaminated food occur with Clostridium perfringens, and over 14 hours from viral agents or bacterial contamination of food with E. coli. Invasive infection with exudative diarrhoea is associated with systemic symptoms, fever, chills, and blood, pus, and proteinaceous material in the stools. It is most commonly found with infections such as Salmonella, Shigella, Campylobacter, or Enterohemorrhagic E. coli. Bloody diarrhoea usually indicates invasive infection.

Giardia infection causes mild diarrhoea with cramping and gas is a frequent presentation. Heavy small bowel infection may produce loose, watery or greasy, foul, yellow stools (steatorrhoea) and mucus, without blood. Malabsorption with significant weight loss often occurs when symptoms persist for more than 10 days.

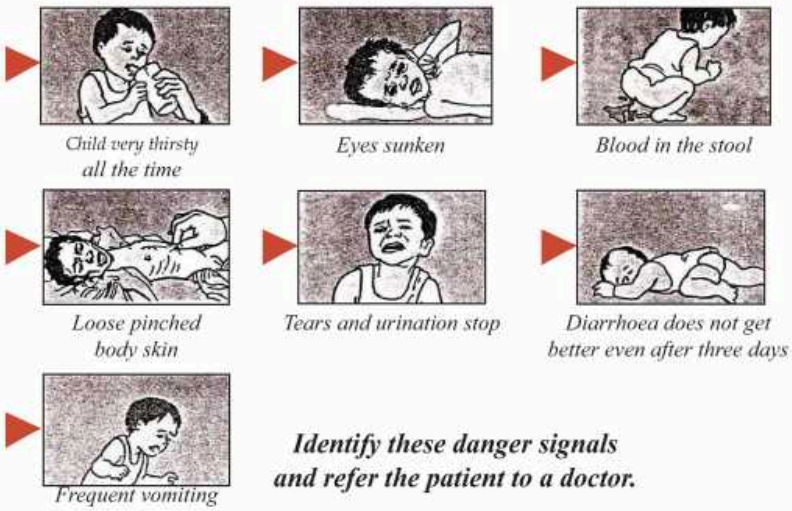


Fig: Danger signals of diarrhoea: *identify these danger signals and refer the patient to a hospital urgently.*

Typhoid fever: "Pea soup" diarrhoea may develop in the third week of an illness characterized by progressive fever, rose spots (evanescent transcent red rash on abdomen and enlarged spleen).

Cholera: A spectrum of diarrhoea from mild to severe gray, watery, "rice water" stools with fluid losses in excess of 1 liter/hour may occur.

Management

Most cases of acute diarrhoea are self-limited.

Symptomatic treatment for diarrhoea involves the patient consuming adequate amounts of **water to replace fluid loss (Oral Rehydration Therapy)**.

Oral Rehydration Therapy (ORT)

Oral Rehydration Therapy is at the core of management of diarrhoea. It includes:

- Oral Rehydration Salt (ORS) solution
- Sugar salt solution
- Food based solutions e.g. dal water, rice water, coconut water, lemon water, soups etc.

Oral Rehydration Salts is the name for a balanced glucose electrocyte mixture used as a drug for treatment of clinical dehydration. ORS solution is absorbed in the small intestines even during copious diarrhoea, thus replacing the water, electroytes lost in the stools. It contains sodium chloride, potassium chloride, sodium citrate and glucose. It is dissolved in water to provide ORS solution. Its functions are:

- Glucose facilitates the absorption of sodium and hence water.
- Sodium and potassium are needed to replace body losses.
- Citrate corrects the acidosis that occurs due to diarrhoea.

The following types of diarrhoea **require medical supervision**:

- Diarrhoea in infants and in young children,
- Severe diarrhoea,
- Diarrhoea associated with blood,
- Diarrhoea that continues for more than two days, and
- Diarrhoea that is associated with fever, dehydration, or weight loss.

Prevention and Control of Spread of Diarrhoea

Diarrhoea can easily spread from a patient to another person. To prevent and control diarrhoea, **following measures are to be adopted:-**

1. Always wash hands with soap and water before cooking, before eating food or after visit to toilet.
2. Do not eat stale, rotten food, raw and unwashed vegetables/fruits, and food exposed to dust or flies.
3. Use safe water for drinking.
4. Wash utensils with clean water.
5. Use boiled milk.
6. Keep food covered so that flies cannot sit over it.
7. Keep your surroundings clean so that flies cannot breed.
8. Maintain proper personal hygiene.
9. Sanitary disposal of excreta; avoid open field defecation.
10. Get immunized against typhoid and cholera.

Remember:

- Diarrhoea can be prevented by maintaining personal cleanliness.
- It can spread quickly from one person to another.
- Give plenty of fluids to drink as soon as diarrhoea starts.

4.4 Vomiting

Vomiting involves forcing of the contents of stomach up, through the esophagus and out of the mouth. **Nausea** is the sensation of having an urge to vomit.

Vomiting is a forceful action. It is accomplished by a downward contraction of the diaphragm. At the same time, the abdominal muscles tighten against a relaxed stomach with an open sphincter. The contents of the stomach are propelled up and out.

Causes of Vomiting

Vomiting a complex and coordinated reflex, which is controlled by the **vomiting centre of the brain**. The vomiting centre of brain causes vomiting by responding to signals coming from different areas of the body like:

- The mouth, stomach and intestines;
- The bloodstream (which may contain medicines or infections);

- The balancing systems - (the cochlea in the ear which causes motion sickness); and
- The brain itself (including unsettling sights, smells, or thoughts).

A variety of stimuli can trigger vomiting (from migraine to kidney stones). In most cases, it is due to a **viral gastrointestinal infection.**

Management of Vomiting

Most of the time, nausea and vomiting do not require urgent medical attention. However, if the symptoms continue for long, or if the person cannot keep any food or fluids in the stomach, medical attention is required.

Dehydration is the main concern with most vomiting. It is important to keep the person hydrated. **Try to give small amounts of clear liquids** (such as electrolyte solutions). Don't give too much of liquid at one time. Stretching the stomach can make nausea and vomiting worse. **Avoid solid foods** until there has been no vomiting for six hours. Then, work slowly back to a normal diet. If vomiting persists, one may require replacement of fluids through **intravenous route**.

Urgent medical attention is required, if:

- Vomiting is severe; or
- if vomit contains blood or bile; or
- if the patient has severe abdominal pain, headache, stiff neck or signs of dehydration (sunken eyes, feeble pulse, less urine and loose pinched body skin).

A number of medicines are effective at preventing vomiting.

Advice to Person having Vomiting

- Take steady, small amounts of clear liquids like dal water.
- Use home made oral rehydration solutions/WHO approved ORS.
- Continue feeding.
- Avoid solid foods until there has been no vomiting for 6 hours.
- Work solwly back to normal diet.
- Maintain food hygiene.
- If vomiting persists, seek doctor's advice..
- See doctor if vomit contains blood or person has headache or signs of dehydration.

4.5 Cough And Upper Respiratory Infection

Cough

It is a reflex that keeps our throat and airways clear. Although it can be annoying, coughing helps our body to heal or protect itself. Cough can be either acute or chronic. **Acute cough** begins suddenly and usually lasts not more than 2 to 3 weeks. Acute cough is the kind we most often get with a cold or flu.

Upper Respiratory Tract Infection (URTI)

It is an acute infection, involving upper respiratory tract i.e. nasal cavity, pharynx and trachea. It causes nasal stuffiness and increased nasal secretions, thereby causing difficulty in breathing. It may also be associated with cough and fever. It usually lasts less than 7 days. It is usually caused by inhalation of viruses (like Rhinovirus or influenza virus) present in the air. The viruses spread from person to person when they are released through sneezing and coughing.

Prevention

There are some things people can do to protect themselves from URTI:

- Avoid close contact with infected persons.
- Avoid crowded places.
- Proper hygiene (like covering nose and mouth with cloth while coughing or sneezing).
- Wash hands often and keep them away from your face. Most germs are spread from your hands to your mouth or your hands to your nose.
- Immunisation as per the National Immunisation Schedule.
- Stay out of crowds, especially in the winter when more people have colds.
- Exercise at least every other day.
- Eat a healthy and balanced diet.
- Get enough sleep of 6-8 hours each night.
- Drink at least 8 cups of fluids each day.
- As much as you can, stay out of places with more air pollution. Avoid places with very dirty air (such as traffic jams, parking garages), dusty work areas and smoke filled rooms where strong chemicals and household products (like cleaners, paints, glue and aerosol sprays) are being used.

Treatment

It is usually self limiting. Steam inhalations, nasal decongestants and analgesics (to control body pains and fever) may be given. Antibiotics (not required in most cases) may be given, if needed. Use household remedies for relief. If cough persists for more than 2 weeks, get sputum examination done.

4.6 H1N1 Infection [Swine Flu]

Swine flu or H1N1 infection is a viral infection. It was originally observed in pigs, hence the name swine flu. In humans, it manifests as fever, running nose, cough and in severe cases, as breathlessness. In late March and early April 2009, cases of human infection with this H1N1 virus were first reported in Southern California and Texas (USA).

On June 11, 2009, WHO raised a worldwide pandemic alert that a **global pandemic** of a new influenza strain called **Influenza-A(H1N1)** was underway. All states in U.S.A. have since reported cases of H1N1 flu infection in humans. In India, there were nearly 50 deaths in humans from swine flu till August, 2009, particularly from Maharashtra, Karnataka and Delhi.

How Swine Flu Spreads

H1N1 Influenza Viruses are responsible for the disease. H1N1 flu viruses **do not normally infect humans**. However, sporadic human infections with H1N1 flu have occurred. Most commonly, these cases occur in persons with **direct exposure to pigs** (e.g. children in contact with pigs or workers in the swine industry).

Human-to-human transmission of H1N1 flu can also occur. This happens in the same way as seasonal flu occurs in people (through coughing or sneezing of people infected with the influenza virus). People may also become infected if they touch something with flu viruses on it and then touch their own mouth or nose.

Symptoms and Diagnosis

The symptoms of H1N1 influenza include fever, lethargy, lack of appetite and coughing. Some people also report runny nose, sore throat, nausea, vomiting and diarrhoea. Severe cases can have breathlessness and may result in death. To diagnose H1N1 influenza infection, a **respiratory specimen** (like nasal swab) is needed. Specific tests for presence of virus are conducted in specialized laboratories.

Vaccination and Treatment for H1N1 Virus in Humans

H1N1 influenza vaccine is available against H1N1. One dose is required for persons 10 years or older and 2 doses at 4 weeks interval for children 6 months to 9 years. Antiviral

drugs (like Tamiflu) can make this illness milder. They also prevent serious influenza complications. Antiviral drugs work best if started as soon after getting sick as possible. They might not work if started more than 48 hours after illness starts.

Prevention

There are **everyday actions** people can take to stay healthy. They include frequent hand washing, covering the nose and mouth when we cough or sneeze, and avoiding close contact with sick people. **Influenza antiviral drugs** also can prevent influenza when they are given to a person who has been in contact with a person having H1N1 influenza. When used to prevent the flu, antiviral drugs are about 70% to 90% effective.

4.7 Acute Bronchitis

Acute bronchitis is the swelling and irritation in the **small air passages** in the lungs, due to acute infection. When the airways are irritated, thick mucus forms in them. **The mucus plugs up the airways**. It becomes hard for air to get into lungs. Symptoms of bronchitis include cough that produces mucus (called sputum), difficulty in breathing and a feeling of tightness in the chest.

Symptoms of Acute Bronchitis

- Fever,
- Cough with sputum,
- Shortness of breath,
- Wheezing, and
- Body aches.

Causes of Acute Bronchitis

Acute bronchitis is almost always caused by **viruses that attack the lining of the bronchial tree** and cause infection. As our body fights back against these viruses, more swelling occurs and **more mucus is produced**. It takes time for body to kill the viruses and heal the damage to bronchial tubes.

In most cases, the same viruses that cause cold, cause acute bronchitis. Bacterial infections also can cause acute bronchitis. The viruses that cause acute bronchitis are sprayed into the air (or, onto people's hands) when they cough. We can get acute bronchitis if we breathe in these viruses.

If we smoke **tobacco** or are exposed to **damaging fumes** (e.g. those from factories), we are more likely to get acute bronchitis.

Management of Acute Bronchitis

Most cases of acute bronchitis will improve on their own after a few days or a week. Bed rest is useful. **Intake of good amount of water** and **steam inhalations** help in liquefying the thick mucus. This helps in opening of air passages. It is best not to suppress a cough that brings out mucus, because this type of cough helps clear the mucus from our bronchial tree faster. Since **acute bronchitis is usually caused by viruses**, antibiotics usually do not help.

Some people who have acute bronchitis need **medicines that are usually used to treat asthma**. If we hear wheezing, this indicates the need for asthma medicines. These medicines can help open the bronchial tubes and clear out mucus. They are usually given with an **'inhaler'**. An inhaler sprays the medicine right into the bronchial tree. So, the medicine works faster. Also, very small amount of medicine is enough, if given by inhaler.

Prevention of Acute Bronchitis

- Avoid smoking tobacco.
- Avoid crowded places.
- Use hand kerchiefs (or hand) in front of mouth, while coughing.
- Avoid damp, cold and polluted areas.

4.8 Skin Diseases

Skin disorders are common in childhood, as young skin is very sensitive. Some common skin rashes in children are those associated with infectious diseases such as **chickenpox and measles**.

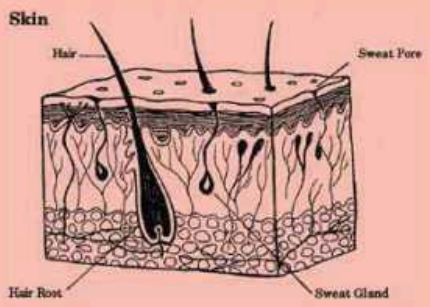


Fig: Structure of Skin.

Other skin disorders may be the result of local bacterial infection, allergies, insect bites, sunburn or irritation (for example, by chemicals in detergents). Most skin disorders are minor and usually clear up rapidly. Impetigo, scabies, boils, fungal infection, infected wounds, allergy, and acne are some common skin disorders.

For **prevention** of skin diseases:

- Maintain good personal hygiene.
- Avoid allergens.
- Practice proper hand washing.
- Avoid sharing of towel, clothes.
- Avoid injuries.

Impetigo

This is bacterial infection that causes rapidly spreading sores with **shiny yellow crusts**. It often occurs on children's faces, especially around the mouth. Impetigo can spread easily to other people from the sores or from contaminated fingers.

Treatment of Impetigo

- Wash the affected part with soap and boiled water, gently soaking off the crusts.
- Paint the sores with **gentian violet** or spread an **antibiotic cream** such as polysporin.
- If the infection is spread over a large area or causes fever, the patient needs antibiotics.

Prevention of Impetigo

Improve the patient's personal cleanliness. Bathe the child daily. Protect from bedbugs and biting flies. If the child has scabies, treat as soon as possible. Do not let a child with impetigo sleep or play with other children. Begin treatment at the first sign.

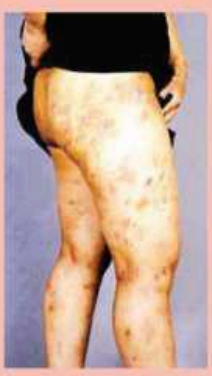
Scabies

Scabies is a skin infection that is caused by Sarcoptes Scabei, a type of mite. Scabies mites make burrows in our skin and live under the outer layer of skin. It causes pimple-like irritations known as the **scabies rash**. These mites lay eggs under the skin and feed on our blood. The mites are about the size of a pinhead, are nearly transparent. So, they cannot be seen by our naked eye. Scabies is a highly contagious disease.

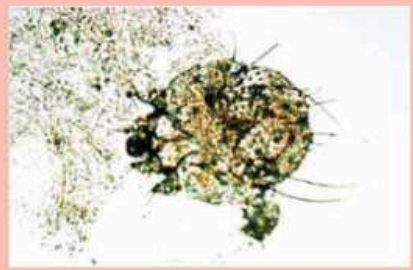
Symptoms of Scabies

The most common symptom of scabies is **extreme itching, particularly at night**. The skin becomes red and blistered. The itching is the result of an allergic reaction of our body to the mites (and their wastes). Irritation of skin specially between joints of fingers may be there.

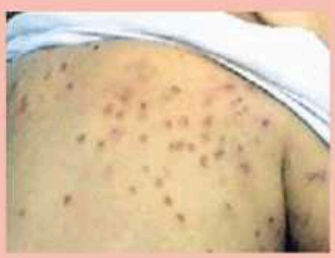
The **areas of skin affected by scabies** include: between the toes and fingers, around the wrist, folds of the elbow, armpits, beltline, genitalia, buttocks, and the groin. Babies and small children may get it even on the face and scalp. The symptoms usually appear from two to six weeks after becoming infested.



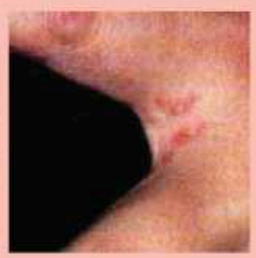
Scabies rash on legs



Mite causing scabies



Scabies rash on back



Scabies rash between fingers

Fig: *Mite causing scabies and some common sites of scabies.*

Transmission of Scabies

Scabies is transferred by **direct skin-to-skin contact**. It can also spread by contact with clothes or bedding contaminated by infected person. A very common way to get scabies is to shake hands with an infected person. It can also be transmitted during sexual contact. We cannot get scabies from our pets. Scabies mites infest only the humans. Scabies mites can only survive for three or four days, if they are away from human body. The patient can spread scabies until all the mites and eggs are killed by treatment.

Scabies Treatment

Start treatment immediately. The longer you wait, the more the mites will spread. Everyone living with an infected person, as well as intimate contacts, should be treated. They should be **treated at one go (at the same time) to prevent re-infestation with scabies** from other persons. Some of them might be infected, but may not have symptoms yet. Apply medication all over the body more so on affected parts after a scrub bath.

Also, the infected person's **clothing and bedding** need to be washed in hot water and ironed, so as to kill the mites and their eggs. Dry the clothing/bedding in direct sunlight. Proper personal hygiene should be maintained.

Permithrin cream is a very safe and effective scabies treatment. This treatment kills the scabies mites and their eggs. It will end the itching and stop the pain and sores.

Boils

Boil is a skin disease caused by infection of hair follicles, resulting in the localized accumulation of pus and dead tissue. A boil generally starts as a reddened, tender area. Over time, the area becomes firm, **hard and tender** [painful to touch and pressure]. Eventually, the center of the abscess softens and becomes filled with infection-fighting white blood cells that the body sends from the bloodstream to eradicate the infection. This collection of white blood cells, bacteria, and proteins is known as **'pus'**. Finally, the pus **"forms a head,"** which can be surgically opened. Or, it bursts and spontaneously drains out, through the surface of the skin.

Types of Boils

There are several types of boils. Among these are:

- **Furuncle** and **carbuncle**: Furuncle is a localized infection in the skin caused by the bacterium **Staphylococcus aureus**. Individual boils can cluster together and form an **interconnected network of boils** called **'carbuncles'**. It can have one or more openings onto the skin. It may be associated with fever or chills. Carbuncles occur in diabetics.

- **Cystic acne**: This is a type of abscess that is formed when **oil ducts** (present in the skin) become clogged and infected. Cystic acne affects deeper skin tissue than the more superficial inflammation from **common acne**. Cystic acne is most common on the face and typically occurs in the **teenage years.**

Causes of Boils

There are many causes of boils. Some boils can be caused by an ingrown hair. Others can form as the result of a splinter or other foreign material that has become lodged in the skin. Other boils, such as those of acne, are caused by plugged sweat glands that become infected.

Symptoms of Boils

Boils are red, pus-filled lumps that are tender, warm, and extremely painful. A **yellow or white point** at the center of the lump can be seen, when the boil is ready to drain or

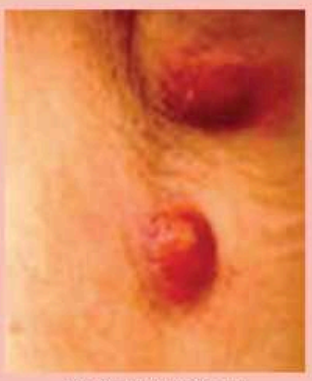


Fig: *Boil with visible pus.*

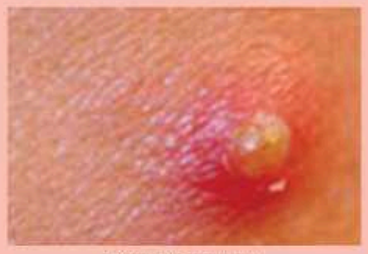


Fig: *Boils in arm pit.*

discharge pus. An abscess is also a collection of pus; however, it can occur anywhere in the body. A boil always involves a **hair follicle**.

In a severe infection, **multiple boils** may develop. The patient may experience fever and swollen lymph nodes (e.g. in groin or arm pit). A recurring boil is called **chronic furunculosis. Risk factors for developing boils** include poor hygiene, diabetes mellitus, obesity and malnutrition. In some people, itching may develop before the lumps begin to

form. Boils are most often found on the back, stomach, underarms, shoulders, face, lip, eyes, nose, thighs and buttocks. Sometimes boils exude an unpleasant smell, particularly when discharge is present (due to the presence of bacteria in the discharge).

Management of Boils

Care of skin and treatment of underlying disorder (like diabetes) help in control of infection. Antibiotics may be needed in some cases. **Skin hygiene** is most important in preventing development of boils.

Infected Wounds

The skin is an essential part of our immune defense against materials and microbes that are foreign to our body. Any **break in the skin**, such as a cut or scratch, can develop into an abscess, if it becomes infected with bacteria. Health care persons should take special care to see that if they are wounded, the wounds (e.g. scratches) are not infected.

Advice to person having infected wounds

- Maintain good personal hygiene.
- Start treatment immediately.
- Proper hand washing with soap.
- Avoid sharing of towel and clothes.
- Proper washing of clothes and bedding.
- Dry clothing and bedding in direct sunlight.

4.9 Jaundice

An increase in the level of **'bilirubin'** in blood can cause the disease, **jaundice**. It manifests as **yellowish discoloration of conjunctiva of eye**. In severe cases, yellowish discoloration of skin can also occur. This discoloration is known as icterus or jaundice. The term Jaundice derives from the French word "jaune" (which in English means yellow).

Generally, the normal presence of bilirubin in plasma is 0.5 mg/dL. But when a person suffers from this disease, this level shoots up to **1.5 mg/dL or higher**, manifesting as **yellowish discoloration of eyes, urine and skin**.

Causes of Jaundice

Bilirubin is essential for digesting food properly. It is secreted from gall bladder. However,

excess bilirubin can cause jaundice. If **red blood cells** do not complete their average life span, they are broken down to bilirubin in the liver. This excess breakdown of red blood cells in turn causes jaundice. Jaundice is commonly caused by viruses, spread through contaminated food, water or blood.

At times, **side effects of some drugs** can cause this disease. People who consume **alcohol** regularly are susceptible to this disease. Malfunctioning of liver resulting in increased bilirubin level can also cause this malady. **Blockage of liver ducts** can force bilirubin to bounce back into the blood and it can also cause this disease. Gallstones can create this kind of problem. **Incompatibility of rhesus blood group** can also cause jaundice.

Symptoms of Jaundice

The eyes become yellow. Skin may become yellow in severe cases. One can experience an itchy feeling in skin. Yellowing of skin may start from the face. Patient will have decreased appetite, yellowish discoloration of urine and easy fatigability. If a **new born baby** is affected by this disease, the parent will observe that the baby is not feeding properly and is sleeping most of the time.

Management for Jaundice

There is no well defined cure. However, proper rest and intake of food, containing high carbohydrates (like sweets) are helpful. **Eating green vegetables and fruits** can help jaundice patients to recuperate from this disease. Drink 2.5 liters to 3 liters of water on a regular basis. Avoid alcohol, and junk foods. The improvement in jaundice can be monitored by change in patient's bilirubin level in blood. If a new born child is attacked by this disease, **phototherapy** (light therapy) can cure that child from Jaundice.

4.10 Stroke [Brain Attack]

A **'stroke'** is the **sudden death of a portion of the brain cells**, due to lack of oxygen. A stroke occurs when blood flow to a part of the brain is impaired. This results in abnormal brain function. Blood flow to the brain can be impaired by blockage or rupture of an artery that supplies blood to the brain.

What Causes a Stroke?

Blockage of an artery in the brain by a blood clot is called **thrombosis**. It leads to deprivation of blood and oxygen to that portion of the brain. This causes a stroke. A clot usually forms in a blood vessel that has been previously narrowed, due to **atherosclerosis** (hardening of the artery).

When a **blood clot** or a piece of **atherosclerotic plaque** (cholesterol and calcium deposits

on the wall of the artery) lodges in an artery of the brain, it blocks the flow of blood that supplies oxygen. **'Cerebral hemorrhage'** occurs when a blood vessel in the brain bursts and blood enters into the surrounding brain tissue. This too can lead to stroke.

All the above causes of stroke lead to lack of oxygen to the brain tissue and its death.

Risk Factors for Stroke

People having the following are more likely to suffer from an attack of stroke:-

- Hypertension (high blood pressure)
- Tobacco smoking/chewing
- Diabetes mellitus
- High alcohol intake
- Dental infections
- High level of cholesterol in blood
- Obesity

Stroke can be prevented by controlling these risk factors. Regular exercises are useful.

Symptoms of Stroke

The most common symptom is sudden onset of weakness or paralysis of one side of the body. Patient may not be able to voluntarily move the leg or arm. Sensation may be lost in a leg or arm. A stroke can result in speech problems. It weakens the muscles of the face. Numbness or tingling can occur. A stroke can cause unconsciousness.

How is a Stroke Diagnosed?

A stroke is a medical emergency. We should suspect stroke when people suddenly suffer from:-

- Weakness of right or left half of body
- Slurring of speech
- Sudden onset of unsteady gait
- Sudden onset of unconsciousness, preceded by headache

They should be taken to a medical facility immediately for evaluation and treatment. **Viral encephalitis** can cause symptoms similar to those of a stroke, but it is usually associated with fever. Diagnosis of stroke may be confirmed by CT scan or MRI of brain.

Management of Acute Stroke

Acute stroke is a medical emergency. The patient should be transported to a hospital, where facilities for management of acute stroke are available. **Airway, breathing and circulation [ABC]** are to be maintained. Avoid dehydration and sudden fall of blood pressure. Look for diabetes or infection (they need specific treatment). CT scan/MRI scan of brain can help in assessing the extent of damage and the nature of damage to the brain. Antiplatelet drugs (e.g. aspirin), will be useful in cases of stroke caused by blockage of vessels. Regular physiotherapy helps in early recovery.

4.11 Typhoid Fever

Typhoid fever is a life-threatening illness caused by the bacterium **Salmonella typhi**. Typhoid fever is still common in the developing countries, where it affects about 20 million persons each year.

How Typhoid Fever Spreads

Salmonella typhi lives only in humans. Persons with typhoid fever carry this bacteria in their bloodstream and in their intestinal tract. A small number of persons, called **carriers**, recover from typhoid fever but continue to carry the bacteria. Both typhoid patients and carriers pass S. typhi in their faeces (stools). Once S. typhi bacteria are eaten or drunk by us, they multiply in the intestines and spread into our bloodstream.

We can get typhoid infection if we eat food or drink beverages that have been handled by a **person who is shedding S. typhi** in his/her faeces. Also, we get infected if **sewage** contaminated with S. typhi bacteria gets into the water we use. Therefore, typhoid fever is more common in localities where:-

- hand washing is less frequent and
- water is likely to be contaminated with sewage.

Symptoms of Typhoid

Fever, abdominal pain, loose motions, generalized weakness and vomiting can occur. In severe cases, there can be perforation of intestine, convulsions and coma.

Tests

Presence of typhoid infection is confirmed by blood and stool culture for isolation of Salmonella typhi organisms. Blood examination, called **widal test**, is done from second week of typhoid fever to detect antibodies to S. typhi.

Treatment and Prevention

Bed rest, cold sponging to control fever and specific drugs (like ciprofloxacin), to kill S. typhi organisms are indicated.

Two basic actions can protect us from typhoid fever:

- Avoid risky foods and drinks that may be contaminated with S. typhi;
- Follow proper hygiene.

Remember the following:-

- Eat foods that have been thoroughly cooked.
- Avoid **raw vegetables and fruits** that cannot be peeled or washed properly with safe water. Some vegetables like lettuce get easily contaminated. It is very important to wash them well.
- Avoid foods and beverages from **street vendors**. It is difficult for food to be kept clean on the street. Many travelers get sick by eating food bought from street vendors.
- Avoid **flavored** ices. That ice may have been made with contaminated water.
- **Get vaccinated** against typhoid fever, during the times when you are excessively exposed to contaminated food or water.

4.12 Malaria

Malaria is an infection, caused by a parasite called Plasmodium. It is transmitted to us by bites of infected mosquitoes. In the human body, the parasites multiply in the liver; and then they infect our red blood cells.

Causes of Malaria

Malaria is caused by a one-celled parasite called plasmodium. Female Anopheles mosquitoes pick up the parasite from infected people whom they bite to obtain blood needed to nurture their eggs. Inside the mosquito, the plasmodium parasites begin to reproduce. When the mosquito bites another person, the parasites mix with its saliva and pass into the blood of the person being bitten. Malaria parasites multiply rapidly in the liver and then in red blood cells.

Life Cycle of Malaria Parasite

1. A **female Anopheles mosquito** carrying malaria-causing parasites feeds on humans and injects the parasites in the form of **sporozoites** into the bloodstream.

The sporozoites travel to the liver and invade liver cells.

2. Over 5-16 days the sporozoites grow, divide, and produce tens of thousands of haploid forms, called **merozoites**. Some malaria parasite species remain dormant for extended periods in the liver, causing relapses weeks or months later.

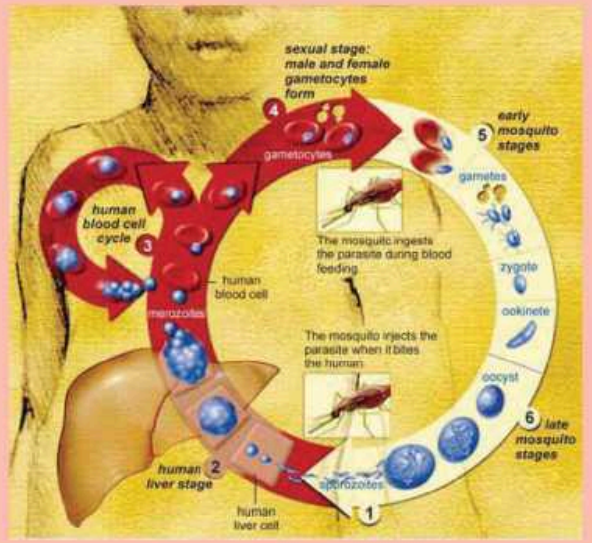


Fig: *Life Cycle of the Malaria Parasite.*

3. The **merozoites exit the liver cells** and re-enter the bloodstream, beginning a cycle of invasion of red blood cells, asexual replication, and release of newly formed merozoites from the red blood cells repeatedly over 1-3 days. This multiplication can result in thousands of parasite-infected cells in the host bloodstream, leading to illness and complications of malaria. This can last for months, if not treated.

4. Some of the **merozoite-infected blood cells** leave the cycle of asexual multiplication. Instead of replicating, the merozoites in these cells develop into sexual forms of the parasite, called **male and female gametocytes**, that circulate in the bloodstream.

5. When a mosquito bites an infected human, it ingests the **gametocytes**. In the mosquito gut, the infected human blood cells burst, releasing the gametocytes, which develop further into mature sex cells called gametes. Male and female gametes fuse to form diploid zygotes, which develop into actively moving

ookinetes that burrow into the mosquito midgut wall and form oocysts.

6. Growth and division of each **oocyst** produces thousands of active haploid forms called **sporozoites**. After 8-15 days, the oocyst bursts, releasing sporozoites into the body cavity of the mosquito. From there, they travel to and invade the mosquito's salivary glands.

7. The cycle of human infection re-starts when the mosquito takes a **blood meal**, injecting the sporozoites from its salivary glands into the human blood stream.

Symptoms of Malaria

One to two weeks after a person is infected, the first symptoms of malaria appear: fever, headache, chills and vomiting. If not treated promptly with effective medicines, malaria can kill by infecting and destroying red blood cells and by clogging the capillaries that carry blood to the brain or other vital organs. Malaria may cause **anemia and jaundice** (yellow coloring of the skin and eyes) because of the loss of red blood cells.

There are **four types of malaria**: Plasmodium vivax, P. malariae, P. ovale and P. falciparum. **Falciparum malaria is the most deadly type**. If not promptly treated, it can cause kidney failure, seizures, mental confusion, coma, and death.

Because the malaria parasite is found in red blood cells of an infected person, malaria can also be transmitted through **blood transfusion**; use of **needles or syringes contaminated with blood**.

Management of Malaria

A drop of blood is examined under the microscope for the presence of malaria parasites. **Anti-malarial drugs** like quinine, chloroquine are useful. Reduction of fever by cold sponging is helpful. Patient should take plenty of fluids.

4.13 Acute Abdomen

The term **acute abdomen** refers to a sudden, severe abdominal pain that is less than 24 hours in duration. It is in many cases a medical emergency, requiring urgent and specific diagnosis. Several causes of acute abdomen need surgical treatment. **The causes of acute abdomen** include acute appendicitis, acute peptic ulcer (and its complications), bowel perforation, intestinal obstruction and stones in common bile duct or in urinary tract.

Symptoms of Acute Abdomen

Acute abdomen usually manifests as sudden onset of pain abdomen, vomiting and constipation. Patient may experience difficulty in urination, restlessness and distension of abdomen. Abdominal X-ray, ultrasound examination and CT scan of abdomen are useful

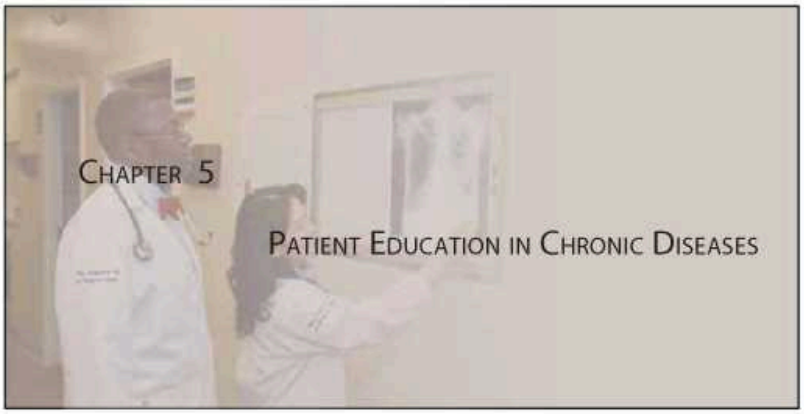
in making diagnosis of what exactly is causing the pain in abdomen.

Management of Acute Abdomen

Acute abdomen is a medical emergency. Patient needs to be referred to a hospital at the earliest. Some patients may require immediate surgery (like in cases of appendicitis, bowel perforation etc.).

Questions

1. Mention causes of dental diseases.
2. List the symptoms of dental diseases.
3. What advice will you give to school children for prevention of dental diseases?
4. Mention the causes of diarrhoea.
5. Explain the measures to be adopted for prevention and control of diarrhoea.
6. What health education would you give to a person who is vomiting?
7. List the common causes of cough.
8. What advice would you give to a person who is having cough?
9. Give symptoms of H1N1 influenza.
10. Explain the management of acute bronchitis.
11. What advice would you give to a person with scabies?
12. Mention the causes and risk factors of stroke.



CHAPTER 5

PATIENT EDUCATION IN CHRONIC DISEASES

Introduction

Though everyone agrees patient education is vitally important, it is often neglected in day-to-day practice. An investment in patient education is one of the most cost-effective ways of improving healthcare in India. Well-informed patients will take much better care of themselves - and information therapy will help to make medical care much more patient-centric.

Patient education is the process by which health professionals and others impart information to patients that will alter their health behaviors or improve their health status. Education providers may include physicians, registered dietitians, nurses, medical social workers, psychologists, general health assistants and pharmaceutical companies.

In this chapter, important chronic diseases namely diabetes, asthma, hypertension, arthritis, ischemic heart disease, obesity, cancer, epilepsy and dementia have been discussed. The chapter includes the causes, symptoms, management, prevention etc. of these diseases.

Objectives

After reading this chapter you will be able to:

- Know about causes, symptoms, prevention and control of common chronic diseases
- Provide patient education for these diseases

5.1 Diabetes

Diabetes is a disease in which the body doesn't produce enough insulin or properly utilize the insulin that is available. This results in excessive sugar in the blood. **Insulin** is a hormone that is secreted by pancreas. It is needed to convert sugar and starches into energy, which is needed in our body for daily activity.

Causes of Diabetes

The cause of diabetes is some defect in insulin production or its efficacy. It is usually due to genetic abnormality. Family history is present in many cases. Factors such as obesity and lack of exercise also play a role. Illness, infection and stress can also lead to diabetes.

Symptoms of Diabetes

The most common symptoms of diabetes are the following:

- ✓ Frequent urination
- ✓ Excessive thirst
- ✓ Extreme hunger
- ✓ Unusual weight loss
- ✓ Increased fatigue

Most of the symptoms are the body's way of trying to stabilize the blood glucose levels. The frequent urination is the body's attempt to rid the excess sugar (glucose). The extreme hunger is because the excess glucose in the body is floating in the blood stream instead of being utilized in the body's cells.

Types of Diabetes

There are two types of diabetes - type 1 and type 2.

Type 1 Diabetes is also called **Insulin Dependent Diabetes**. This is when the body is no longer producing insulin and artificial insulin must be administered through the form of an injection.

Fig: *Diabetes need be diagnosed & treated early. Otherwise, it can lead to complications. Watch out for these symptoms!*

Type 2 Diabetes is also called **Non Insulin Dependent Diabetes**. This is when the body is still producing insulin, but is not enough to meet the requirements needed to keep blood sugar (glucose) levels normal. In some cases, insulin is not able to send glucose into tissues from blood. Changing eating habits or losing body weight can be very therapeutic for returning blood glucose levels to normal.

Complications

The primary feature of this disorder is elevation in blood glucose levels **(hyperglycemia)**. Sustained hyperglycemia affects almost all tissues in the body. **Complications of multiple organ systems** can occur including the eyes, nerves, kidneys, and blood vessels. Diabetes is one of the leading causes of blindness. Other complications of diabetes are kidney failure, heart disease, stroke, skin complications, and nerve damage.

Ignoring high blood sugar can be very dangerous. If not treated, high blood sugar can lead to coma and even death.

Diabetes Mellitus Management

Primary treatment goals for diabetes patients include the achieving of blood glucose levels that are close to normal. This can be achieved by regular exercise, diet control, giving insulin injections or drugs, which increase the efficacy of insulin that is produced in the body.

The treatment of low blood sugar consists of administering a quickly absorbed glucose source. These include glucose containing drinks, such as orange juice, soft drinks (not sugar-free), or glucose tablets in doses of 15-20 grams at a time (for example, the equivalent of half a glass of juice). If the individual becomes unconscious, glucagon can be given by intramuscular injection.

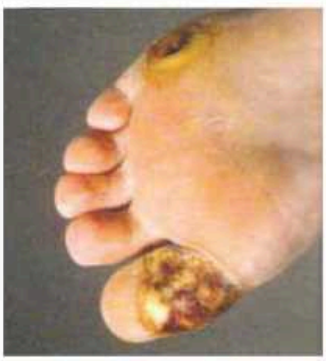


Fig: *Foot ulcer in diabetic patient.*

To treat diabetic retinopathy, a laser is used to destroy and prevent the recurrence of the development of small aneurysms and brittle blood vessels. Approximately 50% of patients with diabetes will develop some degree of diabetic retinopathy after 10 years of diabetes, and 80% of diabetics have retinopathy after 15 years of the disease. Poor control of blood sugar and blood pressure further aggravates eye disease in diabetes.

The progression of nephropathy in patients can be significantly slowed by controlling high blood pressure, and by aggressively treating high blood sugar levels. Drugs used in treating high blood pressure may also benefit kidney.

The pain due to diabetic nerve damage may respond to traditional treatments with drugs. It may also improve with better blood sugar control, though unfortunately blood glucose control and the course of neuropathy do not always go hand in hand.

Complications of diabetes like ulcers on feet can be controlled by proper care of feet, including avoiding walking on barefoot and also by proper control of blood sugar levels.

Diabetic neuropathy can also affect nerves to the stomach and intestines, causing nausea, weight loss, diarrhoea, and other symptoms of gastroparesis (delayed emptying of food contents from the stomach into the intestines, due to ineffective contraction of the stomach muscles).

Advice to Diabetic Patient

- Avoid use of sugar.
- Take timely medicine/insulin, as advised.
- Do not miss meals.
- Take small frequent meals.
- Take preventive steps for avoiding complications.
- Watch for complications.
- Regular check up.
- Exercise.

Diabetes at a Glance

- Diabetes is a chronic condition associated with abnormally high levels of sugar (glucose) in the blood.
- Insulin produced by the pancreas lowers blood glucose.
- Absence or insufficient production of insulin causes diabetes.
- The two types of diabetes are referred to as type 1 (insulin dependent) and type 2 (non-insulin dependent).
- Symptoms of diabetes include increased urine output, thirst and hunger as well as fatigue.
- Diabetes is diagnosed by **blood sugar (glucose) testing**.

The major **complications of diabetes** are both acute and chronic.

- **Acute** - Dangerously elevated blood sugar, abnormally low blood sugar due to diabetes medications.
- **Chronic** - Disease of the blood vessels (both small and large), which can damage the eye, kidneys, nerves and heart.

Diabetes treatment depends on the type and severity of the diabetes.

- **Type 1 diabetes** is treated with insulin, exercise, and diabetic diet.
- **Type 2 diabetes** is first treated with weight reduction, diabetic diet, and exercise. When these measures fail to control the elevated blood sugars, oral medications are used. If oral medications are still insufficient, insulin medications are considered.

5.2 Asthma

Asthma is the leading cause of chronic illness in children. It is a chronic disease that causes the airways (the tubes that carry air in and out of lungs) to become sore and swollen **[inflammation of airways]**. The airways become narrower by increased production of mucus, mucosal swelling and muscle contraction. When asthma symptoms become worse than usual, it is called an **asthma attack**.

Children have smaller airways than adults, which makes asthma especially serious for them. In between the attacks of breathlessness, children can be normal.

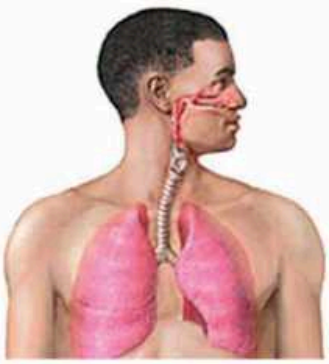


Fig: *Diagram showing airway and lungs.*

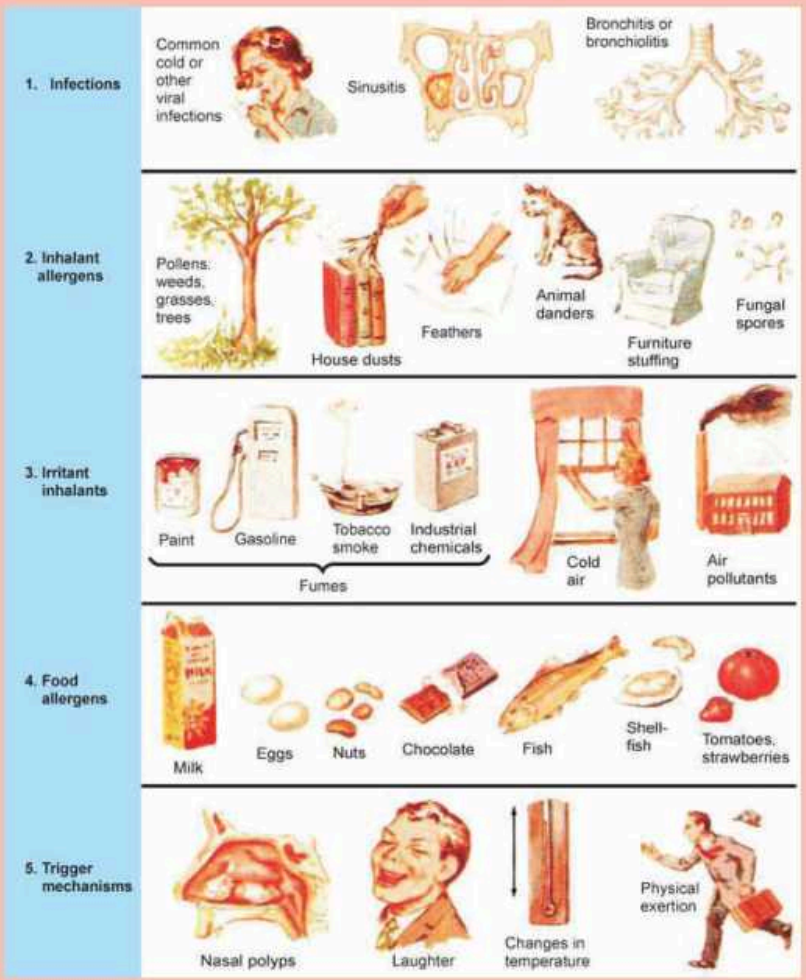


Fig: *Causes of Asthma Attacks.*

Causes of Asthma Attacks

Many things can cause asthma. These include :

- **Allergens** - mold, pollen, animals
- **Irritants** - cigarette smoke, air pollution
- **Weather** - cold air, changes in weather/temperature
- **Infections** - flu, common cold.

Some of the causes and triggers of asthma attack are depicted in the figure.

How Asthma is Manifested?

Signs and symptoms we should look for include:

- ✓ Frequent coughing spells, which may occur during play or at night
- ✓ Rapid breathing and difficulty in breathing
- ✓ Complaint of chest tightness or chest "hurting"
- ✓ Whistling sound (wheezing) when breathing in or breathing out.

Tests

Asthma is usually diagnosed by history and clinical examination. **Pulmonary function tests** (PFT) also called **Lung Function Tests (LFT)** measure the amount of air in the lungs and how fast it can be exhaled. The results of PFT/ LFT can help the doctor determine how severe the asthma is. Other tests include **allergy skin testing**, blood tests and X-rays.

Conditions that Worsen Asthma

- Cigarette smoking
- Allergens - dust, pollens
- Air pollution
- Certain medicines e.g. Aspirin

Treatment

Asthma is treated with two kinds of medicines: **quick-relief medicines** to stop asthma symptoms and **long-term control medicines** to prevent symptoms. Asthma medications are given as **inhalers** or through nebulizer (also known as a breathing machine). A **nebulizer** delivers asthma medications, usually bronchodilators, by changing them from a liquid to a mist. A child gets the medicine by breathing it in **through a facemask**. Precautions may be necessary to avoid inhalation of cold air. A heavy scarf, worn loosely over the nose and mouth, will help avoid cold air-induced asthma.

Advice to Patients of Asthma

Fig: *Taking asthma medicine through an inhaler.*

- Adopt a healthy life style.
- Prevent exposure to severe cold weather.
- Use steam inhalation.
- Take adequate rest; avoid sternous work.
- Take treatment as advised.
- Use oxygen when necessary.
- Stop smoking.
- Protect yourself from allergens; (like pollens, animals).
- Prevent infections like flu, common cold.
- Avoid exposure to smoke and dust.
- Take well balanced diet.
- Regular exercise.
- Avoid obesity.

Remember: Asthma is...

- An inflammatory condition of the airways that is caused by allergens, irritants and respiratory infections.
- Is reversible and controllable.

5.3 Hypertension

Hypertension is the term used to describe high blood pressure. Blood pressure readings are measured in **millimeters of mercury** (mm Hg). It is usually given as two numbers. For example, 120 over 80 (written as 120/80 mm Hg). Blood pressure measurements are the result of the force of the blood pumped by the heart and the size and condition of the arteries. In hypertension, either or both of these numbers may be too high.

The top number is the **systolic pressure**, the pressure created when one's heart pumps blood. It is considered high, if it is consistently over 140 mm Hg. The bottom number is the **diastolic pressure**, the pressure inside blood vessels when the heart receives blood, before pumping out. It is considered high if it is consistently over 90 mm Hg. So if the systolic BP $\geq$ 140 mm Hg or diastolic BP $\geq$ 90 mm Hg, it is hypertension.

Pre-hypertension is when the systolic blood pressure is between 120 and 139 or the diastolic blood pressure is between 80 and 89 (on multiple readings). If a person has pre-hypertension, he is more likely to develop high blood pressure.

Causes of Hypertension

Kidney diseases or diseases of blood vessels can cause hypertension. Abnormal production of certain **hormones**, like adrenaline, steroid hormones can produce hypertension. In most people, no cause is identified, in which case, it is called **essential hypertension**.

High blood pressure can affect all types of people. The person has a higher risk of high blood pressure if there is a family history of the disease. Smoking, obesity, and diabetes are all **risk factors for hypertension**.

Symptoms of Hypertension

Most of the time, there are no symptoms. Chest pain, palpitations, nose bleed, decreased vision and headache may occur. Dangerously high blood pressure (called **malignant hypertension**) manifests as **severe headache** and altered sensorium.

Tests

Blood pressure is measured by an instrument, called **sphygmomanometer**. Tests like ECG and X-ray chest are done to assess heart enlargement. Other tests may be done to look for changes in kidney, eyes or other organs due to hypertension. Hormones may be assessed to find the cause of hypertension.

Treatment

The goal of treatment is to reduce blood pressure so that the patient has a lower risk of complications. Diuretics, which increase urine output, along with increased sodium excretion will be useful. Regular exercise, decreased intake of salt, relaxation techniques (like meditation) and reduction of body weight (if the person is obese) are useful in reducing high blood pressure.

Prevention

Adults over the age of 18 should have their **blood pressure checked periodically. Lifestyle changes** may help control the blood pressure. Lose weight if overweight. Excess body weight adds to the strain on the heart. In some cases, **weight loss may be the only treatment needed**. Exercise regularly. Eat a diet rich in fruits and vegetables. Reduce fried and highly oily foods. Avoid chewing tobacco. Tobacco increases BP and spoils arteries. Avoid alcohol. If diabetic, **keep the blood sugar** under control.

Complications of Uncontrolled Hypertension

- Heart disease
- Kidney damage
- Vision loss
- Paralysis
- Heart attack
- Death

5.4 Arthritis

Arthritis is a group of conditions involving damage to the joints of the body. In arthritis, the joints become inflamed. Arthritis is a term that actually describes over 100 different types of conditions. They affect the joints, tendons, ligaments, muscles, and cartilage. Some of these conditions can also affect the important organs of the body (heart is affected in rheumatic arthritis).

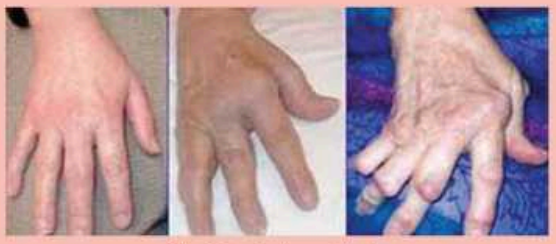


Fig: *Deformity due to Arthritis.*

Types of Arthritis

Arthritis is one of the most common chronic conditions in the world. Some of the most common types of arthritis are:

- **Osteoarthritis** - This occurs when the joints break down due to wear and tear. It occurs more in older people.
- **Rheumatoid Arthritis** - This is an **autoimmune disease** (the body attacks its own joints) causing pain, swelling and some disabling effects. This can affect the whole body and may cause damage to the eyes, heart and/or lungs.

- **Gout** - This often produces a sudden and severe attack of joint pain and swelling. This type of arthritis is caused by **excess uric acid** in the blood. It often begins in the joint of the **big toe**, but can occur in any joint.
- **Ankylosing Spondylitis** - This is arthritis of the spine that causes swelling, pain, stiffness and other complications.

Symptoms of Arthritis

Swelling and pain in joints, limitation of the movement of the joints, stiffness, redness, tenderness and warmth over the joint are some of the common symptoms of arthritis. In rheumatic arthritis, fatigue, weight loss and other general symptoms can be present. Kidney problems can be found in rheumatoid arthritis.

Causes/Risk Factors

The causes and risks depend on the type of arthritis. Injury and age put a person more at risk for osteo-arthritis. **Heredity** is also a major risk factor. Diseases like rheumatoid arthritis can affect children as well as adults. Osteoarthritis is more likely to affect an older person.

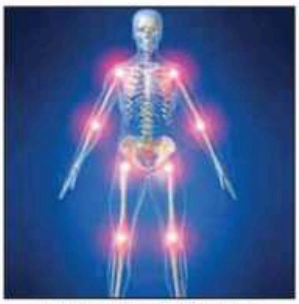


Fig: *Common sites of arthritis.*

Tests/Diagnosis

A detailed medical history and examination of the joints help in the diagnosis for cause of arthritis. X-rays can show joint damage from osteoarthritis and chronic gout. The blood, urine and other tests can be used if arthritis affects the body systems. A **rheumatologist** is the specialist who is most qualified to diagnose type of arthritis and related disorders.

Treatment

Treatment depends on the type of arthritis. Physical therapy can be used to treat some forms of arthritis. The most common treatments include splinting the joint for support, **anti-inflammatory drugs** to lessen swelling, drugs to suppress the body's immune response (e.g. cortico-steroids), paraffin wax dips, cold packs and surgery.

Osteoarthritis may need hip and knee **joint replacement surgery**. **Rheumatoid arthritis** can be best treated by **immune-suppressants** that stop the body's attack on the joint fluid.

5.5 Ischemic Heart Disease [IHD]

Ischemic heart disease (IHD), or **Myocardial Ischemia**, is a disease characterized by reduced blood supply to the heart muscle. This is usually due to narrowing of the coronary arteries, consequent to deposition of fat [**Coronary arteries** are the blood vessels which supply blood to the heart].

Causes of IHD

Fatty deposits (**atheroma**) accumulate in the cells lining the inner walls of the coronary arteries. These fatty deposits build up gradually and irregularly in the large branches of the **two main coronary arteries** which encircle the heart and are the main source of its blood supply. This process is called **atherosclerosis**. This leads to narrowing and hardening of the blood vessels supplying blood to the heart muscle. This results in ischemia (inability to provide adequate oxygen) to heart muscle and this can cause damage to the heart muscle. Complete occlusion of the blood vessel leads to a heart attack (myocardial infarction).

Its risk increases with advancing age, smoking, high blood cholesterol levels, diabetes and hypertension. It is more common in men and in those who have close relatives with IHD.

Risk Factors for Ischemic Heart Disease

Everybody has some risk of developing **atheroma** [deposition of fatty substance in the artery's inner wall, leading to narrowing of blood vessel], which may cause IHD. However, certain **'risk factors'** increase the risk. These risk factors include:

- **Lifestyle risk factors** that can be prevented or changed:
  - Smoking
  - Lack of physical activity (a sedentary lifestyle)
  - Obesity
  - An unhealthy diet (e.g. junk food)
  - Excess alcohol
- **Treatable/partly treatable** risk factors:
  - Hypertension
  - Diabetes
  - Higher level of cholesterol in blood
  - High triglyceride (fat) level in blood
  - Kidney diseases that affect kidney function

- **Fixed risk factors that we cannot alter:**
  - Strong family history: This means if one has a father or brother who developed heart disease or a stroke before they were 55, or in a mother or sister before they were 65.
  - Being male/a woman with an early menopause.
  - Age: the older one is, the more likely to develop atheroma.
  - Ethnic group: e.g. South Asians have an increased risk of IHD.

Features of IHD

- **Angina pectoris** (chest pain on exertion, in cold weather or in emotional situations),
- **Acute chest pain**: acute coronary syndrome, unstable angina or myocardial infarction ("heart attack" i.e. severe chest pain unrelieved by rest associated with evidence of acute heart damage),
- **Heart failure** (difficulty in breathing or swelling of the extremities due to weakness of the heart muscle).

Management

Diagnosis of IHD is done with an electrocardiogram, blood tests (cardiac markers), **cardiac stress testing** or coronary angiogram.

Depending on the symptoms and risk, treatment may be with medication, per-cutaneous coronary intervention (**angioplasty**) or **coronary artery bypass surgery/graft** (CABG). Management of risk factors like hypertension and diabetes are essential. Graduated exercise and periodic check up are advised.

Control these Risks, if IHD is to be Prevented

Control of risk factors like obesity, hypertension and diabetes helps in prevention of IHD. Avoidance of tobacco and alcohol intake is an important preventive measure. Let us see why these need to be avoided:-

Smoking tobacco: It constricts the blood vessels. That makes heart work harder, to keep the blood flowing throughout the body. It also puts a number of toxins into our blood. It sends carbon monoxide into blood, which obstructs other organs from getting oxygen. Tobacco makes heart beat faster and also damages the inner walls of arteries.

Stress: It strikes persons with a certain kind of personality. Such people susceptible to stress are up to four times more prone to CHD.

Lack of regular exercise: Absence of walking, jogging or running in our daily life increases our chances of getting heart disease. Lack of exercise raises blood pressure, increases body weight and lowers good cholesterol.

Obesity: Excess body weight (obesity) leads to high blood pressure, high cholesterol, diabetes and finally IHD.

Diabetes: It causes increased fat deposition in blood vessels, leading to their narrowing.

High Blood Pressure: Known as a **silent killer**. High blood pressure has no symptoms. So, people fail to pay attention, till the problem gets serious. High BP creates pressure against arteries and damages them (especially the arteries present in kidneys, heart, eyes, brain, etc.).

Cholesterol: It is a waxy substance found in blood stream. Accumulation of this on the walls of the arteries restricts the normal flow of blood and oxygen to heart. Without enough oxygen, as well as blood, heart gets damaged.

5.6 Obesity

Obesity is a medical condition in which **excess body fat** has accumulated to the extent that it may have an adverse effect on health, leading to **reduced life expectancy**.

Body mass index (BMI) compares weight and height. It is used to define a person as overweight (pre-obese) when their BMI is between 25 kg/m^2 and 30 kg/m^2 and obese when it is greater than 30 kg/m^2. BMI is defined as body weight in Kg divided by height in $meters^2$.

To **calculate your Body Mass Index** (BMI), take your weight (in kilograms) and divide by your height (in meters) squared. BMI= Weight in Kg/ (height in meters)^2

A BMI between 19 and 25 is normal. Less than 19 is underweight. **BMI between 25 and 30 is overweight**. BMI greater than 30 is obese. BMI above 40 is considered **moribund obesity** and it means that the person is prone to various cardiovascular disorders.

BMI Categories:

- Underweight - BMI <19 Kg/m^2
- Normal weight - BMI = 19 - 25 Kg/m^2
- Overweight - BMI >25- 30 Kg/m^2
- Obesity - BMI of greater than 30 Kg/m^2

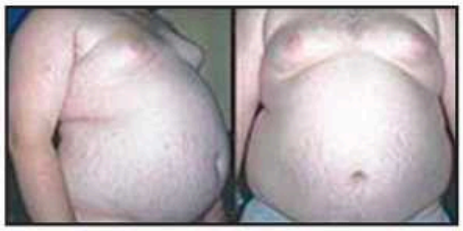


Fig: *Obesity: We should take control of obesity seriously. It leads to health problems, social problems and also occupational problems.*

Causes of Obesity and Consequences

Obesity is most commonly caused by a combination of excessive dietary intake of calories and lack of physical activity. A limited number of cases are due to genetic susceptibility, medical problems or psychiatric illness. **Obesity leads to many diseases**, particularly heart disease, diabetes, breathing difficulties during sleep and arthritis.

Symptoms

The main feature is increased body weight, due to fat deposition. Patients with obesity can have high blood pressure, diabetes, breathing disorders and complications of them.

Treatment

The primary treatment for obesity is **dieting and physical exercise**. If this fails, **anti-obesity drugs** may be taken to reduce appetite or inhibit fat absorption. In severe cases, surgery (**bariatric surgery**) is performed to reduce the stomach volume and length of small intestine. Such surgery leads to earlier satiation of hunger and reduced ability to absorb nutrients from food. Obesity may be prevented by intake of proper diet, regular exercise and avoiding excess carbohydrates/spicy food/ junk food.

Health Education to Prevent Obesity

- Reduce consumption of oily foods and sweets.
- Consume more fruit and vegetables.
- Increase physical exercise.
- Avoid junk foods.
- Use bicycle as much as you can.
- Go for swimming.

5.7 Cancer

Cancer is a term used for diseases in which abnormal cells divide without control. Such cells are capable of invading other tissues. **Cancer cells can spread to other parts of the body**, through the blood circulation and lymph circulation.

The leading sites of cancer among men are cancer of oral cavity, lungs, oesophagus and stomach. Leading sites among women are cervix of the uterus, breast and oral cavity. **Oral and lung cancers in males**; and **cervical and breast cancers in females** account for more than 50% of all cancer deaths in India.

Types of Cancer

Cancer is not just one disease but many diseases. There are more than 100 different types of cancer. Most cancers are **named after the organ or type of cell** in which they start. For example, cancer that begins in the colon is called colon cancer; cancer that begins in basal cells of the skin is called basal cell carcinoma.

Cancer types can be grouped into broader categories. The main categories of cancer include:

- **Carcinoma** - cancer that begins in the skin or in tissues that line or cover internal organs.
- **Sarcoma** - cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue.
- **Leukemia** - cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced which enter the blood.
- **Lymphoma and myeloma** - cancers that begin in the cells of the immune system.
- **Central nervous system cancers** - cancers that begin in the tissues of the brain and spinal cord.

Origins of Cancer

All cancers begin in cells, the body's basic unit of life. To understand cancer, it's helpful to know what happens when normal cells become cancer cells.

The body is made up of many types of cells. These **cells grow and divide in a controlled** way to produce more cells, as they are needed to keep the body healthy. When cells become old or damaged, they die and are replaced with new cells.

However, sometimes this **orderly process goes wrong**. The genetic material (DNA) of a cell can become damaged or changed, producing **mutations** that affect normal cell growth and division. When this happens, **cells do not die when they should** and new cells form when the body does not need them. The extra cells may form a mass of tissue, called a **tumor**. Some cancers do not form tumors. For example, **leukemia** is a cancer of the bone marrow and blood.

Types of Tumor

Not all tumors are cancerous; tumors can be benign or malignant.

- **Benign tumors** aren't cancerous. They can often be removed, and, in most cases, they do not come back. Cells in benign tumors do not spread to other parts of the body.
- **Malignant tumors** are cancerous. Cells in these tumors can invade nearby tissues and spread to other parts of the body. The spread of cancer from one part of the body to another is called **metastasis**.

Risk factors for Cancer

- Unhealthy lifestyle
- Smoking
- Chewing of tobacco
- Alcohol
- Poor personal hygiene
- Air pollution

Danger Signs for Early Detection of Cancer

- Lump or hard area in breast
- Persistent cough or hoarseness of voice
- Bleeding from any of the orifices
- Unexplained weight loss
- Swelling or sore that does not heal
- Any wound that does not heal
- Change in bowel habits
- Change in wart or mole

Important Measures for Preventing Cancers

- Avoid smoking.
- Avoid chewing of tobacco.
- Prevent ulcers and infections in the mouth.
- Maintain oral hygiene.
- Periodic screening, check up.
- Eat healthy diet.
- Avoid alcohol.
- Practice healthy lifestyle.
- Regular exercise.

Treatment

- Radiotherapy
- Surgery
- Chemotherapy

5.8 Epilepsy

Epilepsy is defined as recurrent episodes of **abnormally increased electrical activity of the brain**, which manifests as transient episodes of **seizures** (brief episodes of altered consciousness). It is a very common neurological disorder. About 50 million people worldwide are suffering from it. It can manifest as **recurrent, abnormal, jerky movements of body**, which usually last for a few minutes. Some patients lose consciousness during these episodes. Each episode is called **'seizure'**. Occurrence of two or more seizures is termed as **epilepsy**. With proper medications, one can successfully control it in most of the cases.

Epilepsy is of different types. Not every type lasts life-long. Some types are confined only to some stages of childhood. The **classification of epilepsy** is done on the basis of their cause, observable manifestations of seizures, location in brain where the seizures originate, identifiable medical syndromes and the triggers that result in the seizure.

Epilepsy Symptoms

The most common symptom of epilepsy is recurrent seizures. There are many types of seizures, but most broadly classified are:-

- **Generalized tonic-clonic seizures (GTCS) (**or **grand mal)**, where a person loses consciousness, falls down, stiffens body and starts jerking uncontrollably.
- **Generalized absence seizures (petit mal)**, where there is a brief loss of consciousness for a few seconds, but the person does not fall down. This type of seizures occurs in children.

- **Simple partial seizure**, the person is fully aware and experiences abnormal twitching movements in body parts (like head, legs, arms, hands, eyes etc.). Might experience odd smells, sounds or tastes.

Causes of Epilepsy

The cause of epilepsy is usually not clear in a person. It is observed that, at times, epilepsy runs in the family. Epilepsy is not a mental illness, it's a **neurological disorder**. Epilepsy may develop after damage or injury to the brain,. Such damage may be caused by decreased blood or oxygen supply during birth or stroke, head injury, infection or brain tumor.

Lead poisoning and **substance abuse** too can lead to epilepsy. At times, maternal injury, infection or systematic illness affects the **developing brain of the fetus during the pregnancy** and might lead to epilepsy.

A seizure can also be caused by any of the provocants leading to the abnormal neurological activity. These provocants can be like hot water on head, hyperventilation, flashing or flickering lights (photosensitive epilepsy), and sleep deprivation.

Epilepsy Management

One can perform an **electro- encephalogram (EEG)**, brain MRI or CT scan, so as to check for epilepsy or to find the cause of epilepsy.

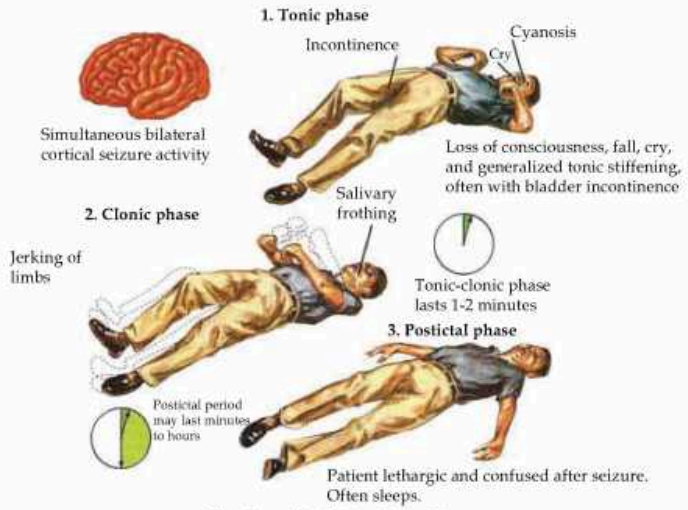


Fig: *Generalized Tonic-Clonic Seizures.*

Medications can be taken to reduce the attacks. Various drugs like carbamazepine, phenobarbital, phenytoin, sodium valproate can be taken in order to control the recurrence of epileptic seizures. Avoiding the triggers will help further in keeping a check on the seizures. In case of severe cases of epilepsy, brain surgery can be performed.

Epilepsy is not a contagious disease. Most people lead a normal life. They can marry and can have normal children.

During the attack, it is harmful to forcefully open mouth to keep something. Keeping keys in hand or making a person to smell shoes are useless in control of seizures. It is essential to avoid injury during convulsion. Turning the patient to one side in supine posture helps in preventing blocking of airway with throat secretions. It also helps in preventing vomit or secretions from entering into the lungs.

Epilepsy can be prevented by **proper care during childbirth**. It can also be prevented by **avoiding head injury** by careful driving and use of helmets.

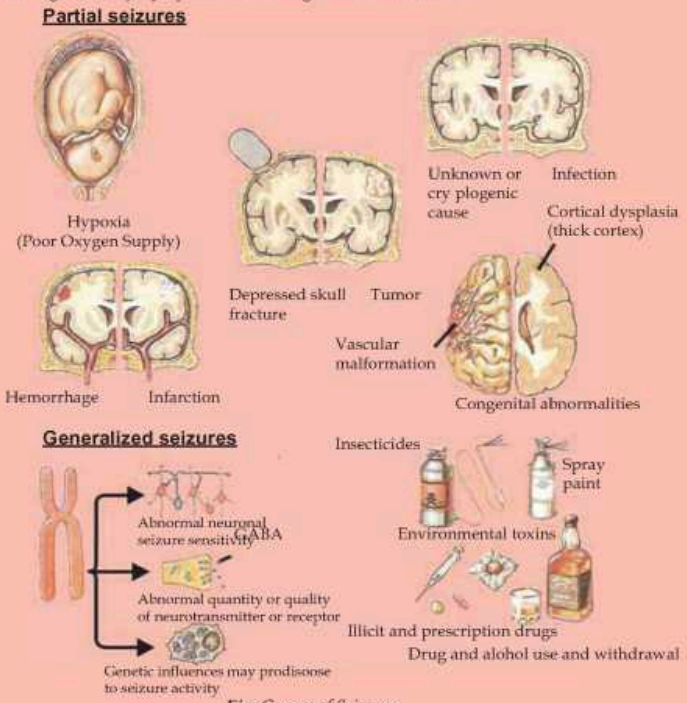


Fig: *Causes of Seizures.*

5.9 Dementia

Dementia is defined as **progressive loss of memory** and other mental functions (like calculation, judgment etc.), thereby significantly affecting the person's daily activities.

Many acute diseases have specific causes (e.g. a virus causing measles infection). However, for many chronic disorders (long-lasting conditions such as **Alzheimer's disease**, the most common cause of dementia), the causes remain uncertain. We look for factors that appear to be linked to the development of a disease. These are **"risk factors"** – if they are present, there is an increased chance that the disease will develop. It is important to note that **risk factors are not necessarily causes of a disease**.

Risk factors for Dementia

- **Age** is the most important risk factor for dementia. As we grow in age, our body's self-repair abilities become less efficient.
- **ApoE gene**: Apart from the mutated genes responsible for dementia, the most important genetic risk factor for Alzheimer's disease is the apoE4 gene.
- **Other risk factors** for dementia: diabetes, high blood pressure, head injury, low levels of formal education.

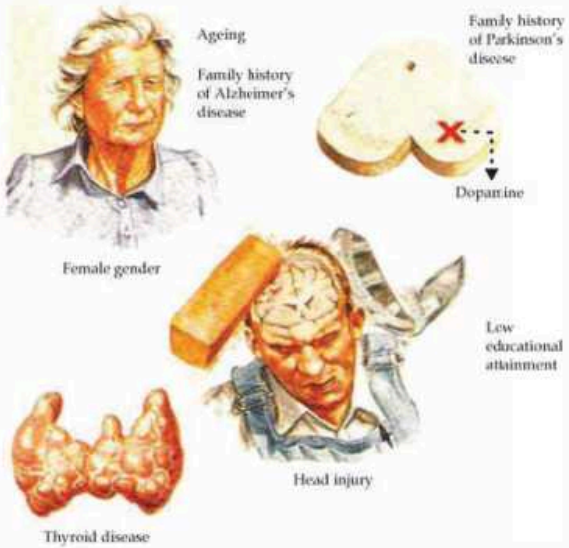


Fig: *Risk factors of Dementia.*

Features of Dementia

The persons are usually of older age group, **forget the recent events** (like the recent news details or where they kept their money etc.). They tend to forget the way to their house from market or unable to count money. Remote events, like names of children or childhood events are lost in late stages. **Social behaviour** can be affected.

How to Confirm the Diagnosis?

Diagnosis of dementia is confirmed by careful assessment of mental functions and by imaging of brain (by CT or MRI scans). It is important to **exclude reversible causes of dementia** due to medical disorders, like hypothyroidism, Vitamin B12 deficiency and psychiatric disorders.

Reducing the Risk of Dementia

Living a healthy lifestyle may help reduce one's overall risk of developing **Alzheimer's disease**. A healthy lifestyle includes healthy eating, maintaining a healthy weight, taking part in regular physical activity, maintaining normal blood pressure and cholesterol levels and participating in activities that involve **socializing and stimulating brain activity. Frequent intake of fruits and vegetables** has shown to delay the onset of dementia.

Management

We should give due respect to patients of dementia by understanding their problems. Help them and their caregivers. **Patients may keep a dairy** to note things; otherwise they tend to forget. They should **carry their identity details** always in their pockets, so that they can be helped, if lost in market place. **Drugs have only minimal role** to play in the management of dementia (e.g. control of behavioral disorders).

Questions

1. Describe patient education.
2. Mention the symptoms of diabetes.
3. State four complications of diabetes.
4. Explain what advice you would give to a patient of asthma.
5. Mention complications of uncontrolled hypertension.
6. Explain what health education you would give to Arjun, an 18 year old school boy to prevent obesity.
7. Name two common cancers among men in our country.
8. Mention four risk factors of dementia.

Introduction

Healthy habits play an important part in preservation of health. These habits have to be developed and practiced in our day to day life. Maintaining personal hygiene, taking sufficient rest and about eight hours sleep, having nourishing food, regular physical exercise and fresh air are some healthy habits that everyone should practice. Healthy habits help in building physical, mental and social health. This chapter deals with the essentials of personal hygiene and good grooming, hand washing and its importance, methods of hand washing, pitfalls in hand washing and prevention of food poisoning through proper personal hygiene.

Objectives

After reading this chapter you will be able to:

- Know the importance of personal hygiene
- Describe different aspects of personal hygiene
- Explain the importance and method of hand washing
- Describe the role of personal hygiene in prevention of food poisoning

6.1 Personal Hygiene

The word **'hygiene'** has been derived from the Greek word Hygeia - the Goddess of health in Greek mythology. Hygiene is defined as "the science of health which embraces all factors contributing to healthful living". Hygiene can be classified into personal, social and community hygiene.

Personal hygiene is an aspect of hygiene which tells us how an individual **preserves, improves and maintains the health** of his own mind and body. In fact, it is the first step to **good grooming** and **good health**. Personal hygiene leads us towards sanitation as a scientific prescription i.e. it leads us to keeping our body clean, keeping our clothes clean and keeping our streets, villages, towns and cities clean. Thus it is a holistic approach to improve the health of a society.

Personal hygiene is related to **keeping our body clean from head to toe**. Every external part of the body demands a basic amount of attention on a regular basis. Maintaining good personal hygiene is important as it helps to:

- prevent transmission of diseases like diarrhoea, skin diseases, eye diseases etc.
- prevent hospital infections.
- create good image/public relations.
- enhance feeling of self worth.
- improve aesthetic sense.
- prevent unpleasant body odor.

6.2 Health Problems that can be prevented by Good Personal Hygiene

1. **Skin and hair conditions**: Head lice and body lice, scabies, ringworm infection, pyoderma and furuncles, perspiration and body odour, dandruff, cracks and callosities.
2. **Oral conditions**: Dental caries, peri-odontitis (pyorrhoea), stained teeth, oral cancer, bad breath etc.
3. **Eye conditions**: Eye infections such as trachoma, viral conjunctivitis, etc.
4. **ENT (ear, nose and throat) conditions**: Ear wax, infections of nose and throat.
5. **Genito-urinary conditions**: Reproductive tract infections, urinary tract infections, sexually transmitted infections (STIs), cervical cancer etc.

6. **Conditions related to digestive system**: Diarrhoea, amoebic dysentery, typhoid, infective hepatitis, food poisoning and worm infestations.

7. **Other conditions**: Athletes Foot (a fungal infection of the skin), paronychia (infection of the edges of the nails).

Now you understand how many health problems and aesthetic problems can be prevented by good personal hygiene! If health care persons get these problems, they can spread infections to the patients in the hospital. So, **all health care persons should take personal hygiene seriously!**

6.3 Aspects of Personal Hygiene and Good Grooming

There is a proverb, **'Cleanliness is next to Godliness'**. Cleanliness is desirable from both **hygienic as well as aesthetic standpoint**. Here are some important aspects of personal hygiene and some good grooming routines:

Care of Skin

- **Take bath** daily with cold/warm water and a mild soap. Use bath sponge for scrubbing.
- Those who are involved in active sports or **work out to a sweat would do well to take a bath after the activity**.
- Use **back brush and heel scrubber**. Avoid the use of abrasive material.
- **Genitals and anus** need to be cleaned well because the natural secretions of these areas in unhygienic conditions can cause irritation and infection. Dry with a clean towel.
- Avoid sharing soaps and towels.
- Change into **clean underwear** after bath. Other clothes that are worn should also be clean.
- Dry clothing and bedding in **direct sunlight**.
- Have good rest and sleep, nourishing food, regular physical exercise and fresh air, to **keep the skin glowing**.

Care of Teeth

- Rinse the mouth before brushing to remove plaque and loosen debris from the tooth surface.

Fig: Enjoying a warm tub bath in cold weather. Take particular care in scrubbing genital & anus areas; and area between the buttocks.

- **Brush teeth** at least **twice a day** (preferably after every meal).
- While brushing, make sure to get rid of the food particles stuck in between the teeth.
- **Brush teeth correctly** – Hold the toothbrush at 45° angle against the gum line and move the brush back and forth, with short gentle strokes for 2-3 minutes.
- Use **soft brush** with **rounded bristles**. Rinse it well and leave to dry after use.
- There are no perfect **toothpastes**/powders. Use one without harsh abrasives or strong antiseptics/ chemicals.

Fig: Proper brushing of teeth** is a great skill, not many people know. Brush gently in all directions for at least 2 minutes each time. Over-brushing erodes the teeth. Under-brushing makes teeth and gums vulnerable to diseases. This figure shows children learning in their school about **how to brush their teeth properly.

- Change the toothbrush after every 3 months.
- **Rinse mouth** well after every meal to remove food particles.
- Limit sugary snacks (especially sticky ones).
- Get enough calcium; drink milk.
- Eat healthy and balanced diet.
- Avoid smoking.
- Regular dental check up.
- **Avoid chewing 'paan'** ('betel cud' containing areca nut, catechu, slaked lime, condiments and some other materials. It may contain even tobacco!). It can be harmful to both teeth and gums. It can lead to **attrition of teeth and decay of gums**. It can also increase the chances of getting oral cancer. Also it can **stain the teeth**, especially if they are broken/abraded/eroded; or if the roots are exposed due to receding gums (teeth become dirty brown or black).

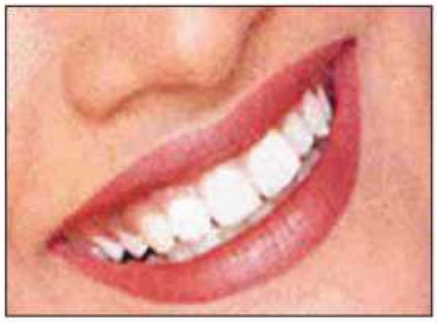


Fig: Clean and untainted teeth give us a nice smile.
Prevent tainting of your teeth
by avoiding tobacco, paan masaala and paan.

- **Do not chew tobacco**. It leads to **cancer of the oral cavity**. So, avoid chewing tobacco in any form ('Zarda', 'Khaini' or tobacco-tooth paste). **Oral cancer is the most prevalent cancer** in our country.

Cleaning of Tongue

- Use a tongue cleaner or toothbrush to clean the tongue.

Care of Eyes

- Wash the eyes with clean water, then rinse for 6-8 times a day.
- Dry them with soft clean cloth or towel.
- Avoid rubbing the eyes with **soiled fingers**.
- Do not put **kajal** or any other make up material into eyes.
- If there is any problem in the eyes, consult eye doctor.

- Study in **proper light** coming from behind. Make sure that the print of the book is fairly bold to prevent undue strain.
- Avoid watching TV for long hours or from very close distance.
- Do not work on computer for hours constantly.
- Use **sun glasses** in bright sunlight, to prevent / delay development of cataract.
- Get **regular eye check up** done to detect any abnormalities such as near and far sightedness.
- Eat food rich in Vitamin A e.g. carrot, papaya, mango, guava.

Care of Ear

- Never put anything into the ear.
- Clean the **outer ear** gently with a clean wet cloth.
- If there is **water in the ear**, turn the head first to one side, then to the other side until the water is drained out on its own.
- Never use **sharp edged objects** to clean the wax from the ear.
- Always use **ear buds** to clean the ear.

Care of Hands

- Keep hands scrupulously **clean at all times**.
- Always wash hands with soap and water before and after meals, and after using the toilet.
- Dry the hands with a soft clean towel after wash.
- **Prevent cuts and abrasions** on hands.
- Keep nails **short and clean**.
- **Nail polish** users should see that it **does not chip off into the food**.
- Do not keep the nails painted continuously as it causes the keratin, of which nails are made,to split.
- **Manicure** can be done once in three weeks. This requires soaking hands in warm water for ten minutes, massaging of hands, thorough cleaning and shaping of nails. Choose **manicure kit** with care as in some kits, the instruments are crudely made which will do more harm than good.

Fig: *Well cared for and artistically decorated hands: All health care persons should* ***spend lot of time and effort*** *in keeping them clean and free of disease causing agents.*

Note: *The method of hand washing is given in section 6.6.*

Care of Nose

- Avoid putting finger/any object into the nose.
- Use soft cloth or tissue paper to clean the nostrils.
- Blow the nose on handkerchief or tissue paper.

Care of Hair

- Comb the hair daily with a soft bristled brush or a wide toothed comb. Prevent dust by covering the head.
- Wash the hair minimum twice a week with good shampoo or soap.
- Use clean comb/hairbrush.
- Apply adequate oil and massage gently at least once a week to prevent dandruff.
- Avoid unnecessary use of hair colour and dyes as they can cause scalp allergies, allergic colds and throat conditions.
- Prevent pediculosis (lice infestation), infection by maintaining hair hygiene.

Care of Feet

- Wash feet daily; when having a bath, give them a good scrub with a sponge, pumice stone or foot scrubber which is not made of abrasive material.
- After bath, dry the area between the toes.
- Keep toenails clipped.
- Protect feet by wearing shoes or chappals.
- Do not use shoes for hours constantly, slip them off now and then, to air the socks a bit and make them less smelly.
- Wear cotton socks; wear a clean pair of socks everyday.

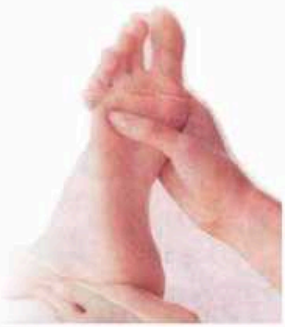


Fig: A well cared for foot: *wearing good shoes that cover the feet fully is important, otherwise the feet get weathered and later get cracked. People who wet their feet too frequently are prone to* ***cracked soles****. Cracks may even get infected. People not in habit of using shoes and those using ill-fitting shoes get* ***callosities****!*

- People who have sweaty feet should powder their feet before wearing socks.
- Avoid wearing the same pair of shoes every day; keep at least one more pair and use it alternatively.
- Give importance to comfortable wearing, in the choice of footwear.
- For those who go barefoot indoors, door mats must be cleaned or changed frequently.
- Extra foot care is required for diabetics.
- Apply oil or petroleum jelly to feet in the winter season to keep them soft and supple.
- Pedicure can be done once in three weeks.

Menstrual Hygiene

Menstruation is a normal physiological process for all women of **reproductive age** (15-49 years). For most women it occurs once a month. Each month the womb develops a special lining that can protect and feed a fertilized egg as it develops into a baby. If a woman is not pregnant, this lining is no longer needed and is lost from the body. Menstruation shows that a woman is healthy and fertile. Unfortunately a lot of **myths and misconceptions about menstruation** exist in our society. In many cultures women are thought to be unclean during menstruation.

No woman feels completely comfortable during her menstrual period. She may have **pre-menstrual tension** or **stomach cramps**. She has to deal with the **menstrual flow**. She has to **avoid staining her clothes**. Girls need to be educated about menstruation and menstrual hygiene. This education should begin at an early age, before they reach puberty. This helps them to be **better prepared** emotionally for the experience of menstruation. Following are some of the **menstrual hygiene practices**.

- Have a **regular bath** and maintain good personal hygiene during menstruation period.
- **Use sanitary napkins** to deal with the menstrual flow as they are hygienic, absorbent and much softer than ordinary cloth.
- Change the napkin 3 to 4 times a day for a normal menstrual flow.
- Wash and dry the genital area before changing the sanitary napkin.
- Wash hands with soap before and after changing the napkin.

- Dispose the used sanitary pad properly by wrapping it up in a paper and putting it into a dustbin.
- **Use cotton panties;** change them twice a day during menses days. Dry them in direct sunlight.
- Eat well balanced diet.
- Have normal routine; be active.

6.4 Hand Washing and its Importance

Proper hand washing is an essential procedure in a hospital or any healthcare institution. It is one of the most basic ways of preventing nosocomial (hospital acquired) infections. It is also the single cost effective measure which protects healthcare providers. Frequent and thorough washing of hands reduces the number of micro-organisms (germs) present and discourages the multiplication of those which still remain on the hands.

Hand washing is the act of cleansing the hands with lathery soap/detergent and water for removing dirt and micro-organisms from hands. It is of two types– routine hand washing and clinical hand washing (before carrying out any procedure for a patient). Minimum time required for routine hand washing is 10-15 seconds. Before any clinical procedure, at least two minutes hand wash is recommended. As a universal precaution, gloves are used in hospitals before carrying out any procedure, or before handling blood or specimens.

The purpose of hand washing is to cleanse the hands of pathogens (including protozoa,

Fig: *Hand washing with soap: Always keep soap ready at the wash basins. Wash basin without soap is an incomplete facility!*

Fig: *It is very important to wash our hands properly, frequently and at appropriate times.*

bacteria or viruses) and chemicals which can cause personal harm or disease. Hand washing is vitally important especially for people who handle food or work in the health field. Appropriate hand washing:

- Prevents transmission of faeco-oral diseases like dysentery, cholera,
- Prevents nosocomial infections,
- Prevents infection of surgical wounds in surgical wards,
- Prevents cross infection from one patient to another, and
- Makes the person feel good and clean.

Hand washing is important **before and after attending to a sick person**. In our daily lives, there are **five critical times** at which we should wash our hands with soap, if we have to prevent faeco-oral transmission:

- After using toilet,
- Before eating food,
- Before feeding child,
- Before cooking food; or handling raw meat, fish, or poultry, and
- After cleaning child/changing nappies.

6.5 Role of Cleansing Agents

Removal of micro-organisms from skin requires the addition of soaps or detergents to water. Different products are available for washing hands. **Soaps and detergents** (non-antimicrobial agents) are sufficient for routine hand washing. Often, products sold as "soaps" are actually detergents. In places where there is a high risk of infection (e.g. casualty, intensive care unit, etc.), use of products having **anti-bacterial ingredient** is recommended. They can destroy bacteria or suppress their growth.

Since **solid soap** is reusable, it may hold bacteria acquired from previous users. So, **wash the soap itself**, before and after use. Contaminated soap can colonize our hands with Gram-negative bacteria. Warm and soapy water is more effective than cold and soapy water at removing the natural oils from our hands (the natural oils present on our hands hold soils and bacteria).

6.6 Methods of Hand Washing

Hand Washing with Soap and Water

This method is used when hands have visible dirt, and whenever the person comes in contact with a patient. It is a simple **step-by-step process**:

- Wet hands under running water and apply soap.
- Rub hands together vigorously for at least 15 seconds.
- Cover all surfaces of the hands and fingers. Use circular movements to clean the palms, back of hands and wrists. Interface the fingers and thumbs and move them back and forth during hand washing.
- Rinse hands under running water.
- Dry the hands thoroughly with a disposable/clean towel.
- Use towel to turn off the faucet (tap) or elbow taps if available.
- Trim nails regularly with nail cutter.

Surgical Scrub

This is done before surgery or procedures which need sterile technique. Here are the steps of surgical scrub:

- Clean under nails;
- Wet hands up to elbow;
- Use antiseptic and rub all surfaces for 2-6 minutes;
- Rinse with running water;
- Dry with sterile towel.

6.7 Pitfalls in Hand Washing

- **Compliance** with this simple procedure of hand washing is difficult to achieve. Proper hand washing is often not practiced, despite providing education about its importance.
- Routine hand washing is often not always practiced **after each client contact**.
- Healthcare providers often **wear gloves without proper hand washing**. This is rather harmful as the warmth and moisture inside gloves create an ideal environment for bacteria to grow.

6.8 Prevention of Food Poisoning through Proper Personal Hygiene

Food poisoning is an inflammation/acute infection of gastro-intestinal tract caused by ingestion of contaminated food or drink. **Humans are the prime source of food poisoning bacteria/viruses**. They form a vehicle for the transmission of infections. Food poisoning may be:

1. **Bacterial** - Caused by consumption of food contaminated by bacteria like Salmonella typhimurium, Staphylococcal aureus, Escherichia coli.

2. **Non bacterial** – Caused by **chemicals** e.g. fertilizers, pesticides.

The **signs and symptoms** of food poisoning include nausea, vomiting, diarrhoea, abdominal pain, headache, fever, and prostration (inability to sit). Apart from these individual symptoms, there is:

< History of ingestion of a common food,

< Many persons falling ill at the same time, and

< Majority of cases having similar signs and symptoms.

Personal hygiene practices for preventing food poisoning are given here:

- Always wash hands with soap and water before cooking, before eating food or after visit to toilet.
- Maintain a **high standard of personal hygiene**. Take bath daily. Wear clean clothes.
- Keep **nails clean and short**.
- Make sure that the **hair is clean, tidy and covered**.
- People having diseases such as infected wounds, diarrhoea, dysentery, throat infection, etc. should avoid handling food.
- **Ready-to-eat food** should not be handled with bare hands.
- People who prepare food should have **nothing on them that can fall into the food** (buttons, hair clips etc.).
- Avoid scratching, or touching the face, nose, mouth or any other body orifices **while handling food**.
- Avoid coughing or sneezing around food. Cover the mouth and nose with clean handkerchief while coughing or sneezing.
- **Get vaccinated** against typhoid and cholera.

6.9 Food Hygiene

- **Wash hands with soap** before and after handling any food, and after using toilet, changing diapers, or after coming into contact with animals.
- Practice clean habits and good personal hygiene.
- Wash the **cereals and pulses** properly under clean running water.
- Always wash the **fruits and vegetables** thoroughly under running water before cutting.
- Use safe water for food preparation and for drinking.
- Select food stuffs carefully.
- Store food appropriately in refrigerator or hot case.
- Use **boiled milk**.
- Food should be served hot. **Food with unusual smell** should not be consumed.
- Avoid foods and beverages from street vendors.
- Do not eat stale, rotten food, overripe fruits, raw and unwashed fruits / vegetables and, food exposed to dust or flies.
- **Raw fruits and vegetables** after cutting should be consumed immediately to avoid infection.
- **Avoid flavored ices** as these may have been prepared with contaminated water.
- Keep the **surroundings clean** so that flies cannot breed.
- Have adequate space, light, ventilation and washing facilities in the **kitchen**.
- Maintain **cleanliness of work surfaces, utensils and equipments**.
- Make sure that the food premises are kept free from rats, flies, dirt etc. Food should not be exposed to dust, flies or rats. keep food covered.
- Use a **covered dust bin** for disposal of garbage and waste food.
- **Sanitary disposal of excreta**; avoid open field defecation.
- Have **regular immunization** against typhoid and cholera.

6.10 Cooking of Food

- Food should be cooked well.
- Cooked food should be kept covered.
- The water used for soaking cereals or pulses should not be discarded; it should be used for cooking as it contains vitamins and minerals.
- **Steaming/pressure cooking** of food should be preferred.

Questions

1. Prepare health education contents for a group of school children on care of teeth.
2. Mention some ways by which we can maintain healthy eyes.
3. List the topics of health education you would give to a group of adolescents on personal hygiene.
4. What health education would you give to a group of children about care of skin?
5. Prepare contents for health education for children in a rural community on care of feet.
6. Mention the health education messages you would give to a group of adolescent girls on menstrual hygiene.
7. Explain how hand washing is important in health.
8. Mention the steps of hand washing.
9. List the critical times when hand washing should be practiced.
10. What health education messages would you give to food handlers for maintenance of their personal hygiene?

CHAPTER 7

ENVIRONMENTAL SANITATION

Introduction

In the past, sanitation was centred on the sanitary disposal of human excreta. Now, the term sanitation covers the whole field of controlling the environment with a view to prevent disease and promote health. Poor hygiene, inadequate quantities and quality of drinking water, and lack of sanitation facilities cause millions of the world's poorest people to die from preventable diseases each year. Women and children are the main victims.

This chapter deals with the essentials of sanitation, importance of proper disposal of human faeces, faeco-oral transmission of diseases, hygiene education, disposal of solid & liquid wastes, and disposal of biomedical waste.

Objectives

After reading this chapter you will be able to:

- Define environmental sanitation
- List the essential components of environmental sanitation
- Understand the links between sanitation and health
- Explain faeco-oral transmission of diseases
- State the importance of proper disposal of human faeces
- Mention various issues related to hygiene education
- Describe methods of disposal of solid and liquid wastes
- Explain methods of disposal of biomedical waste

7.1 Essentials of Sanitation

Sanitation is a general term which comprises all phases of programme for improving environment and health. Specifically, sanitation is intended to **prevent diseases by creating favourable conditions to promote health**.

The term "**sanitation**" can be applied to specific aspects/concepts/ locations or strategies, such as:

- **Basic sanitation** - refers to the management of human faeces at the household level.
- **On-site sanitation** - the collection and treatment of wastes is done where it is deposited. Examples are the use of pit latrines and septic tanks.
- **Food sanitation** - refers to the hygienic measures for ensuring food safety.
- **Environmental sanitation** - the control of environmental factors that form links in disease transmission. Subsets of this category are solid waste management, water and wastewater treatment, industrial waste treatment and noise and pollution control.

Definition of Sanitation

WHO and UNICEF define 'environmental sanitation' as "the control of all those factors in man's physical environment which exercise or may exercise a deleterious effect in his physical development, health and survival".

Sanitation in fact is "the science of safeguarding health". National Sanitation Foundation of the U.S.A. says that sanitation is "a way of life". It is the quality of living that is expressed in a clean home, a clean farm, a clean business, a clean neighbourhood and a clean community. Being a way of life, it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations".

Man has controlled a number of factors in his environment, e.g., food, water, housing, clothing, sanitation. It is the control of these factors that has been responsible for considerable improvement in the health of the people in the developed countries during the twentieth century.

Essential Components of Environmental Sanitation

According to UNICEF and WHO, Environmental Sanitation includes seven elements:

(i) Handling of drinking water

(ii) Disposal of waste water

(iii) Disposal of human excreta

(iv) Disposal of solid wastes and cattle dung

(v) Home sanitation and food hygiene

(vi) Personal hygiene

(vii) Village sanitation.

The Links between Sanitation and Health

Water, sanitation and health are linked in many ways:

- Contaminated water that is consumed may result in **water-borne diseases** (viral hepatitis, typhoid, cholera, dysentery and other diseases that cause diarrhoea).
- Without adequate quantities of water for personal hygiene, **skin and eye infections** (e.g. scabies, pyoderma, conjunctivitis, trachoma etc.) spread easily.
- **Water-based diseases** and **water-related vector-borne diseases** can result from water supply projects (including dams and irrigation structures). The water projects inadvertently **provide habitat for mosquitoes** that are intermediate hosts for parasites (e.g. malaria, filariasis and Japanese encephalitis).
- Water containing **high amounts of chemicals** (e. g. fluorides, arsenic, nitrates, etc.) can cause serious disease.
- **Improvements in water quality and quantity** can reduce childhood diarrhoea by 15 to 20%. Greater reductions can be produced through **safer excreta disposal** (36%) and **hand-washing** (35-42%).
- **Poor hygiene practice**, particularly involving food and hands, may be a major cause of disease transmission, even where appropriate excreta disposal facilities are in place.

Water and Sanitation (WatSan) is one of the primary drivers of 'public health' (health of people at large). Their availability to people would prevent sickness. The disease burden on our society is very high because of lack of safe water and sanitation.

The following losses occur, consequent to sickness:

- Loss of wages due to loss of working hours/days,
- Cost of the medicines & medical services,
- Loss of opportunity during the period of illness, and
- Loss of good nutritional status, which costs lot of money to regain.

We need to **encourage people to calculate these costs**. Suffering from sanitation related diseases is not acceptable. Especially since **these disease are preventable** through very simple, inexpensive and affordable technologies.

People have money to buy tobacco. But many of them say **that they can't afford to buy soap for washing hands**. Should we believe them? By not having a latrine at home and by refusing to use soap for washing hands, they are not only neglecting their own health, but **also endangering other's health in the society**.

Once we ensure access to clean water and to adequate sanitation facilities for all people, **a huge battle against all kinds of diseases will be won**. We cannot actually defeat diseases like AIDS, tuberculosis, malaria, or other infectious diseases, until we have won the **battle for safe drinking water and sanitation**.

There are some population groups which are particularly susceptible to **Faeco Oral (F.O.) Diseases**. We should pay particular attention in preventing these diseases among these people. Such **special risk groups include**:

- **Children under five years of age** are most at risk from communicable diseases since their immune systems have not developed fully. **Malnutrition** resulting from food insecurity and chronic emergencies increases this risk further.
- **Severely malnourished children and adults** are at increased risk from diarrhoeal disease.
- **Elderly people**, especially if exhausted after travelling considerable distances.

7.2 Diseases related to Sanitation

Some of the diseases that are related to water, sanitation and hygiene are given below:

Diarrhoea:

- 1.8 million people die every year from diarrhoeal diseases; 90% are children under the age of five, mostly in developing countries.
- 88% of diarrhoeal disease is attributed to unsafe water supply, inadequate sanitation and hygiene.
- Improved water supply reduces diarrhoea morbidity by 6% to 25%, if severe outcomes are included.
- Improved sanitation reduces diarrhoea morbidity by 32%.
- Hygiene interventions (including hygiene education and promotion of hand washing) can lead to a reduction of diarrhoeal cases by up to 45%.

Malaria:

- 1.3 million people die of malaria each year, 90% of whom are children under 5.
- There are 396 million episodes of malaria every year in the world.
- Intensified irrigation, dams and other **water related projects** contribute importantly to this disease burden.
- **Better management of water resources** reduces transmission of malaria and other vector-borne diseases.

Trachoma and conjunctivitis:

- Improving access to safe water sources and better hygiene practices can reduce trachoma morbidity by 27%, which can cause blindness, if not properly treated.
- **Conjunctivitis** causes redness, itchiness, swelling of the eyelids. Many children get this painful but not serious sickness..
- These diseases spread more in the crowded places. Lack of good face washing, hand washing and hygiene also contributes to their spread.

Intestinal helminths (e.g. ascariasis, trichriasis, hook worms etc.)

- 133 million people suffer from high intensity intestinal helminths infections which often lead to severe consequences such as cognitive impairment, massive dysentery, or anaemia.
- These diseases cause around 9400 deaths every year.
- Access to safe water and sanitation facilities and better hygiene practice can reduce morbidity from ascariasis by 29% and hookworm by 4%.

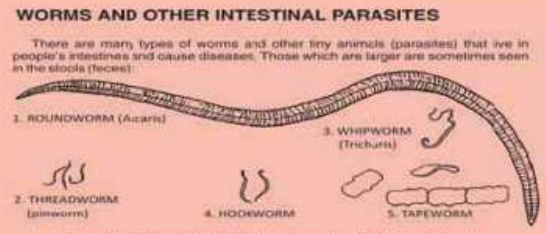


Fig: Intestinal parasites which are spread by faecal contamination.

Japanese encephalitis:

- 20% of clinical cases of Japanese encephalitis die, and 35% suffer permanent brain damage.
- Improved management for irrigation of water resources reduces transmission of disease.

Environmental classification of excreta related diseases is given in the box below. It divides all these diseases into seven groups.

Environmental classification of excreta related diseases

1. **Non-bacterial faeco-oral diseases** (viral and protozoal)
   (Rota virus, hepatitis virus, giardiasis, etc.)
2. **Bacterial faeco-oral diseases** amoebiasis,
   (Typhoid or salmanellosis; shiegellosis, etc.)

Helminthic (worm) diseases:

3. Geo-helminthiases (life-cycle is related to the soil)
   (Ascaris, trichuris and hookworms)
4. Taeniases (tape worm disease)
   (Beef and pork tapeworms)
5. Water-based heminthiases (these are more in Africa)
   (Schistosoma, Clonorchis and fasciolopsis).

(The above categories are excreted infections, means the disease agent is excreted in faeces by the host).

Vector diseases:

6. Excreta-related insect vector diseases
   (e.g. filaria)
7. Excreta-related rodent vector diseases (e.g. lepto-spirosis).

Some Food-Borne Micro-organisms

- **Salmonellosis** is a major problem in most countries. Salmonellosis is caused by the Salmonella bacteria. Symptoms are fever, headache, nausea, vomiting, abdominal pain and diarrhoea. Examples of foods involved in outbreaks of salmonellosis are eggs, poultry and other meats, raw milk and chocolate.

- **Campylobacteriosis** is a widespread infection. It is caused by certain species of Campylobacter bacteria. Foodborne cases are mainly caused by foods such as raw milk, raw or undercooked poultry and drinking water. Acute health effects include severe abdominal pain, fever, nausea and diarrhoea.

- Infections due to **Entero-haemorrhagic E. coli** (e.g. **E.coli-O157** and **Listeriosis**) have become important foodborne diseases. Although their incidence is relatively low, they have their severe and sometimes fatal (particularly among infants, children and the elderly).

- **Cholera** is a major public health problem in developing countries, also causing enormous economic losses. The disease is caused by the bacterium **Vibrio cholerae**. In addition to water, contaminated foods can be the vehicle of infection. Different foods (including rice, vegetables, millet gruel and various types of seafood) have been implicated in outbreaks of cholera. Symptoms, including abdominal pain, vomiting and profuse watery diarrhoea, may lead to severe dehydration and possibly death (unless fluid and salt are replaced).

The UN organisation UNICEF is working around the world to improve water supplies and sanitation facilities in schools and communities, and to promote safe hygiene practices. UNICEF uses a **human rights based approach** and works in partnership with communities – especially women and children – in planning, implementing and maintaining water and sanitation systems. UNICEF works with government and other partners to create conditions for change – or enabling environments – to ensure the effectiveness and sustainability of all **Water, Sanitation and Hygiene (WASH) Programmes. WASH programmes** are designed to contribute to the Millennium Development Goal (MDG) for water and sanitation: to halve, by 2015, the proportion of people without sustainable access to safe water and basic sanitation.

7.3 Human faeces: Importance of Proper Disposal

Due to availability of water, food and warmth, **micro-organisms live in our intestines** (especially in large intestine). So, a human excreta always contains large numbers of germs. Some of them may cause diarrhoea and other faeco oral (F.O.) diseases. When somebody becomes infected with faeco-oral diseases (E.g. cholera, typhoid and hepatitis A) their excreta will contain large amounts of the germs.

Excreta-related communicable diseases include cholera, typhoid, dysentery (including shigellosis), diarrhoea, hookworm, roundworms, poliomyelitis and hepatitis. The likelihood of all these diseases (especially epidemics such as cholera and hepatitis) increases significantly when a population is displaced or affected by a disaster.

Transmission of excreta-related diseases is largely faecal-oral. Hook worm disease spreads through penetration of the host's skin at his/her feet.

The disease agents (bacteria, viruses and parasites) that cause these diseases, cannot be seen, as they are too small to be seen (our eye cannot see anything less than 0.2 m.m. in size). These agents get into humans through the mouth or skin; and are passed out in excreta. They can be passed from one person to another because of unclean hygiene practices.

Unsafe disposal of human faeces can lead to the transmission of faeco-oral disease, can result in:

1. the contamination of the ground and water sources,
2. can provide breeding sites for flies (which may carry infection).
3. faeces may attract domestic animals and vermin (which spread the potential for disease).
4. create an unpleasant environment in terms of odour and sight.

7.4 Faeco-oral Transmission of Diseases (Five Fs)

There are five routes (shown in the figure below) through which disease causing biological agents **('pathogens')** are transmitted from **faeces of the infected person** to the mouths of **new hosts**. They are

1. Fluids (Water)
2. Foods (Eatables/snacks/vegetables/fruits)
3. Flies (House flies)

4. Fingers (of human beings), and

5. Fields (Soil).

This transmission has to be stopped by achieving a **"Sanitation Barrier"** between the infected person's faeces and the possible new hosts (human beings).

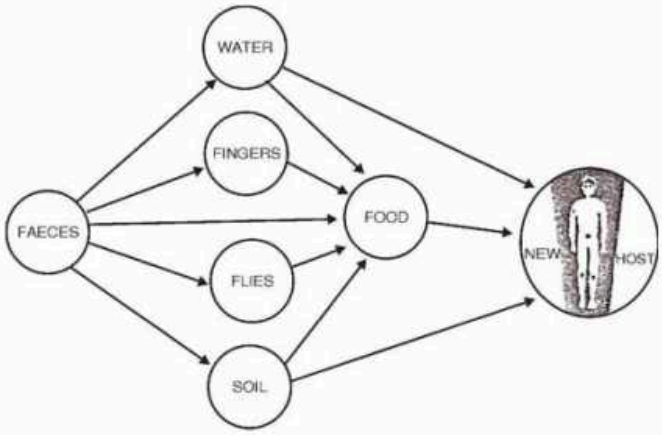


Fig: Five routes of transmission *of faeco-oral diseases.*

1. The Fluids

During the rainy season, the faeces that have been excreted by the people in open fields may be washed away by rain-water. This water can run into wells and streams. The germs in the excreta will then contaminate the water. Such water, if used by people for drinking or cooking can lead to infections.

Water gets contaminated with pathogenic microorganisms through intestinal discharges of man and animals. Furthermore, in the intestinal tract of man and animals, there exists a characteristic group of organisms designated as coliforms.

The coliform group of bacteria includes aerobic and facultatively anaerobic, gram negative, nonspore forming bacilli which ferment lactose with acid and produce gas within 48 hours at, 35°C. The most common species of this group are various strains of **Escherichia coli** and **Aerobacter aerogenes**.

E. coli is commonly found in the intestinal tract of man and animals, while **A. aerogenes** is normally found on plants and grains, and may sometimes occur in the intestinal tract of man and animals. Contamination of water with either type makes the water unsatisfactory for drinking purposes.

Faeco-oral diseases transmitted by **contaminated water** include cholera, typhoid, hepatitis-A and many diarrhoea1 diseases. These diseases may also be spread by other means. But the **quality of public water supplies** is particularly important in controlling them. So, we monitor water quality by testing for **indicators of faecal contamination** such as **thermo-tolerant (faecal) coliforms**.

2. **The Fingers**

A person with **unwashed hands** who touches food will make it dirty. Microbes can spread when people handle raw meat and then don't wash their hands before touching cooked food.

The untrained food handlers that make and serve us the food, do not even know that washing hands with soap is necessary (leave alone actually following it scrupulously). They pass the F-O Diseases! They may make a tasty food at very reasonable cost, but **would offer us the diseases too with it free of cost**!

3. **The Foods**

Many raw foods, most notably poultry, meats, eggs and unpasteurized milk, may be contaminated with disease causing organisms. Thorough cooking usually kills the pathogens.

Eating on road side can lead to food poisoning. We should be conscious that often the food we may be tempted to eat on the road side can lead to disease burden on us. It is better to avoid eating from cooked food outlets as they may not be maintaining good food hygiene; we may eat some bananas to quench our hunger; or eat some hygienically packed factory made food (e.g. biscuits). But, of course, we have to **clean our hands before eating** such safe food. Otherwise, our own dirty hands can contaminate the food we eat outside our homes!

4. **The Flies**

Flies often feed on human faeces. They carry faeces and microbes on their feet to wherever they next land. Just one fly crawling over a plate of food can be enough to spread diarrhoea to the people who eat the food.

When the flies touch our food, the excreta and the germs in the excreta are passed onto the food, which may later be eaten by another person. Some germs can grow on food and in a few hours their numbers can increase very quickly. Where there are germs there is always a risk of disease.

5. **The Fields**

Many common diseases that can give diarrhoea can spread from one person to another when people defecate in the open fields.

Fig: Contamination of soil by open field defaecation.

Open field defaecation leads to hookworm infestation, especially in the slums and rural areas. Many farmers have **wrong notion that human faeces is good manure**. Actually it is the human urine which has more urea that is nutritious for the plants. Human faeces hardly have any nutrients in them which are useful for the plants. Faeces actually become

manure only after **putrefaction, which can occur over 3 to 6 months**, (if the farmer passes it into the pit of a sanitary latrine). **If we defecate in agricultural field, we are actually polluting the farm land** with all the pathogens (bacteria, viruses and eggs of parasites). **Farmers should not allow people to defecate in their farms**. If they allow, they can get hook worm infection, when they work in their own farm!

We have to always keep these in mind and ensure that these five routes of transmission of faeco-oral disease are blocked to protect ourselves from these disease.

We can greatly **reduce the spread of faeco-oral diseases:**

- By disposing of human excreta safely in sanitary latrines
- By isolating excreta from flies and other insects, and
- By preventing faecal contamination of water supplies.
- **By proper personal hygiene** (particularly washing hands after defecation and before eating and cooking).

Fig: *How excreted infections spread through the five Fs.*

Excreted infections are those pathogens that are present in the excreta of the person. It causes diseases in another person. Such excreted infections include **a wide variety of:**

-Viruses -Bacteria

-Protozoa -Helminths worm

The **importance of excreta disposal** cannot be overestimated. Diseases transmitted via the faeco-oral route, such as diarrhoea, have been shown to account for **40% of all childhood deaths**.

7.5 Breaking Faeco-oral Transmission of Diseases

Pathogens from faeces can be prevented from reaching the five Fs by obtaining a **Sanitation barrier**. This barrier has to be ensured for controlling faeco-oral transmission of diseases.

Good sanitation practices bring about a sanitation barrier between one person's faeces and another person's mouth.

The main components of this sanitation barrier are:

1. Sanitary latrine, and
2. Hand-washing with soap.

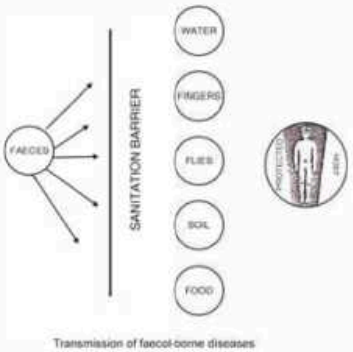
If this sanitation barrier is achieved, much of India's disease burden could be reduced. This leads to tremendous socio-economic gains to individuals, families and the community.

1. **Use of Sanitary Latrines**

Only about 48 % of the rural population in India has access to toilets and sanitation services. The **Millennium Development Goal** target to reduce by half the proportion of people without access to basic sanitation, such as simple latrines, by 2015.

When people do not have basic sanitation, their children pay the price in lost lives, missed schooling, in disease, malnutrition and poverty.

Schools with decent toilet facilities enable children (especially girls reaching puberty) to remain in the educational system. Clean, safe and dignified toilet and **hand-washing facilities in schools** help ensure that girls get the education they need and deserve. When girls get an education, the whole community benefits.



Transmission of faecol-borne diseases

Fig: *Pathogens from faeces can be prevented from reaching the five Fs by obtaining a* ***Sanitation barrier****. This barrier can be achieved by just two things: 1) Sanitary Latrine and 2) Hand washing with soap.*

2. **Hand Washing with soap**

This has been covered in chapter 6 of this book.

7.6 Hygiene Education

Water taps and toilets are only as safe as the ways people use them. So, hygiene education is an integral part of WatSan (water & sanitation) projects.

If communities do not understand how water becomes polluted, their practices can easily contaminate their water. **Simply washing hands with soap and water can reduce diarrheal diseases by over 40 percent.**

Fig: *Children learning good hygiene practices through a card.*

Our messages are straightforward. But changing longstanding practices of people is a challenge. So, we have to continually use innovative approaches to alter the unsafe behaviour of the people.

It is necessary to bring about a **sanitation revolution in India** because of the following reasons:

- India has a very heavy burden of disease on the society.
- Just by increasing sanitation and hygiene, **80% of the disease burden** on the society (especially in the rural areas) can be reduced.
- It can bring down the mortality rate among children below the age of five years (U5MR).
- It would be possible to **raise the standard of living** of the people in the country.

To prevent **faeco-oral transmission of infections**, we need three safe things: **safe water, safe food and safe environment**. The above three things can be achieved through the following:

- Sanitary latrines

- Sanitary land fillings
- Soakage pits
- Hand-washing with soap on regular basis
- Abolishing open defecation
- Controlling public spitting.

Hygiene education can be imparted through public awareness campaigns, household discussions, demonstrations, radio programs, plays and puppet shows, picture books, games, posters, and videos. All these should encourage people to:

- wash their hands, faces, bodies, and clothes,
- safely dispose of faeces, refuse, and wastewater,
- prepare and store food properly,
- protect their water supply and store water safely, and
- Carefully maintain their toilet facilities.

It is not easy to change people's hygiene related behaviours. Some of the reasons for this are given below.

- **These need be done every day**– Hygiene behaviours such as cleaning children and washing hands have to be done every day. So, they will be more difficult to promote than a behaviour such as immunization that only has to be done a few times in a life time.
- They need **spending time or money**– e.g. buying soap and nail cutter, collecting enough water for repeated hand washing.
- They may not be simple to carry out and also they may require **learning new skills**– e.g. washing hands with soap properly, keeping the latrine clean.
- They may be **in conflict with existing/traditional practices**– e.g. stopping to go for open field defecation in the village, along with friends.
- Whole community does that and just some individuals – e.g. open field defecation in the village.
- They may be long standing habits, and so are not be easy to change.

Education for environmental sanitation should focus on the following:

- Women, teachers, leaders, and school children should be the **first target** for such a program. Community participation is a very effective key to the success of sanitation projects.
- Health education and sensitization are a prerequisite to people's participation. But we should recognize that it takes time to convince the communities.
- Particular attention must be given to the maintenance and cleanliness of the latrines serving community (e.g. health centres, markets.

School health programs offer a good entry point for community hygiene promotion. Local school children and college students can be involved in preparing educational posters and notices for public places.

Fig: *A hygiene promotion procession organised by school authorities.*

Sanitation in public places

Where a large number of people are using one area (e.x. a bus station/ school), especially when they are eating food from the same source, there is a greater risk of the spread of F.O. diseases. All **public places** need to have adequate sanitation and hygiene facilities.

Educate about ill-effects of public spitting:

About 4 persons in every 1,000 population of India (0.4% of the population of both urban and rural population) now is carrying tuberculosis bacilli in their sputum **('sputum carriers of TB')**. They are throwing these rod shaped bacteria in to our society. They eventually reach people's respiratory tracts through the dust. These bacilli do not die easily. Also they carry other respiratory infections.

So, we should not indiscriminately spit around openly.

Let us avoid the **"take it easy policy" on hygiene**: It is the "take it easy policy" of the ordinary Indian which is keeping us in **conditions of poor sanitation**. We should resist the people that pollute our land, air and food and **work steadily towards improving their unhygienic and insanitary habits**. We should do it at least in our own work environment, that is the hospital where we work!

Let us deal with **hygiene education issues** under the following heads:-

1. Hand hygiene
2. Latrine hygiene
3. Water hygiene
4. Food hygiene
5. Hospital hygiene

1. Hand Hygiene

Please refer to chapter 6 for hand hygiene.

2. Latrine Hygiene

There are several basic rules for **sanitation in public places**:

- There should be sufficient **toilet facilities** for the maximum number of people using the area during the day. This normally means **one toilet compartment for every 25 users**. The toilet facilities should be arranged in **separate blocks** for men and women. The men's toilet block should have **urinals and toilet compartments**; the women's block, toilet compartments only.
- **Toilet facilities** should not be connected directly to kitchens. This is in order to reduce the **number of flies entering the kitchen** and to reduce odours reaching the kitchen. It is important that people using the toilet facilities **cannot pass directly through the kitchen**.
- There must be a **hand washing basin** with clean water and soap close to the toilet facilities. There should be separate, similar facilities **near to kitchens** or where food is handled.
- There must be a **reliable water supply** for the purposes of **hand washing**, personal hygiene and flushing of toilet facilities.
- **Refuse** must be disposed of properly and not allowed to build up, as it will attract flies and vermin.

- We have to **ensure that latrines can be used at nights also**. For this to be achieved, latrines have to be **safe for women & children**. Good lighting is essential in the latrines.

Responsibilities for cleaning public facilities should be very clearly defined. Dirty facilities make it more likely that people will not use the facilities properly. Or they will not use at all. Clean facilities set a good example to users.

India's national sanitation programme, the **Total Sanitation Campaign** (TSC), is operational in most of the districts now.

Promoting adoption of sanitary latrines:

We can **promote adoption of sanitary latrines** in the community by doing the following:

- Analyse the causes behind why the people are not having latrines.
- Understand the community preferences about the latrines (e.g. Toilet attached to bed room/toilet in the backyard).
- Discuss the inconveniences they face due to lack of toilets. Discuss the problems and constraints they envisage to face, in case they decide to construct toilets.
- Discuss about the availability of services of trained mason and technological options available to them.
- Give information on different low-cost options available to them (e.g. water seal latrine/VIP latrine). Explain how they can up-grade the facilities already available with them.

Tell that sanitary latrines enhance women's dignity and safety: Lack of toilets makes women and girls vulnerable to violence (if they are forced to defecate only after nightfall and in secluded areas). Sanitary latrine enhances dignity, privacy and safety, especially for women and girls.

3. Water Hygiene

The quantity and quality of the water that we drink is directly linked to health. If the water is contaminated with **germs or chemicals**, health will be affected. **Outbreaks of diseases** transmitted by water have a major impact on human health.

Ample quantity of clean and safe water is essential in controlling WatSan related infections. We have to help **people in rural areas** dig or drill wells that tap groundwater, build gravity-

flow systems that convey water from upland streams and springs, and collect and store rainwater. In crowded cities, we also help connect **slum communities** to municipal water sources.

Fig: *Water supply of ample quality and quantity contributes to health, through improving sanitation & hygiene.*

The human right to water entitles everyone to sufficient and safe water of acceptable quality for personal and domestic uses.

Purification of water by Slow Sand Filtration Plant:

Slow Sand Filtration Plant requires considerable area because the rate of filtration of water in this is slow. A concrete floor (with drainage tiles) to collect the filtered water is constructed. The tile is covered with coarse gravel, fine gravel, coarse sand and finally 2 to 1 feet of sand at the top. Water from the top seeps through the filter slowly. It is collected by tile drain pipes at the bottom, and is pumped into a reservoir.

At best five million gallons of water per acre, per day, can be filtered. Slow sand filters are clogged by turbid water. Water to be filtered is, therefore, clarified by sedimentation with or without coagulation.

The purification of water is accomplished not by the screening action of the sand for the spaces arc much too large, but by a different principle. A **colloidal, flocculent material** (composed of bacteria, algae, and protozoa) accumulates in the surface layers of fine sand. This slimy, gelatinous film closes up the pores between the sand grains and makes the filter bed more and more effective. Since bacteria have a negative electrical charge and colloidal material on the sand grains has a. positive charge, bacteria are thus adsorbed on the particles.

Bacteria are also ingested by Protozoa. They live in the upper layer of the film. Metabolic activity of microorganisms also greatly reduces the chemical content of the water. When, the gelatinous film finally become too thick, the efficiency of the filter gradually decreases. The filter is taken out of service and the surface layer is removed.

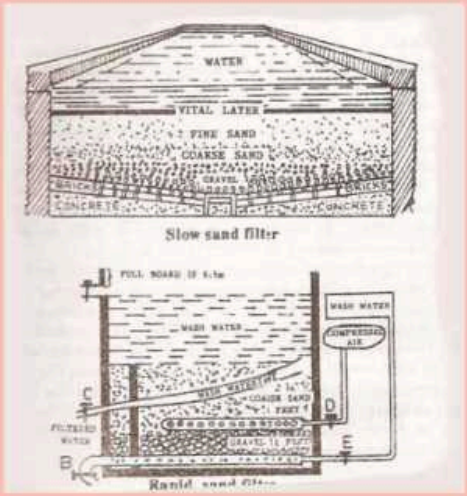


***Fig: Slow and rapid sand filters**. These sand filter plants are efficient in purification of water; and are suitable for urban areas.*

Effectiveness of water supply, sanitation and hygiene interventions:

Constructing drinking water supply facilities is necessary. But that is not enough to improve health. Sanitation and hygiene promotion must also be done. Most endemic diarrhoea is not water-borne. It is transmitted from person to person by poor **hygiene practices**.

Improved hygiene (eg: hand washing) and sanitation (eg: latrines) are more important than drinking water quality for improvement of health conditions. These can substantially reduce in diarrhoea and parasitic infections; and contribute to reduction of childhood morbidity and mortality.

If we ensure that **good quantity of water** is available to people, they can wash their hands and utensils well. Because they wash their hands and utensils well, they can maintain the hygiene of their drinking water hygiene well in the family. So, improving the **'quantity of water'** will automatically improve the **'quality of water'**!

Proper storage of water at home:

Key factors in the provision of **safe household water** include:

- the conditions and practices of water collection and storage, and
- the choice of water collection and storage containers or vessels.

Water can easily get contaminated during **household storage**. The risk is especially high where all members of a family/ community do not practice good hygiene.

Water stored in the home may become contaminated during handling if it is not stored and protected properly. So even if water is purified or collected from a clean and properly protected water source, it may become contaminated.

Quality of drinking water:

There is always a risk that water may become contaminated with pathogens (either at the source or during treatment/distribution). It is important to test water supplies regularly to make sure that the water is safe to use. Contaminated water supplies have to be quickly identified and remedial measures taken water samples may deteriorate during prolonged transport. So, it is better to carry out water quality monitoring using **on-site testing methods**.

Disinfection of water is an important step in the **control of water-borne diseases** such as cholera, typhoid, hepatitis A and many diarrhoeal diseases. **Disinfected water** is not necessarily sterile. Bacteria dangerous to health are killed by disinfection but others not dangerous to health may survive. Water may be disinfected by chemical or physical means.

Keeping water in clay pots will help keep water cool and fresh for drinking. Plastic or metal containers may be easier to use for collecting water (they are lighter to carry), but they do not keep water cool.

Use ladle to draw water

Microbes get into water when someone with unwashed hands touches the water. Anyone who has not washed hands after touching faeces, will make the water dirty. Either pour

water directly from the container or **use a ladle to scoop out water**. Do not drink directly from this but use a cup/ glass. Store the ladle in a clean place and not on the ground. **Leaving water uncovered** means that dirt or flies can fall in. Water for drinking should always be covered.

Monitoring the quality of water by "E. coli Count":

Escherichia coli is a bacterium found in the intestines of man and animals.

Coliforms are several different types of bacteria that exist in the **intestines of warm blooded animals**. They are found in human faeces and animal droppings. But it doesn't grow in water. Also it doesn't grow well in the environment. So **if it is found in water, the implication is that the water has been contaminated with faecal material**. Some strains of E. coli, such as O157:H7, cause serious disease, though most do not. The micro-organism is used as a 'Indicator of Faecal Pollution'. If E. coli is present in water, other enteric pathogens (e.g. Salmonella or Rota virus), might be present.

Coliform bacteria are described and grouped, based on their common origin or characteristics, as either **total or faecal coliforms. Total coliforms** includes:

- **faecal coliform bacteria** (such as Escherichia coli or E.coli), as well as
- **other types of coliform bacteria** that can survive in soil and vegetation.

Total coliforms do not necessarily indicate recent water contamination by faecal waste. However their presence or absence in treated water is often used to determine **whether water disinfection is working properly**.

Faecal coliforms are bacteria that are present naturally within the body waste of all warm blooded animals. Most of these species are **not capable of survival outside the body of a warm blooded animal** for an long period of time. The presence of faecal coliforms usually **indicates recent contamination of groundwater by human sewage or animal droppings**.

A laboratory test is needed to tell whether these microorganisms are present in a sample of water that we collect. **Sources of total and faecal coliforms** in groundwater can include:

- Agricultural run-off
- Effluent from septic systems or sewage discharges
- Infiltration of surface water contaminated with faecal matter from wildlife.

After testing water for faecal or total coliforms, the report is given as the **number of colony forming units per 100 millilitres (CFU**/100mL). A single sample may contain up to 10 total coliform CFU/100 Ml. However, **no samples should contain faecal coliform bacteria**.

Poor well site selection, poor maintenance of the well and construction of shallow wells increase the risk of microorganisms getting into the well water supply.

4. Food Hygiene

Foodborne illnesses are defined as diseases, usually either infectious or toxic in nature, caused by agents that enter the body through the ingestion of food. Every person is at risk of foodborne illness. Foodborne diseases are a widespread and growing public health problem, both in developed and developing countries.

Most foodborne diseases are sporadic and often not reported. But **foodborne disease outbreaks** may happen on massive proportions. For example, in 1994, an outbreak of **salmonellosis** due to contaminated ice cream occurred in the USA. It affected an estimated 224,000 persons. In 1988, an outbreak of hepatitis A (resulting from the consumption of contaminated clams), affected some 300,000 individuals in China.

Food poisoning:

Food poisoning is usually caused by micro-organisms, including bacteria, viruses and moulds. The spread of these germs can be prevented by practising good food hygiene.

Food poisoning from bacteria can occur in two different ways.

1) Some bacteria release poisons called **'toxins'**. These **toxins**, when present in our food, lead to symptoms of food poisoning within hours after the food is eaten.

2) Other bacteria **'multiply in the body'** before causing symptoms. The delay between eating the contaminated food and developing symptoms is known as the 'incubation period'. This can be a few hours or up to a few days.

Some of the commonly occurring **food borne diseases** is listed in the table below.

Table : Food borne diseases

Disease	Causative Ogranism	Vector / Means of spread.
Bacterial Anthrax	Bacillus anthracis	Contaminated meat.
Botulism	Clostridium botulinum	Anaerobic growth of spores in inadequately processed/ Canned/bottled food/
Cholera	Vibrio cholerae	Contaminated water or food; flies.
Dysentery (bacillary)	Genus Shigella	Contaminated water or food; flies
Paratyphoid fever	Salmonella spiecies	Contaminated food, particularly milk products/ shellfish; flies.
Salmonellosis	Salmonella spp.	Contaminated food, particularly Meat/milk products.
Staphylococcal Infections.	Staphylococcus spp	Food contaminated by humans
Streptococcal Infections.	Streptococcus spp	Food contaminated by humans
Typhoid fever	Salmonella typhi	Contaminated water and food Particularly milk, milk products and shellfish.
Amebiasis	Entameba histolytica	Contaminated food, particularly Vegetables eaten raw; water
Ascariasis	Ascaris lumbricoides	Contaminated vegetables eaten
Taeniasis and	Taenia saginata	Infected beef.
Crysticercosis	Taenia solium and its larval form Crysticercus celluloses.	Infected pork.
Trichinellosis	Trichinella spiralis	Infected pork.
Trichuriasis	Trichuris trichuria	Contaminated food.

Symptoms of food poisoning include diarrhoea, stomach pain, nausea and vomiting. Depending on the specific cause and the situation of the person affected, food poisoning can lead to:

- gastroenteritis (inflammation of the stomach and intestines),
- more serious illnesses,
- organ failure and even death.

Bacteria that cause food poisoning are found in many foods, including:

- meat and meat products - in particular poultry, minced meat and patés
- seafood
- eggs and raw egg products - in particular **mayonnaise** (it is made from uncooked eggs).
- unpasteurised milk (or milk contaminated after pasteurisation)
- soft and mould - ripened cheeses
- cooked foods - especially if these haven't been cooled and stored properly.
- unwashed fruit and vegetables

Improving Food Hygiene & Personal Hygiene

Maintaining high levels of personal hygiene and kitchen hygiene are important and effective ways to stop germs from spreading.

- Wash your hands and nails with soapy and water:
  - before handling food,
  - between handling cooked and uncooked foods, and
  - after going to the toilet.
- The wet hands transfer germs more effectively from one place to another, than the dry hands. So, rinse your hands well and dry them (on a clean hand towel, a disposable paper towel, or under a hand dryer).
- Use different clothes for different jobs (e.g. washing up and cleaning surfaces).

- Wipe and disinfect surfaces and utensils regularly, using a detergent or dilute solution of bleach
- Don't handle food if you have stomach problems such as diarrhoea and vomiting, or if you're sneezing or coughing frequently.
- Cover up cuts and sores with waterproof plasters.
- If possible, remove rings, watches and bracelets before handling food. Germs can hide under these.

Appropriate temperatures for prevention of food poisoning:

The most serious types of food poisoning are caused by bacteria. Bacteria multiply best in a **moist environment between 5°C and 63°C**. Just a single bacterium on an item of food left overnight, can generate many millions of bacteria by the morning. **Storing food below 5°C** prevents bacteria from multiplying. **Cooking food at temperatures over 70°C** will kill any existing bacteria.

When eating out, consider whether the food hygiene is good at that eatery (e.g. restaurants, cafés or pubs). There are certain **warning signs of poor hygiene standards** that you can look out for:

- dirty dining areas, toilets, cutlery or crockery.
- rubbish and overflowing bins outside (these could attract pests).
- staff with dirty uniforms, dirty fingernails or with long hair not tied.
- hair or insects in food.
- raw food and ready to eat food displayed together
- hot food that isn't fully cooked in all the parts; and cold food that is served lukewarm.

Storing food safely in the refrigerator

Always check labels for guidance on where and how long to store food (especially fresh or frozen food). Store fresh or frozen food in the fridge or freezer within two hours of purchase - sooner if the weather is hot.

- Allow meal leftovers to cool to room temperature before storing them in the fridge, (within two hours of preparation). Divide leftovers into smaller portions the fridge can cool more quickly.

- Store raw food such as meat in airtight containers at the bottom of the fridge. This prevents juices or blood from dripping onto other food.
- Defrost frozen foods (this is also collect thawing) before use. Place them on a plate/container as they defrost, so that they don't drip on or contaminate other foods.
- Don't overfill the fridge (food may not cool properly).
- Keep the fridge at less than 5°C and the freezer at less than -18°C. Consider getting a thermometer and keeping it in the fridge.
- Don't store opened tins of food in the fridge (Transfer the contents to a suitable airtight container).

Cooking food safely

If food isn't cooked at a high enough temperature, bacteria can still survive. The following will help you to cook safely:

- Don't cook foods too far in advance. Keep cooked foods covered.
- Food should be piping hot (steaming) before serving.
- Take special care that pork, sausages, ham burgers and poultry are cooked through. They should not be pink in the middle. Using a clean skewer, pierce the meat. When cooked properly, the juices run clear.
- When microwaving, stir food well from time to time to ensure even cooking.
- Reheat food only once and serve piping hot.
- Eggs contain harmful bacteria. They can be dangerous to pregnant women, older people and babies. Don't serve eggs with runny yolks. Don't use egg containing foods that will not be cooked (e.g. homemade mayonnaise).

Ten Golden Rules for Safe Food Preparation:

1. **While buying foods, choose foods that are processed for safety:**

   Many foods like fruits and vegetables are best in their natural state. Other foods may not be safe unless they have been processed. For example, buy pasteurized milk as opposed to raw milk. Select fresh poultry/frozen poultry that is treated with ionizing radiation.

   Remember that food processing was invented to improve safety as well as to prolong shelf-life of the food.

2. **Cook food thoroughly:**

Many raw with foods, most notably poultry, meats, eggs and unpasteurized milk, may be contaminated disease causing organisms. Thorough cooking will kill the pathogens. But the temperature of all parts of the food must reach at least 70°C. Foods that are frozen in the refrigerator (e.g. frozen meat, fish & poultry) must be thoroughly thawed, before they are cooked.

3. **Eat cooked foods immediately:**

When cooked foods cool to room temperature, microbes begin to proliferate. The longer the wait, the greater the risk. To be on the safe side, eat cooked foods just as soon as they come off the heat.

4. **Store cooked foods carefully:**

If you must prepare foods in advance or want to keep leftovers, be sure to store them under either hot conditions (above 60°C) or under cool conditions (below 10°C). This rule is of vital importance if you plan to store foods for more than four or five hours.

A common error (responsible for cases of foodborne disease), is putting too large a quantity of warm food in the refrigerator. If the refrigerator is overburdened, cooked foods cannot quickly cool. When the centre of food remains warm (above 10°C) for too long, microbes proliferate. This causes food poisoning.

5. **Reheat cooked foods thoroughly:**

Microbes may have developed during storage (proper storage slows down microbial growth but does not kill the organisms). Thorough reheating (e.g. in a microwave oven) means that all parts of the food must reach at least 70°C.

6. **Avoid contact between raw foods and cooked foods:**

Safely cooked food can become contaminated through even the slightest contact with raw food. This 'cross contamination' can be direct (e.g. raw poultry meat comes into contact with cooked foods).

7. **Wash hands repeatedly:**

Wash hands thoroughly before you start preparing food and after every interruption (especially if you have to change the baby or have been to the toilet). After preparing raw foods such as fish, meat, or poultry, wash again before you start handling other foods.

If you have an infection on your hand (e.g. boil or infected wound), bandage it or cover it, before preparing food. Also remember that household pets (dogs, cats, birds, turtles) often harbor dangerous pathogens, which can pass from your hands into food.

8. **Keep all kitchen surfaces meticulously clean:**

Since foods are so easily contaminated, any surface used for food preparation must be kept absolutely clean. Think of every food scrap, crumb or spot as a potential reservoir of germs.

Cloths that come into contact with dishes and utensils should be changed frequently and boiled before re-use. Separate cloths for cleaning the floors also requires frequent washing.

9. **Protect foods from insects, rats, and other animals:**

Animals frequently carry pathogenic microorganisms which cause foodborne disease. Storing foods in closed containers is your best protection.

10. **Use safe water:**

Safe water is just as important for food preparation as for drinking. In case you have any doubts about the quality of water supply, boil water before adding it to food or making ice for drinks. Be especially careful with any water used to prepare an infant's meal.

5. Hospital Hygiene

We serve food in our hospitals. We have to make sure that our patients do not catch any foodborne infections in our hospital premises. So, the hospitals should have **very hygienic kitchens**. Also the food has to be served hygienically by personnel who maintain high standards of personal hygiene. **Food safety is of utmost importance in the hospital settings**.

Fig: A modern hospital's food preparation area.

We need to promote the following desirable personal hygiene practices among **health care personnel**:-

Practices assessed for physicians and nurses:-

- Use uniforms according to hospital policy.
- Ensuring that uniforms are clean.
- Use proper shoes (not slippers).
- Have short fingernails.
- Do not wear jewellery (rings/bracelets).
- Use needle-cutter and specific container for discarding used syringes, needles and other sharp items.
- Wash hands after each step of working.
- Wash hands after contact with patients.
- Wear gloves when needed.
- Use **protective devices** (gown, mask, gloves and goggles) when in contact infectious patients or if there is possibility of splashing blood or other body fluids.

Practices assessed for hospital cleaners:

- Use gloves for cleaning of toilets and other sites.
- Wear boots when washing the ward.
- Wear rubber aprons when washing the ward.

7.7 Disposal of Wastes

Sanitation promotes health through prevention of human contact with the hazards of wastes. Wastes that can cause health problems are human and animal faeces, solid wastes, domestic wastewater (sewage, sullage, grey-water), industrial wastes, and agricultural wastes. Let us look into how different kinds of wastes can be disposed in a sanitary manner.

Waste can be divided by their physical, chemical and biological characteristics. Wastes can also be classified by their consistency, as follows:-

- **Solid wastes** are waste materials that contain less than 70% water. They include materials like household garbage, industrial wastes and mining wastes.

- **Liquid wastes** are usually wastewaters that contain less than 1% solids. Such wastes may contain high concentrations of dissolved salts and metals.
- **Sludge** is a class of wastes between liquid and solid. They usually contain between 3% and 25% solids. Rest of the material is water dissolved.

Wastes may be hazardous or non-hazardous. Non-hazardous wastes are those that pose no immediate threat to human health and the environment. Household garbage is included into this category. Disposal of garbage is a problem that is growing with increasing socio-economic development and growth of population. Hazardous wastes are of two types:

- Those that have common hazardous properties such as ignitability (burns when comes in contact with a flame) and reactivity (chemically react when comes into contact with other materials); and
- Those that are 'Special Wastes', which contain leachable toxic components (e.g.: radioactive wastes and medical wastes). Such toxins percolate into the soil. Their disposal is regulated with specific guidelines.

Hazardous wastes pose a danger to humans or other living organisms. Management of radioactive and other hazardous wastes is subject to laws. Hazardous wastes can be pumped into deep wells. There is a strong opposition to this method because of the apparent explosions and even earthquakes that have resulted from waste injection techniques. Hazards can be physical, microbiological, biological or chemical agents of disease.

Fig: *Transportation of solid wastes (waste collection vehicle & dustbin) - A front loading garbage truck.*

Waste collection methods vary widely between different countries and regions. Domestic waste collection services are often provided by local government authorities, or by private industry.

7.7.1 Disposal of Solid Wastes

The disposal of refuse can have a significant effect on the health of communities. If the refuse is not disposed of properly, it can lead to pollution of surface water (rain washes the refuse into rivers and streams). We have many methods of disposing of solid wastes. But there is no absolutely safe way to do this job.

Waste management is the collection, transport, processing, recycling/ disposal, and monitoring of waste materials. It is undertaken to reduce their effect on health and the environment; or to improving aesthetics. Waste management also can recover resources from it.

Waste management practices differ for developed and developing nations, for urban and rural areas, and for residential and industrial producers. Management for non-hazardous residential and institutional waste in metropolitan areas is usually the responsibility of local government authorities. Management for non-hazardous commercial and industrial waste is the responsibility of the institution that generates the waste.

It is important that **industrial waste** is disposed of safely, as it is sometimes toxic and highly dangerous to human health.

***Fig:** What goes into our dustbins? This picture shows what are the contents of solid waste bins (in percentage terms) in the developed countries.*

	How long to rot
Cotton rags	1–5 months
Paper	2–5 months
Orange peel	up to 6 months
Wool socks	1–5 years
Cigarette ends	1–12 years
Plastic-coated drink cartons	5 years
Plastic bags	10–20 years
Photo film	20–30 years
Leather shoes	25–50 years
Artificial fibre clothes (nylon, etc)	30–40 years
Tin cans	50–100 years

Table: Biological degradation of solid wastes. *This table shows the time needed for the nature to degrade each type of solid waste.*

Landfills:

Disposing of waste in a landfill involves burying the waste, This remains a common practice in most countries. Landfills were often established in abandoned or unused quarries, mining voids or borrow pits. A properly-designed and well-managed landfill can be a hygienic and relatively inexpensive method of disposing of waste materials. Poorly-managed landfills can create a number of adverse environmental impacts such as wind-blown litter, attraction of vermin, and generation of liquid leachate.

A common by-product of landfills is gas (mostly composed of methane and carbon dioxide), which is produced as organic waste breaks down anaerobically. This gas can create odour problems, kill surface vegetation. Also it is a greenhouse gas.

Modern landfills include methods to contain leachate such as clay or plastic lining material. Deposited waste is normally compacted to increase its density and stability. It is covered to prevent attracting vermin (such as mice or rats). Many landfills also have **landfill gas extraction systems** installed

Fig: *A landfill compaction vehicle in action.*

to extract the landfill gas. Gas is pumped out of the landfill using perforated pipes. The gas is burnt in a gas engine, to generate electricity.

More than 90 percent of municipal refuse is disposed by landfills. But **landfills** can contaminate drinking water in the area. It is the most cost effective method of disposal. Collection and transportation of wastes accounts for 75 percent of the total cost.

In a modern landfill, refuse is spread **thin and compacted layers**. It is covered by a layer of clean earth. Pollution of surface water and groundwater is minimized by lining and contouring the fill, compacting and planting the uppermost cover layer, diverting drainage, and selecting proper soil in sites not subject to flooding or high groundwater levels. **The best soil for a landfill is clay**. Clay is less permeable than other types of soil.

Materials disposed of in a landfill can be further secured from leakage by solidifying them in materials such as cement, fly ash (from coal based power plants), asphalt, or organic polymers.

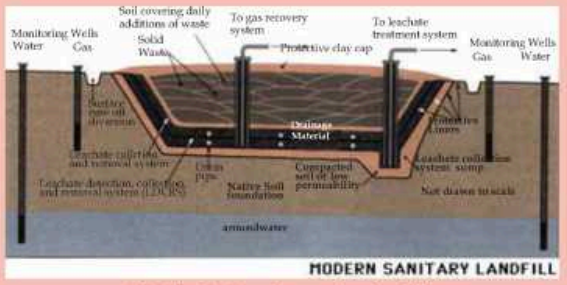


Fig: *Sketch of a modern sanitary landfill.*

The importance of 'daily cover' lies in the reduction of vector contact and spreading of pathogens. Daily cover also minimises odour emissions and reduces windblown litter.

Fig: *Landfill operation in Hawaii.*

Disposal of solid waste is most commonly conducted in **landfills**. But incineration, recycling, composting, and conversion to bio-fuels are some **other methods for solid waste disposal**.

Incinerators:

Incineration is a disposal method that involves combustion of waste material. Incineration and other high temperature waste treatment systems are sometimes described as **"thermal treatment"**. Incinerators convert waste materials into heat, gas, steam and ash.

Incineration is carried out both on a small scale by individuals and on a large scale by industry. It is used to dispose of solid, liquid and gaseous waste. It is **good method of disposing of biomedical waste (hospital wastes)**. Incineration is a controversial method due to issues such as emission of gaseous pollutants. Incineration is common in **places where land is more scarce**.

Refuse is burned in **incinerators**. It is more expensive but a safer method than landfills. Modern incinerators are designed to **destroy 99.9% of the organic waste material**. For incineration options, the release of air pollutants, including certain toxic components is an attendant adverse outcome. Recycling and biofuel conversion are the sustainable options that generally have superior life cycle costs, particularly when total ecological consequences are considered. Composting value will ultimately be limited by the market demand for compost product.

Micro-pollutants may be present in gaseous emissions from the incinerator. **Dioxins** which may be created within the incinerator, which may have serious environmental consequences in the local area. On the other hand, this method produces heat that can be used as energy. **'Waste-to-energy'** or **'energy-from-waste'** are broad terms for facilities that burn waste in a furnace or boiler to generate heat, steam and/or electricity.

Garbage burned in incinerators can pollute air, soil and water. Communities residing near the incinerators often object to them.

Recycling the solid wastes:

It takes time, energy, labour, and money to make new products from recycled ones. Right now it's often easier or cheaper for manufacturers to use virgin rather than recycled materials to make things. To complete the recycling loop, those cans, papers, and bottles must be remade into new products that you buy and use.

The best method of reducing waste disposals negative effect on society is simply to **prevent generation of wastes**. If the consumers of our country were to make a firm stand against the production of useless waste. The **recycling of complex products** (such as computers and electronic equipment) is more difficult. They need additional dismantling and separation.

Organic materials can be detoxified biologically. Composting and land farming, in which materials are spread out over a large land area so that microbes can decompose them, are examples of biological treatment of hazardous waste. If the materials are not detoxified before they percolate into groundwater than obvious repercussions may occur.

The practice of recycling solid waste is an old one. Metal implements were melted down and recast in prehistoric times. Today, recyclable materials are recovered from municipal refuse by a number of methods, including shredding, magnetic separation of metals, screening, and washing. Composting includes preparing refuse and breakdown of organic matter by aerobic microorganisms.

Fig: An active compost heap.

Biological reprocessing

Waste materials that are organic in nature (e.g. plant material, food scraps, and paper products) can be recycled using biological composting and digestion processes. The resulting organic material is then recycled as mulch or compost (for agricultural or landscaping purposes).

Biological decomposition may be of aerobic or anaerobic methods.

Fig: Anaerobic digestion in a treatment plant of Germany.

Waste to energy method' of disposing solid wastes is one of the best methods environmentally. **Waste gas** from the process (such as methane) can be captured and used for generating electricity. Composting and anaerobic digestion are some of the biological reprocessing methods. '

Some of the Waste management concepts:

Waste hierarchy – This refers to the **"3 Rs"; reduce, reuse and recycle;** This is the cornerstone of waste minimization strategies. The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste.

- **Extended producer responsibility** - (EPR) is a strategy designed to promote the integration of all costs associated with products throughout their life cycle (including end-of-life disposal costs) into the market price of the product. Extended producer responsibility is meant to impose accountability over the entire lifecycle of products and packaging introduced to the market.
- **Polluter pays principle** implies that the polluting party pays for the impact caused to the environment. It means that a **waste generator** has to pay for appropriate disposal of the waste.
- **Waste minimization** is an important method of waste management is the prevention of waste material being created, also known as **'waste reduction'**. Methods of avoidance include:
    - reuse of second-hand products,
    - repairing broken items instead of buying new ones,
    - designing products to be refillable or reusable (such as cotton instead of plastic shopping bags),
    - avoiding use of disposable products (e.g. disposable cutlery),
    - removing any food/liquid remains from cans, packaging, and
    - designing products that use less material to achieve the same purpose (e.x. light weight beverage cans).

7.7.2 Disposal of Liquid Wastes

The standard sanitation technology in urban areas is:

- the collection of wastewater in sewers,
- treatment of sewage in wastewater treatment plants for reuse, or disposal in rivers, lakes or the sea.

Waste water is called by different names. They include:

1. **Sewage:** Sewage is the content of sewers. It is usually liquid in nature and contains stool, urine, liquid waste from households and factoriess
2. **Effluent**: It is liquid waste from factories or outflow from sewage, septic tank.
3. **Silage**: Liquid waste from houses is called silage. Silage is not mixed with stool or other solid waste.

It is better to have separate drainage system in the **urban areas** for collection and drainage of rain water. In such case, sewers collect only sewage water **(sanitary sewers)**. **Sewers** are either combined with storm drains or separated from them as **sanitary sewers**. **Combined sewers** are usually found in the older parts of urban areas. Heavy rainfall and inadequate maintenance can lead to combined sewer overflows (or sanitary sewer overflows). That means, diluted raw sewage gets discharged into the environment, which exposes the population to faeco-oral contamination.

In areas, households are not connected to **sewers**, they discharge their wastewater into septic tanks (it is an **'on-site sanitation'** method in which sewage is not taken away). Ground water can be contaminated by faecal material from the **'septic tanks'**. Septic tank systems might be feeding human faecal matter to the ground water. However, wells in the surrounding area, both up and downstream of the potentially contaminated site tested negative for Escherichia coli. The wells may be contaminated by human faeces from the outflow of the septic tanks.

***Fig: Poor drainage systems** in our urban areas are a cause of high incidence of sanitation related diseases.*

Industries often discharge **industrial wastewater** into municipal sewers. This can complicate wastewater management (unless the industries have pre-treated their discharges).

The reuse of untreated wastewater in irrigated agriculture is common in developing countries. The reuse of treated wastewater in gardens, agriculture and for industrial use is becoming increasingly widespread. **Wastewater** is often used in agriculture as it contains water, minerals, nutrients and its disposal is often expensive. Wastewater can also be used as a fertilizer, thus minimizing the need for chemical fertilizers. This reduces costs, energy, expenditure and industrial pollution. Wastewater is also commonly used in aquaculture (fish farming).

Soakage Pit:

Soakage pit is the best method for disposal of household waste water in the **rural areas**. How a soakage pit is laid is showed in the picture below. Dig a pit two metres deep and 1.5 metres square (or 1.5 metres in diameter). Divide it vertically into three equal portions. The lowest portion should be filled with gravel or burnt bricks of 3/4 size. The middle portion should be filled with bricks of 1/2 size. Cover the uppermost portion with bricks of 1/4 size. Further, this should be covered with six inch **a layer of earth**.

The opening should be protected by a **parapet** 10 cm. high, to prevent rain water from entering the pit. The house drain should join the soakage pit through a pipe opening into the middle of the pit.

The waste water should be made to pass through a **basket filled with straw or leaves**. This serves as a filter. The content of the basket has to be removed from time to time and are replaced by fresh dry straw or leaves. During the **rainy season** the soakage pit should be disconnected by blocking the drain.

After a certain time the soakage pit becomes **"Sewage Sick"** and starts overflowing. Then the pit has to be emptied. The stones/bricks have to be washed, dried and replaced. Soakage pits cannot be used in water-logged areas.

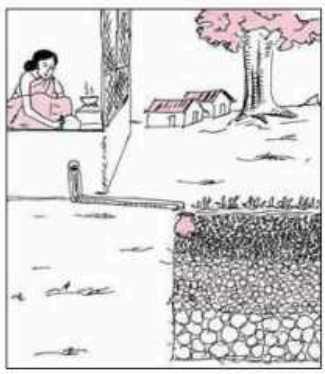


***Fig: Soakage pit**: it provides water for garden; and also prevents collection of stagnant water that can breed mosquitoes.*

Treatment of municipal wastewater:

In developed countries treatment of municipal wastewater is now widespread. In developing countries, most wastewater is still discharged untreated into the environment (often into the water bodies like rivers, lakes or sea).

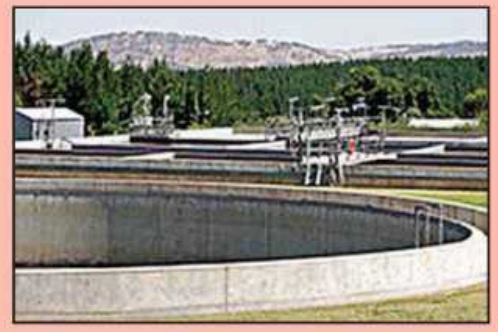


Fig: Sewage treatment plant.

7.8 Disposal of Biomedical Wastes

Healthcare waste (HCW), also called Biomedical Waste, is a by-product of healthcare. It includes sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices and radioactive materials. Poor management of HCW exposes healthcare workers, waste handlers and the community to infections, toxic effects and injuries.

Biomedical waste differs from other types of hazardous wastes like industrial waste. The **risk comes from biological sources** as the wastes have been generated in the diagnosis, prevention or treatment of diseases. Common **producers of biomedical waste** include hospitals, health clinics, nursing homes, medical research laboratories, offices of physicians, dentists, and veterinarians, home health care and funeral homes.

Fig: Sorting of medical wastes in hospital.

Biomedical Waste must be properly managed to protect the general public. Also we have to protect **healthcare and sanitation workers**, who are regularly exposed to biomedical waste (as an occupational hazard). Any **tools or equipment** that come into contact with

potentially infectious material are sterilised in an autoclave.

Sorting of medical wastes in hospital:

Where it is generated, the biomedical waste is placed in specially-labelled bags and containers for removal by transporters. Other forms of waste should not be mixed with biomedical waste, as different rules apply to the treatment of different types of waste.

Disposing of these materials with regular household garbage puts waste collectors at risk for injury and infection, especially from sharps as they can easily puncture a standard household garbage bag. Many communities have programs in place for the disposal of household biomedical waste. Some waste treatment facilities also have mail-in disposal programs. Hospitals should have the following four **disposal and collection systems**:

3. Container to collect all plastic related articles for further disposal.
4. Container to collect all kinds infected materials of hospital wards (organs or specimen from surgery, pathology and medical wards).
5. Dry or wet refuse from patients, wards and other places of hospital corridors.
6. Specific containers for toxic or dangerous items like mercury, batteries, wastes solvents and radioactive waste.

Colour Code for storage system:

Colours used in the hospitals for storage bins/bags of biomedical wastes convey the following messages:

- Red : Fire hazard and or flammables.
- White : Contact hazard and or corrosive.
- Blue : Health hazard and or toxic poisonous.
- Yellow : Reactivity hazard/oxidisers.
- Green, Gray : Moderate or slight hazard.

Safe disposal of hospital waste

1. **Waste segregation** is an important step. Papers, cardboards glass, metals can be segregated and separated for recycling in the market.
2. Separate **pathological and infected waste** from regular waste. It is to be collected in separate bags, preferably in colour red, to signify 'dangerous'.

3. **Solid non-infectious hospital waste** can be disposed of by standard composting method.

Biomedical waste is treated by the following methods:-

- incineration;
- discharge through a sewer or septic system; and
- steam, chemical, or microwave sterilisation.

Solid Hospital Waste

These are collections from dry sweeping papers, cardboards and other non-septic waste. These can be collected in different receptacles and can be disposed by **composting** at a suitable ground.

Biomedical wastes are generated often in our households also. **Household biomedical waste** usually consists of:

- needles and syringes from drugs administered at home (such as insulin), soiled wound dressings,
- disposable gloves, and
- bed sheets or other cloths that have come into contact with bodily fluids.

Biomedical waste treatment facilities are licensed by the local governing body, which implements laws related to operation of these facilities. The laws ensure that the contamination from biomedical wastes would not reach the general public (through contamination of air, soil, groundwater, or municipal water supply).

Questions

1. Define environmental sanitation.
2. Explain the importance of environmental sanitation.
3. List the essential components of sanitation.
4. Describe methods of disposal of solid waste.
5. Explain methods of disposal of liquid waste.
6. What are the advantages of using sanitary latrines?

CHAPTER 8

HUMAN SEXUALITY AND FAMILY LIFE EDUCATION

Introduction

Adolescence is a crucial stage marked by growth and maturation. Adolescents often feel confused as they try to make sense of the changes in their physical appearance, as well as to establish their identity. It is the period when young people develop the knowledge, attitudes and skills they require to become sexually healthy. As they grow and mature, they need access to correct information about sexuality.

Human sexuality is a very important aspect of an individual's life. Therefore, it is the responsibility of parents, teachers and the society at large to provide appropriate information to adolescents about sexuality. This chapter deals with some important health issues like sexuality, family life education, prevention of STIs, prevention & control of HIV/AIDS, and universal safety precautions for control of HIV/AIDS. It also includes safer sex, planned parenthood and family planning.

Objectives

After reading this chapter you will be able to:

- Understand human sexuality and family life education
- Know about sexually transmitted infections, their prevention and control
- Know about HIV/AIDS, its prevention and control
- Describe universal precautions for prevention and control of HIV/AIDS
- Define safe sex, safer sex options
- Explain planned parenthood, family planning and family planning methods

8.1 Sexuality

Sexuality refers to the total sexual makeup of a person. It is the function of one's complete personality that is lifelong, beginning from the time of birth. It is always growing and changing. It is the way an individual thinks, feels and behaves. It is not just talking about sex, as is commonly believed. It includes ***body image*** (how you feel about yourself), ***relationships*** (how you get along with members of the opposite sex), ***sexual preferences and orientations*** (whether a person is emotionally and sexually attracted to a person of the same sex, opposite sex or both) and ***self esteem***. It also includes ***feelings*** (how you feel about being a male or female), ***attitudes, values*** (what are right and wrong for you) and preferences. ***Sexuality is more than sexual intercourse.***

8.2 Family Life Education

Family Life Education provides knowledge and attitudes to adolescents that will raise the standards of home life and help them live constructively. It is not a one time activity. It is a life long process of acquiring knowledge and forming attitudes, beliefs and values. It is a multi-faceted approach which takes into account, development of an individual during adolescence and onwards in the context of overall development of a family and society. It uses informatory participatory activities to help adolescents grow up into confident, caring and responsible adults.

Aims of Family life education

- To help adolescents relate the problem of overpopulation of the country to the need for planned parenthood.
- To help them become more sensitive and responsive to social roles and relationships.
- To help adolescents gain more self confidence and take right decision about marriage, family size and family life.

8.3 Prevention of Sexually Transmitted Infections (STIs)

Sexually transmitted Infections (STIs) are infections which are mostly acquired by having sex with an infected person. Some STIs may also be passed on by an infected woman to her baby during pregnancy (e.g. syphilis and HIV) and at childbirth (e.g. gonorrhoea, Chlamydia, HIV). Some STIs can infect the reproductive organs of the person, giving rise to Reproductive Tract Infections (RTIs). There are more than 25 infections that can be transmitted through sexual activity. Evidence shows that almost 70 % of STI patients are in the age group of 15 to 24 years.

Some common STIs and their causative organisms

Bacterial

- Syphilis – Treponema pallidum
- Gonorrhoea – Neisseria gonorrhoeae
- Chancroid – Haemophylis ducreyi
- Granuloma inguinale – Klebsiella granulomatis (Donovan bodies)
- Lympho-granuloma venerium – Chlamydia trachomatis

Viral

- Genital Warts - Human Papilloma virus (HPV)
- Hepatitis - Hepatitis B and Hepatitis C virus
- Acquired Immune Deficiency Syndrome (AIDS) – Human immunodeficiency Virus (HIV)
- Herpes Simplex - Herpes simplex virus 1 and 2

Parasitic

- Trichomoniasis – Trichomoniasis vaginalis
- Candidiasis – Candida albicans

Hepatitis B and HIV can also spread by infected blood and by sharing of needles.

Reproductive Tract Infections

Reproductive Tract Infections (RTIs) are infections of the reproductive tract. They can affect any sex; male or female. Agents of infection can be bacteria, viruses or protozoa. All RTIs are not sexually transmitted. Some RTIs may develop due to imbalance of the normal bacteria in the reproductive tract e.g. Bacterial vaginosis or Candidiasis. Similarly, **Pelvic Inflammatory Disease** (PID), a RTI, is caused by iatrogenic infections (infections acquired during a gynecological procedure such as pelvic examination). PID has been discussed at the end of this section.

Common ways of contracting RTIs are **poor genital hygiene** and **unsterile techniques** practiced by service providers during delivery, abortion, pelvic examination or IUD insertion.

Factors contributing to high incidence of STIs in India

- Poor knowledge and awareness about STIs
- Inadequate health services
- Under utilization of the services available due to stigma attached to STIs

- Poor personal hygiene
- Urbanization
- People having sex with multiple sex partners
- Homosexuality
- Limited condom use
- Drug abuse

Most STIs can be easily diagnosed and treated by a qualified doctor. But if they are not detected and treated early, they may result in illness, disability, infertility (inability to produce a child) and even death. It is extremely important to have correct knowledge of STIs, how to prevent them and the need for early treatment.

Consequences of untreated STIs

- Chronic pain
- Repeated abortions
- Ectopic pregnancies (pregnancy occurring in fallopian tube)
- Cervical cancer
- Permanent infertility
- Heart and brain damage
- Increased risk of HIV transmission
- Infection passed on to the sexual partner
- Damaging effects on the foetus/newborn – Babies born to mothers with STIs may have lower birth weight, be premature, blind, deaf or have congenital defects
- Death

Relationship between STIs and HIV

- The risk behaviours that predispose for STIs and HIV infection are the same i.e. unprotected sex with an infected partner.
- STIs cause damage to the genital area and mucous membrane. This facilitates the entry of HIV into the body (almost tenfold).

Therefore a person with a STI is at a higher risk for HIV/AIDS, both through the predisposing behaviour, as well as the increased risk associated with STIs themselves.

Signs and Symptoms of STIs

Symptoms vary for different STIs. Some STIs are silent/asymptomatic (show no symptoms at all). That is why many women often may not be aware that they have a STI. This may lead to severe complications like infertility.

Symptoms in men are visible. That is why men become easily aware that they have developed a STI.

Women	Men	Both Women and Men
• Unusual discharge and smell from vagina. • Pain in pelvic area (between the navel and sex organs). • Bleeding from vagina (which is not regular menstrual flow). • Burning or itching sensation around vagina. • Pain deep inside the vagina when having sex.	• A drip or discharge from penis.	• Sores, blisters, ulcers on or near the sex organs or mouth. • Pain or burning sensation during urination. • Frequent urge to urinate. • Swelling in the groin (area around the sex organs).

Prevention of STIs

- Have appropriate knowledge of STIs.
- Maintain good personal hygiene; females to also maintain menstrual hygiene.
- Practice abstinence (refraining from sexual activity).
- Don't ignore any unusual discharge.
- Consult doctor immediately in case of any of the symptoms mentioned.
- Avoid self medication and treatment from quacks.

Diagnosis and Treatment of STIs

- Anyone who suspects having a STI must get diagnosed and treated.
- STIs are diagnosed through medical examination and laboratory tests.
- Once STI is diagnosed, it must be treated completely. Incomplete treatment can make the infection chronic and hence difficult to eradicate.

- STIs should be treated only by qualified doctors.
- Self medication and treatment by quacks must be avoided.
- Treatment is available at all government hospitals, health centres and clinics.
- It generally involves a course of antibiotics, analgesics, plenty of oral fluids and maintenance of good genital hygiene.
- The sexual partner also should seek medical advice as he/she may be probably infected too and needs to be treated.

Syndromic Care Management of STIs

This approach is being followed in treatment of STI cases. It is based on the assumption that symptoms of STI may be simple and easily recognized. The symptoms may be the result of one or more infection. Based on the patient's chief complaints, detailed history, and clinical examination, a flow chart is prepared. The use of an appropriate flow chart helps in accurate and complete treatment and management of the patients. Syndromic care involves giving antibiotics, analgesics (pain killers) and anti itching drugs to patients with STIs.

Some STIs

Syphilis

Syphilis is not very common nowadays but can be serious, if not treated at early stage. A person with the infection may feel well, but can still infect others. Pregnant woman with syphilis can transmit the infection to her unborn child.

Cause

Syphilis is caused by a bacterium called Treponema pallidum. It penetrates broken skin in the sexual organs, mouth or rectum.

Symptoms

Stage 1

- A hard painless lesion called **chancre** appears on or near the vagina or penis. It appears between one and five weeks after contact with an infected person.
- It disappears in a few days and may not be detected.
- If syphilis is not treated early, it can proceed to stage 2 in two to eight weeks.

Stage 2

- A red rash appears on the body after about six weeks after contact.
- Highly contagious spots on feet, hands or mouth.
- Flue like symptoms such as fever, headache and sore throat.

Like the chancre of stage 1, stage 2 symptoms also disappear in a few weeks (but the disease won't). Stage 2 may also pass undetected.

Stage 3

- This stage may occur many years after infection. Symptoms may have disappeared by this stage but the disease is still present in the body.
- If the earlier stages of the disease have not been treated, the patient may develop serious complications due to permanent damage to the heart, brain, eyes, joints, bones or almost any other part of the body. These days, however, this happens very rarely.

Long Term Health Effects of Syphilis

If syphilis is left untreated, it may cause major problems. These include:

- Damage to major organ systems (like cardiovascular, central nervous system, musculoskeletal system) leading to heart problem, blindness, deafness, insanity, disfigurement and death.
- Pregnant woman may pass on syphilis infection to her unborn child causing spontaneous abortion, premature birth, stillbirth or serious birth defects.
- Genital ulcers can increase the risk of HIV acquisition, so patient should be tested for HIV.

Treatment

- Syphilis can be completely cured with antibiotics prescribed by a qualified doctor.
- Patients with syphilis must attend the clinic after treatment to make sure by tests that they have been completely cured.
- Patients receiving syphilis treatment must abstain from sexual contact until the treatment is complete.
- They must ensure that their sexual partners too receive treatment.
- All pregnant women should be tested for syphilis.

Gonorrhoea

Gonorrhoea is one of the commonest STIs. If left untreated, it can lead to Pelvic Inflammatory Disease (PID) and infertility in women, and prostatitis and sterility in men. Babies can catch gonorrhoea at birth if the mother has the infection.

Cause

It is caused by the bacterium called Neisseria gonorrhoea.

Symptoms

Symptoms appear 3 to 5 days after infection. Most women and some men may have no symptoms at all.

In Women

- Unusual vaginal discharge
- Burning or painful urination
- Pain in lower abdomen (pelvic area)

However, most women with gonorrhoea remain asymptomatic If not adequately treated, 10-40 % women with gonorrhoea may develop PID.

In Men

- Yellow/green discharge from the penis
- Burning pain during urination

Treatment

- Mostly, it gets completely cured with antibiotics prescribed by a qualified doctor.
- The patient must take the full course of treatment.
- Both partners must take the treatment.
- They should avoid sex until the treatment is over.

Risks

- If the infection is not detected and treated, it may spread and cause sterility in both men and women.
- Some strains of gonorrhoea are resistant to certain antibiotics. Hence one must get treated by a qualified doctor to ensure proper treatment.
- Newborn's eyes can get affected during birth.
- Can increase risk of HIV.

Pelvic Inflammatory Disease (PID)

PID is an infection of the female reproductive tract. It can result in scarring of the fallopian tubes, abnormal pregnancies and infertility.

PID is one of the most serious and common complications of STIs among women. It can also occur as an iatrogenic (physician-induced) infection as a complication of gynecological procedures (e.g. abortion, medical termination of pregnancy, insertion of an intra-uterine device, or child birth).

Cause

PID occurs when bacteria (gonococci, streptococci, staphylococci or others) invade through the cervix causing infection of the uterine lining (endometritis) followed by infections of the fallopian tubes (salpingitis) and ovaries (oophoritis).

Symptoms

- Vaginal discharge
- pain in lower abdomen
- Fever
- Tenderness on pelvic examination
- In more severe cases, high fever, nausea, vomiting, abdominal tenderness and rapid heart rate.

Treatment

As PID is a severe condition, once diagnosed, the patient should be treated promptly with antibiotics by a specialist.

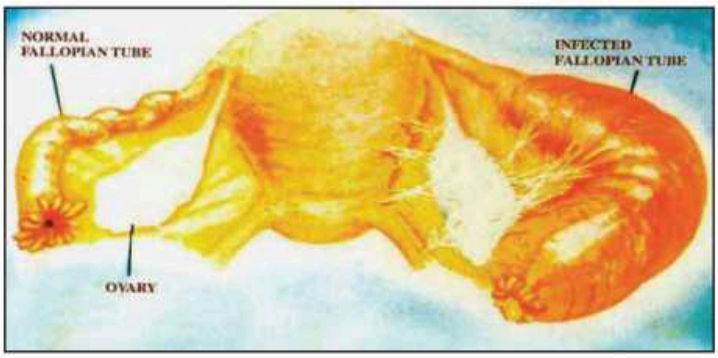


Fig: *Acute Salpingitis (Pelvic Inflammatory Disease).*

8.4 Prevention and Control of HIV/AIDS

HIV/AIDS is one of the most serious public health problems being faced worldwide. Young people are among the most susceptible to the HIV infection. Evidence shows that more than half of those newly infected with the HIV virus are young people. Many of them got infected only because they lacked appropriate information on how to protect themselves from HIV. It is therefore important that we all understand about HIV/AIDS and learn how we can protect ourselves from getting infected with HIV.

Presently over 2.5 to 3 million people in India are infected with the HIV. Of all the sexually transmitted infections, perhaps HIV/AIDS is the most frightening one, since it has no cure. However, the good news is that it is preventable and it is in our own hands to protect ourselves. Getting up-to-date information therefore, is the first step towards protection.

HIV

H - Human

I - Immunodeficiency

V – Virus

HIV is Human Immunodeficiency Virus. It infects and weakens the body's immune system. It survives in body fluids such as blood, semen, vaginal and cervical fluids.

Persons infected with HIV are called HIV positive people. They may look and feel perfectly healthy and can work like normal persons. They may not even know that they are infected and can infect others. PLWHA (People living with HIV/AIDS) is a term commonly used for HIV/AIDS patients.

AIDS

A – Acquired	-	One gets it from somebody infected. It is not hereditary.
I - Immune	-	It affects the immune system of the body.
D - Deficiency	-	Inadequacy of the body's immune system to fight infections.
S – Syndrome	-	A group of diseases or symptoms. It is not just one single disease.

Effect of HIV on Immune System

A healthy person is well protected by the body's immune system which fights off harmful infections. White Blood Corpuscles (WBCs) present in our blood are a very important part

of this defense. They fight and destroy the infection causing micro-organisms (such as bacteria, virus) by producing specific substances called antibodies.

HIV enters the body's WBCs. The virus begins to live and reproduce in the WBCs. It rapidly multiplies until there are millions of viruses present. Gradually the number of WBCs is reduced and they can no longer protect the body from infections. The immune system gets paralyzed to the extent that tuberculosis, pneumonia, cancer and other infections occur in the body. This is the stage when we say that the person has AIDS.

HIV and Young People

Some factors that put young people at risk of HIV are:

- Curiosity about sexual matters
- Limited information on reproductive issues
- Weakening of traditional value systems and social control
- Experimentation with alcohol and drugs especially injecting drug use
- Migration
- Youth take risks and perceive themselves as non susceptible to HIV

Women are More Vulnerable

Women are more vulnerable to HIV infection because of the following reasons:

- Limited access to information and educational messages.
- Biological vulnerability - large vaginal area and delicate vaginal membrane allow the virus to pass through easily.
- Increased risk of infection from man to woman – Higher concentration of virus in the semen; HIV transmission from man to woman is more rapid rather than in the reverse direction.
- Many women suffer from asymptomatic STIs which facilitates HIV transmission.
- Poor access to healthcare services.
- Lower literacy rates.
- Lower socio-economic status – women often economically dependent on men.
- Passive attitude of women towards sexual issues.
- Different social norms - most societies male dominated; women having no say in matters of sexual relationships.
- Women often require blood transfusion (during childbirth or for treating anemia) and face the risk of infection due to the possibility of infected blood transfusion.
- Lesser social support when infected.

Modes of HIV Transmission

Four main ways or routes of transmission of HIV are:

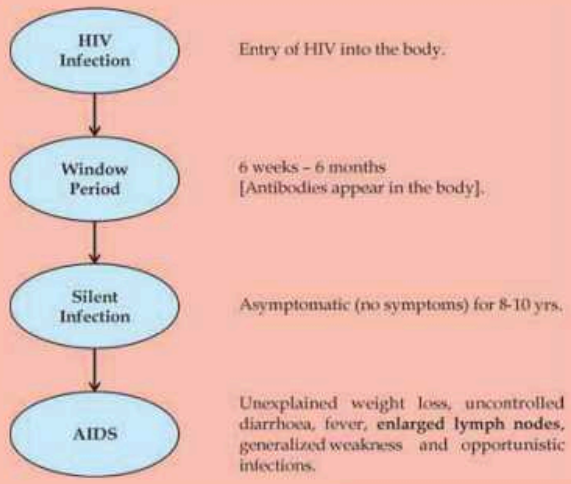
- By transfusion of infected blood or blood products
- Having unprotected (without a condom) sex with HIV infected person
- By infected needles, syringes and other instruments
- By an infected mother to her unborn child during pregnancy or childbirth

Ways in which HIV is Not Transmitted

HIV is not spread through:

- Casual contacts such as shaking hands, hugging, eating or drinking from the same utensils, etc.
- Traveling together
- Donating blood
- Mosquito bites (the virus doesn't survive in mosquito's body)
- Normal use of toilets and urinals
- Coughing, sneezing (not an air borne disease)
- Caring for people living with HIV/AIDS

Progression of HIV in the Body



The length of time it takes from HIV infection to develop into AIDS widely differs from person to person. The various factors that contribute to this are:

- Individual differences in immune responses.
- Poor lifestyle: lack of sufficient rest, poor diet, lack of exercise, overexertion, unhygienic conditions.
- Risky health behaviours such as drug abuse.

Testing for HIV

A person infected with HIV may not have any signs and symptoms of the infection for years. The only way to find out if a person has HIV is through a blood test. The following tests are available for detection of HIV:

- Rapid test/Spot test
- ELISA (Enzyme Linked Immunosorbent Assay)
- Western Blot
- PCR – DNA test

Rapid test/Spot test and ELISA are screening tests and need to be confirmed by Western Blot Test. They detect antibodies to HIV and not HIV itself. The test may sometimes show false negative. It is because of the window period in which the presence of the antibodies is not detected in the test.

The PCR – DNA test is the only test that detects the virus. However this test is expensive and is not yet routinely available in our country.

Window Period

The antibodies against HIV appear in adequate concentration in the body only after about 12 weeks of infection. Hence some HIV infected persons may test negative as their bodies have not produced antibodies at that stage. This period between the entry of the HIV into the body and production of antibodies is called as window period. During this period, the infected person can pass on the virus to others i.e. he/she is infective to others.

Where to Get Tested for HIV

A person can get tested at any hospital, Integrated Counseling and Testing Centre (ICTC) or any medical centre which provides such facilities. Testing must always be accompanied by pre- and post-test counseling by trained counselors. This is done to help the person

understand the need for testing and the test results. Whatever is discussed between the patient/client and the counselor is kept confidential.

Fig: *Integrated Counseling and Testing Centre is a place where a person is counseled and tested for HIV on his/her own free will or when advised by a medical provider.*

Signs and Symptoms of AIDS

When the person's immune system due to HIV infection gets damaged, signs and symptoms of AIDS appear. These include:

- Weight loss more than 10 % of body weight
- Fever for longer than 1 month
- Diarrhoea for longer than 1 month
- Persistent severe fatigue
- Repeated infections

Since these symptoms may also occur in some patients who do not have HIV infection, proper investigations need to be done before labeling any person as AIDS patient.

Preventive Measures

Preventive measures to be taken for protection from HIV include:

- Having appropriate information about HIV/AIDS, and skills to make correct choices
- Making sure the blood is tested before transfusion
- Abstaining from sex
- Resisting negative peer pressure
- Avoiding alcohol and drugs
- Not having unprotected sex
- Having a mutually faithful sexual relationship with an uninfected person
- Practicing safer sex
- Not injecting drugs
- Not sharing needles and syringes with anyone
- Pregnant women to get tested for HIV
- Taking universal safety precautions

How Young People can contribute

- Learn and understand basic facts about HIV and its prevention.
- Develop life skills to protect themselves and others.
- Assess personal risk for HIV infection.
- Share information.
- Dispel myths.
- Tackle stigma in school and in the community.
- Avoid alcohol and use of drugs that may affect judgment.
- Treat PLWHA with compassion, not discrimination.
- Practice abstinence (not having sex with anyone).

Anti Retroviral Therapy (ART)

There is no cure for HIV/AIDS yet. However, now Anti Retro Viral (ARV) drugs are available which stop people with HIV from becoming ill for many years. ARV Treatment for HIV or ART consists of drugs that have to be taken by HIV person for the rest of his/her life.

ART increases the person's ability to fight the disease. The drugs control the reproduction of the HIV virus, thereby reducing HIV levels in blood and semen. They reduce symptoms and delay the onset of AIDS. In other words, ART converts HIV infection from a fatal disease to a chronic disease. But they do not cure HIV infection.

Since the virus tends to develop resistance to the drugs rather quickly, now, Highly Active Anti Retroviral Therapy (HAART) is the recommended treatment for HIV. This therapy combines three or more anti-HIV drugs in a daily regimen.

However, these drugs are expensive, have severe side effects and are beyond the reach of many people in our country. Once started, the treatment has to be taken life long. If stopped, the person living with HIV/AIDS will become ill in a few months.

Post Exposure Prophylaxis (PEP)

Healthcare providers may get exposed to HIV infection while handling the patients. To handle such situations, PEP is practiced. The term PEP refers to comprehensive medical management to minimize the risk of infection among healthcare personnel following potential exposure to blood borne pathogens. This includes counseling, risk assessment, relevant laboratory investigations, first aid and provision of short-term antiretroviral drugs with follow up and support. The National AIDS Control Organization (NACO) has arranged for providing ARV drugs as treatment for occupational exposures free of cost.

Occupational Exposure Protocol

- Never put the injured part in mouth or squeeze it. Remain calm.
- Wash the area thoroughly with soap and water.
- Dispose of the sharp instruments properly.
- Report the exposure to the appropriate authority.
- Seek counseling for PEP and baseline test for HIV.
- Start PEP within 2 hours and not later than 72 hours of exposure.
- Follow up HIV testing to be done at 6 weeks, 3 months, 6 months and 1 year.
- Follow up counseling and care as advised.

8.5 Universal Safety Precautions for Control of HIV/AIDS

Healthcare providers run a greater risk of getting infected accidentally by HIV if they come into contact with patient's blood and other body fluids. They can also transmit the virus to an uninfected patient, if they themselves are infected with HIV. These risks can be avoided by following standard Universal Safety Precautions (USPs), at all times with all patients.

Universal Precautions as defined by CDC, are universal precautions designed to prevent transmission of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and other blood borne pathogens when providing first aid or healthcare.

These precautions must be taken by all healthcare providers in any health setting, in order to protect themselves as well as their patients. Precautions to be taken for control of HIV infection include:

> ***All patients' blood, body fluids, substances, secretions and excretions*** must be treated as potentially infected as we do not know who is infected with HIV until their blood is tested for it.

1. Hand hygiene
2. Handling of sharps and needles
3. Biomedical waste management
4. Use of Personal Protective Equipment (PPE)
5. Disinfection and Sterilization
6. Safe disposal of dead body

1. Hand Hygiene

All healthcare providers must follow the simple hand washing procedure (already dealt with in Chapter 6).

2. Handling and Disposal of Sharps and Needles

Accidental exposure to sharp objects (needles, glasses etc.) is the most common way through which healthcare providers are exposed to HIV. This can be avoided by ***proper handling and disposal of sharps (scissors, scalpel, blades and other sharp instruments) and needles***. It should be assumed that all used injection equipment is contaminated and ensured that they are not exposed to risk of infection or needle stick injuries. A sterile syringe and needle should be used for giving injection. Reuse of a needle/syringe between patients without proper sterilization is the most harmful practice. It can cause cross infection and put patients at risk. After giving injection, sharps must be discarded in a safety box/puncture proof container for proper disposal.

All health staff need to be well trained to use properly sterilized sharps and needles, prevent needle stick injuries, and to safely dispose of sharps and needles. They also need to understand the risks to patient, to themselves, to waste handlers and to the community when they come in contact with used/contaminated sharps and needles.

Precautions while handling sharps and needles

- Cover any cuts/abrasions on your hands.
- Wash hands before handling clean sharps and needles.
- Always use sterile syringes and needles for giving injections.
- Prevent cuts in your hands.
- Prevent needle stick injuries.
- Avoid recapping needles.
- Do not re-use the disposable sharps and needles.
- See that they are immediately contained in a sharps container after use without recapping or manually mutilating/handling the sharps and needles.
- Collect used syringes and needles in a sharps container which is **puncture proof and leak proof**.
- Seal the container when it is three-quarters full.
- Once closed and sealed, the container should not be reopened or reused.
- Dispose the sharps waste in an efficient, safe and environment friendly way to protect people from any exposure to used sharps and needles.
- Some hospitals may use incinerators or burning methods for this purpose.

Certain options for safe disposal of sharps waste

- Disposal pit
- Cutting the needle and shredding the plastic barrel
- Incinerator
- Metal drum

Sharps container

Sharps containers are used for proper disposal of sharps and needles in hospitals. If there are no sharps containers available e.g. in a health facility in a village or a small town, we can use an alternative container. We can use a cardboard box with rigid sides and enough room to hold a number of sharps and needles used in one session. The box can be sealed and disposed after use/stored in a safe place until the next session.

3. Biomedical Waste Management

The hospital waste may be household waste (non infectious), infected waste and infected plastic waste. The table below depicts how to deal with hospital waste.

a. **Household waste (non infectious)** • Leftover food, fruit peels,vegetables. • Waste paper, packing material, empty boxes and bags, etc.	Use black drum/bag.	This waste should be sent to municipal authorities for final disposal.
b. **Infected waste** • Human anatomical waste - Organs, blood, body fluids etc. • Solid waste – Used cotton gauze, dressings, plaster cast etc.	Use yellow drum/bag.	This waste should be sent for incineration.
c. **Infected plastic waste** • Used disposable syringes and needles, sharps, blades, etc. • Plastic items – IV sets, Ryle's tube, catheters, etc.	Use blue drum/bag.	This waste is autoclaved to make it non-infectious followed by shredding before its final disposal.

4. Use of Personal Protective Equipment (PPE)

PPE is meant to protect healthcare providers from workplace injuries or illnesses occurring due to contact with chemical, radiological, physical, mechanical or any other workplace hazards. These equipments are used, based on risk of procedure. They include:

- Gloves - Use gloves before handling blood or specimens, and before carrying out any clinical procedure.
- Masks - They help to prevent the spread of respiratory infections. Wash hands before putting on mask. Cover mouth and nose with mask. Always use a fresh mask having at least four layers.
- Eyewear – Goggles, face shield
- Gowns and Aprons - Wash hands before wearing and after removing gown/apron.
- Caps – Wash hands before putting on cap. After use, discard it in appropriate place.
- Footwear – Wear clean and appropriate footwear.

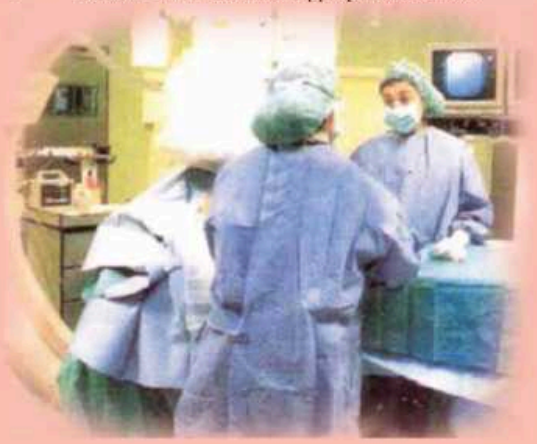


Fig: *Use of personal protective equipment gives protection to healthcare providers from workplace injuries and illnesses.*

5. **Disinfection and Sterilization**

HIV is a delicate virus and easily gets destroyed by simple methods such as boiling for one second or using chemicals (like 70% ethanol, 0.5 % lysol solution, 3% hydrogen peroxide solution).

USPs are meant to isolate the HIV and body fluids, and not the patient.

6. **Disposal of Dead Body**

- Plug all orifices well.
- Cover open wounds with water proof dressing.
- Place body in double plastic sheets and with bleaching powder.
- Tie the body bag well.
- Label the body, the sheet covering the dead body, and the bag in which the body is kept.
- Suggest the relatives of the dead not to open the body bag, once it is closed.
- Cremation is the best procedure for disposal of the dead. However, deep burial may be suggested in cases where cremation is not practiced, due to religious or some other reasons.

8.6 Safe Sex

Sexual activity which completely eliminates the risk of infection is termed as safe sex. Any sexual activity between two uninfected individuals is safe. Similarly, a sexual activity which does not involve the entry of blood, vaginal fluids or semen into the body is safe.

Safer Sex

It is the way of adapting one's sex life to minimize the risk of getting or transmitting HIV infection/STIs. Safer sex is anything a person does during sex to reduce his/her risk of acquiring a STI. For those sexually active people who care about their own and their partner's health, safer sex is a responsibility. It protects them and their partners from getting a STI. It embraces the whole range of sexual practices, making minimum changes necessary to make them safer.

It is termed as 'safer sex' (rather than safe sex) as it involves **minimizing risks**, rather than totally eliminating them.

Safer Sex Options

- Abstinence (refraining from sex).
- Mutually faithful relationship with an uninfected partner.

- Practicing sexual activities that involve no contact with blood, semen or vaginal fluids (such as kissing, hugging, body caressing).
- Having protected sex – using a condom correctly.
- Avoiding multiple sexual partners.

8.7 Planned Parenthood

Preparation for future is something which every young person needs to think and work on. For this, they seek information and guidance from various sources like parents, teachers, peers, society, media etc. An issue central to their preparation for a fulfilled adult life is planned and responsible parenthood.

Young people must understand the negative consequences of early parenthood and avoid such practice. Although they now possess the equipment to create a new life, they may not be mature enough and ready to deal with the consequences of having a child at an early age. Having a baby is a great responsibility. It is an expensive affair in terms of time, energy, attention, health, education or money. Therefore every couple needs to consider very carefully when they should start their family.

When a woman and a man decide to have children only when they are mentally, economically and physically ready for the same, it is called ***Planned Parenthood***. The couple must understand that a baby is created by two adults who have love and respect for each other. They should make sure that babies are produced by choice and not by chance. Quite often young people may feel that 'they are in love' but they must accept that it requires more than just strong feelings for a happy and long lasting relationship.

In our country the legal age for marriage is 18 years for females and 21 for males.

Effects of Early Parenthood

- Poor health of the mother
- Child having lower birth weight
- Abortion, premature birth or stillbirth
- Death of the mother during pregnancy or childbirth
- Financial problems in the family
- Conflicts/fights between the couple
- Malnourished child
- Mental problems such as stress, depression

8.8 Family Planning

Family planning (FP), according to WHO, is a way of thinking and living that is adopted voluntarily, upon the basis of knowledge, attitudes and responsible decisions by individuals and couples, in order to promote the health and welfare of the family group and thus contribute effectively to the social development of the country.

WHO has also given another descriptive definition of FP. According to this, FP refers to practices that help individuals or couples to:

- Limit family size
- Avoid unwanted birth
- Bring about wanted birth
- Regulate the intervals between pregnancies
- Control the time at which births occur in relation to the ages of the parents, and
- Determine the number of children in the family.

Family planning is a basic human right of each and every individual. Everyone has a right to get information pertaining to family planning and then decide freely and responsibly the number and spacing of their children.

***Fig: Small family** is a happy family! But most families have not yet learnt how to optimally space child births. **Healthcare persons** should take this work as their **occupational, social & national responsibility**; and educate people of **reproductive age group** (RAG).*

Contraception

Contraception refers to preventive methods to help women avoid unwanted pregnancies. It is the intentional prevention of conception by artificial or natural means. There are specific methods meant to be used by men and women. Each method has its own advantages and disadvantages. The users are free to choose any method out of various FP methods available (Cafeteria Approach) according to their needs and preferences. Contraceptive methods can be divided into two groups:

I. Temporary/Spacing Methods

1) Barrier Methods
2) Intrauterine devices
3) Hormonal methods
4) Miscellaneous

II. Permanent/Terminal Methods

1) Vasectomy in males
2) Tubectomy in females

A brief description of some of the family planning methods is presented below:

I. Spacing Methods

1) Barrier Methods

(a) **Condom:** It's a fine sheath of latex or rubber which is used by men during the sexual act. It acts as a physical barrier preventing the semen from entering the vagina. It is generally known by its trade name 'Nirodh' which is Sanskrit word meaning prevention. Condoms are provided free at government hospitals, dispensaries, primary health centers, sub centres etc.

Advantages

- Condom is safe, effective and cheap.
- Easily available.
- Easy to carry, use and dispose.
- No side effects.
- Available in a variety of shapes, sizes and textures.

- In addition to preventing pregnancy, condom also protects against HIV and other sexually transmitted infections.

However, condom must be used correctly and consistently every time during sexual act.

(b) **Diaphragm:** It is a barrier method used by the females. It is a small rubber cup that is placed inside the vagina at the cervix before sexual act. It blocks the sperms from entering the uterus. However this method is not commonly used.

(c) **Female Condom:** It is made of a thin plastic material called polyurethane. This material is different from rubber or latex. It is placed in the vagina by the user herself. The flexible ring present at both ends keeps the condom in place. Instructions on the package for using female condoms need to be followed.

Advantages

- It gives women a sense of freedom and more control over their bodies.
- No prescription required.

Disadvantages

- It is more expensive than male condom.
- It needs practice to use the condom correctly.
- It is large and odd looking.
- It does not protect against STIs/HIV.
- Available only at select pharmacies.

2) Intra Uterine Device (IUD)

Copper T: It is an IUD which is shaped like the alphabet 'T'. This device is made of polyethylene which has a coil of fine pure copper wire wrapped around its vertical arm. It is inserted by a doctor into the uterus and can be left there for 3 years. It prevents the fertilized egg from attaching to the uterus. It is a convenient method of avoiding pregnancy and of spacing births.

Advantages

- Low failure rate.
- Cheap and independent of sexual act.

Disadvantages

- Some females may have some side effects at the initial stage like abdominal pain or cramps, slight bleeding or increased menstrual flow.
- Chance of ectopic pregnancy.

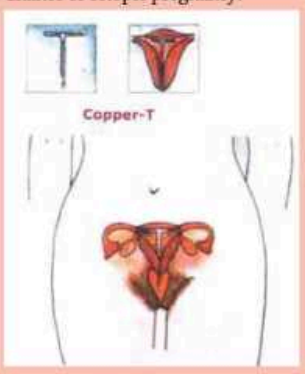


Fig. Copper T is inserted by a doctor into the uterus; it prevents the fertilized egg from attaching to the uterus.

3) Hormonal Method

(a) **Oral pills:** Birth control pills such as 'Mala D' are easy, safe, effective and reversible contraceptive for females wanting to delay the first pregnancy or space the next child. These pills contain hormones which suppress the release of egg from the ovaries.

***Fig. Tools for planning one's family: Mala D** brand of Oral Contraceptive Pills (OCP), **"Saheli"** (once a week pill) & Condom (**"Nirodh"** brand of Govt. of India). OCPs are the best method for obtaining optimal time space between two child births. They are safe. They also give additional benefits for the women who use them.*

Advantages

- Highly effective against pregnancy when used consistently and correctly under strict medical supervision.
- They reduce the risk of Pelvic Inflammatory Disease.

Disadvantages

- There may be some side effects like breast tenderness, headache, nausea, mood changes etc. in the first few months.
- The pill does not protect against HIV/STIs.

(b) **Injectables:** Depo-Provera is a contraceptive injection of time release hormones. It, like birth control pills, prevents release of egg(s) from the ovary. One injection prevents pregnancy for 3 months.

Advantages

- It is very effective.
- No one else can tell if someone is using it.

Disadvantages

- There may be changes in menstrual bleeding, decrease in sex desire, mood swings, headache.
- Injection required after every 3 months.
- It does not give protection against STIs/HIV.

(c) **Emergency contraceptive pills (ECPs):** ECPs are the use of oral contraceptives within 72 hours of unprotected sex to prevent pregnancy. The earlier ECPs are taken after unprotected sex, the greater the chances that they will be effective. However, it is important to understand that ECPs are for emergencies only. They are not a substitute for a regular contraceptive method. They contain higher amounts of hormones and should be used under strict medical supervision. The government has introduced e-pills, that are available free of cost at family planning centres.

4) Miscellaneous

Abstinence: Avoiding sex is the surest method of contraception for both females and males. It is appropriate for those who have not yet begun sexual activity, as well as those who have. It is the surest way to prevent pregnancy and STIs. It requires high degree of motivation, self control and commitment from both partners. It should be encouraged among young people.

Other ways of demonstrating love and affection, such as holding hands, hugging, etc. can be used.

II. Permanent / Terminal Methods

1) Male Sterilization (Vasectomy)

In vasectomy, about one cm of the vas deferens (a part of the male reproductive system) is cut and tied. It prevents passage of sperms and is 100% effective.

Advantages

- Safe, very effective.
- Easy and simple method.
- Complications are rare.

2) Tubectomy or Tubal Ligation

In females the fallopian tubes are either ligated or cut twice 1 cm apart and ligated. In the case of laparoscopic sterilization, they are burned and sealed with the help of electric current, or occluded with rings or clips.

Advantages

- Very effective.
- Does not interfere with sex.
- No side effects.

Medical Termination of Pregnancy (MTP)

Therapeutic abortion is carried out under the **MTP Act 1971** when there are specific indications like contraceptive failure, risk to mother's health, on humanitarian grounds such as rape, and risk of foetal abnormalities. In India, the MTP Act allows any female above the age of 18, married or unmarried, to have an abortion. It is legal only up to 20 weeks of pregnancy. Complications such as infection, infertility and even death may occur if MTP is not done by medical experts. MTP is a back up to be used only when contraceptives have failed or it was unplanned and unwanted pregnancy. It is not a family planning method.

MTP is a way of legal and safe abortion by qualified doctors at hospitals, nursing homes approved by the Government. Maternal mortality caused by illegal unsafe and septic abortions can be prevented by MTP services under the MTP Act.

Questions

1. What do you understand by sexuality?
2. Mention common sexually transmitted infections and their causative organisms.
3. Mention common signs and symptoms of sexually transmitted infections.
4. Write the modes of HIV transmission.
5. Explain what preventive measures should be taken to protect oneself from HIV.
6. Mention the universal safety precautions for control of HIV/AIDS.
7. List the ill effects of early parenthood.
8. Give classification of family planning methods.
9. Mention the advantages and disadvantages of using IUD.
10. Describe the MTP Act.

Chapter 9

Public Relations in Health Care Service Institutions

Introduction

The health care industry today is competitive. Hospitals need to have an edge that makes them stand out from the ordinary ones. The hospital management likes them to be appealing and interesting to the patients, the public and the media. The patients are the clients. The public are the buyers of the hospital services. The media are responsible for furthering it. The Public Relations department in a hospital aims to enhance the hospital's repulation. It is responsible for understanding its consumers' needs and providing sympathetic services to them.

This chapter describes the role and importance of public relations in healthcare institutions, the role of GHAs in hospitals, doctor-patient relationship, staff-patient relationship in health care setting, empathy Vs sympathy in patient care and, personal hygiene of hospital staff.

Objectives

After reading this chapter you will be able to:

- Define public relations and its functions
- Explain the role and importance of public relations in health care institutions
- Describe the role of general health assistants in hospitals
- Understand staff patient relationship and doctor patient relationship
- Explain the role of personal hygiene of health staff.

9.1 Definition and Functions of Public Relations (PR)

Public relations is the art and science of managing communication between an organization and its key public to build, manage and sustain its positive image. **Public relations** is a management function. **Public relations** work is both an art and science. It serves the following functions:-

- It manages communication between the organization and the public at large. It builds, manages and sustains the **organization's positive image**.
- It **builds rapport** with employees, customers, investors, voters or the general public.
- It **builds and manages relationships** with those who influence the organization.
- It plays the role of the institution's **reputation protector**.

Staff that work in public relations (commonly known as 'PR') are **skilled publicists**. They have to **present the organization and its services to the world in the best light**. Different kinds of organizations utilize PR departments for various purposes. For example:-

- **Business corporations** utilize public relations to convey **information about the products they manufacture or services they provide** to potential customers. PR supports sales and establishes corporation's brand.
- **Business institutions** also use public-relations as a vehicle to reach politicians and policy makers, to get favourable treatment from them. They use PR to portray themselves as enlightened employers (in support of **human-resources recruiting programs**).
- **Non-profit organizations** (e.g. schools and universities, hospitals, and human and social service agencies) use public relations in support of awareness programs, fund-raising programs, staff recruiting, and to increase patronage of their services.

The Public Relations Department **executes a program of action that earns public understanding and acceptance**. The essential functions of public relations include research, planning, communications dialogue and evaluation. This department focuses on **two-way communication** and fosters a mutually beneficial relationship between an organization and its stakeholders.

Thus, PR helps an organization and the public adapt mutually to each other. Organizations that have a stake in how it is portrayed in the public arena employs some level of public relations. A number of specialties exist within the field of public relations (e.g. Analyst Relations, Media Relations, Investor Relations or Labour Relations, etc.).

The public often think that PR is a **glamorous job**, and that public relations people may indulge in partying and networking to find new contacts. This may be true to some extent. But, the **PR people have to actually put in long hours of hard work**.

Skills necessary for PR Work

- PR work needs a high level of **communication skills** (both written and verbal communication).
- The PR person has to be good at multitasking and **time management**.
- They need to have some **media background or training**. That makes them understand how the **media and advertising work**.
- **Organizational and planning** skills are also important in public relations.

The PR worker has to be able to cope well under pressure. They may have to deal with a barrage of **questions from the media and the public**. If the hospital comes under a critical attack, it is the PR department who must take control of the situation. They must effectively answer the criticism and turn it around in order to **protect the hospital's reputation**. So, the people working in the PR department should **inculcate the ability to cope under pressure**.

9.2 Role and Importance of PR in Healthcare Institutions

The main goal of public relations in the hospital is to **enhance the hospital's reputation**. An **understanding of the consumer's needs** and **sympathetic services** is the crux of public relations in a hospital.

Public relations of a hospital is the image of the hospital by the users and their peer groups. The **image may be positive or negative**. It is a combination of:

- Impressions of the users and public,
- Attitudes of the people working for the hospital, and
- Attitudes of the hospital's administration.

The public relations department of the hospital has to be the department that is most helpful to people. Its job is to **show the public the hospital at its best**.

Within a hospital, public relations provide **public information** and further **customer relations**.

Hospital has to deal with whole community

Hospitals have to deal with patients, their relatives, visitors and the community at large. Therefore, it is **not enough if the hospital satisfies its actual customers**. It has to do even more. It has to attend the outpatients and inpatients that come to the hospital; and also has to deal with the **potential customers in the hospital's catchment area that** will come to seek the hospital's services.

Current and ex-patients are the best advertisement for a hospital. People tell their friends and neighbours about their experience in the hospital. From this emerges a series of pictures of the hospital, which together make up its local image.

Satisfying the patient's expectations

Patients who attend the hospital want sympathetic treatment, effective services and satisfaction. **Hospital workers** want job satisfaction and recognition of their work by their peers and the people.

The patients (including their family, friends and relatives) are a bundle of expectations, anxieties, hopes and fears. The health care personnel have to meet all these. They can be satisfied if we can **pay special attention to the following**:

- A **patient needs privacy**, at least when he/she is not critically ill. Let us respect a patient's privacy and provide that.
- The patient has to have the **option of sociability**, when he/she is fit to socialise within the hospital.
- The patient has the **need to be informed** in general about his/her illness and the **progress being made**.
- They need **freedom from pain**, when it occurs.
- They need to be enabled to **plan their care**.
- They need to be **assured that they will not be abandoned at a time of crisis**.
- The patient needs to have confidence that **people caring for them are good at their job** and that they know the particular **patient's special requirements**.
- A hospital needs financial support of the community. It has to win and maintain the **confidence of the public** which it is there to serve.

Ten commandments for Patient Relations

Remember that patients prefer to be treated as special human beings, not just as a number. Here are the **10 Commandments** for patient relations which you and your staff should live by.

I. The patient is never an interruption to your work – the patient is your work! Everything else can wait!

II. Greet every patient with a friendly smile. Patients are people and they like friendly contact. They usually return it.

III. Call patients by name. Make a game of learning patients' names, and see how many you can remember.

IV. Teach your staff members that for patients, all staff members are as important as the doctor !

V. Never argue with a patient. The patient is always right (in his/her own eyes). Be a good listener, agree with him/her where you can, and do what you can to make him/her happy.

VI. Never say, "I don't know." If you don't know the answer to a patient's question, say, "That's a good question. Let me find out for you."

VII. Remember that the patient pays your salary - treat him like your boss!

VIII. Choose positive words when speaking to a patient – this is a valuable habit that will help you become an effective communicator.

IX. Brighten every patient's day. Do something that brings a little sunshine into each patient's life, and soon you'll discover that your own life is happier and brighter.

X. Always go the extra mile, and do just a little more than the patient expects you to do. For example, make it a habit to phone the patient after discharge from hospital, to ensure he is doing well. Exceeding patient expectations is the best way of keeping your patients happy – and keeping them your patients for life!

Public relations is a function of all hospital staff

Public relations are not just the sum of individual relations of those who work in the hospital. It is much more. The acts and attitudes of every worker and staff member would **mould the image of the hospital** in the community.

Public relations of the hospital are not the task of the hospital administrator alone. The image of the hospital reflects through the behaviour of **every member of the staff**. Let us remember some issues:-

*Fig: Indian health care system is getting globalised. Learn about the **foreign visitors**. Know the etiquettes that please them.*

- Health care personnel **frequently interrupt a patient's privacy**. That means they are trespassing into the patient's territory, without knocking the door or without announcing.
- Members of the medical team often **carry out clinical and diagnostic activities without any explanation**. And then they depart, without any explanation as to what they have done.
- In some hospitals, the patients often get an impression that he or she is the trespasser on the territory of the medical team. Actually it is the other way round.

The impression which the community harbours about a hospital may be pleasant, indifferent, or unpleasant. This impression is not just a question of chance alone. **Creation of good impression** has to be deliberately planned. It has to be achieved by **conscious effort** for:

i. cheerful and courteous behaviour,

ii. prompt and efficient treatment, and

iii. clean surroundings and well kept appearance of workers.

How to know that public is happy with your hospital?

PR helps the hospital to achieve its full potential. They do this by **providing feedback to the different functionaries in the hospital** from the public. The PR department may conduct research regarding what areas of the hospital's services the public is most happy or unhappy with. The following **indicators** are useful for **measuring public relations** in the hospital:

- **Patient satisfaction surveys.**
- General **opinion polls** in the community being served.
- Number of complaints received.
- Amount of **voluntary work extended by the community** for the hospital (if more voluntary work is offered by the community, it means the public are happy with the hospital).
- **Letters to the editors** in local paper.
- Amount of **donations** given to the hospital.
- **Consistency in attendance by patients**: If a patient keeps coming again and again to the hospital, that means he/she is happy with the hospital.
- **Turnover of medical staff**: if the staff are quitting more frequently, that means they are not happy with the hospital.

- Patients **leaving against medical advice** (LAMA): If too many patients are leaving against medical advice, that means their impression about the hospital is not good.

9.3 Role of General Health Assistant (GHA) in Hospitals

The **General Health Assistant** (GHA) performs both administrative and clinical tasks to keep the offices of physicians, hospitals, clinics, wards from offices of the hospitals running smoothly. The duties of GHAs vary from office to office, depending on the location and size of the practice and the practitioner's specialty. In small practices, GHAs usually do many different kinds of tasks, handling both administrative and clinical duties. They may report to a hospital administrator, physician or nurse. Those in large hospitals **may specialize in a particular area**, under the supervision of seniors or fully trained professionals.

GHA performs both administrative and clinical functions

Duties of GHAs vary according to where they are posted in the hospital. GHAs that perform **administrative tasks** have many duties. They update and file patients' medical records, fill out insurance forms and arrange for hospital admissions and laboratory services. They also perform **general administrative tasks** such as answering telephones, greeting patients, handling correspondence, scheduling appointments and handling billing and bookkeeping.

Some common tasks include taking medical histories, recording vital signs, **explaining treatment procedures** to patients, preparing patients for examinations and assisting physicians during examinations.

GHAs may **collect and prepare laboratory specimens**, sometimes perform basic laboratory tests, dispose of contaminated supplies and **sterilize medical instruments**. They can instruct patients about medications and special diets, prepare and administer medications as directed by a physician/nurse. They can authorize drug refills, inform on telephone the prescriptions to a pharmacy. They can draw blood, prepare patients for X-rays, take electrocardiograms. They can remove sutures and change dressings.

GHAs can arrange **examining room instruments and equipment**. They can purchase and maintain supplies and equipment. They can take charge and keep waiting and examining rooms neat and clean.

What Skills should GHA have?

The General Health Assistant (GHA) has to have good communication skills. He/she has to know about health, safety and security. He/she has to provide **quality services to divergent groups of patients** that attend the hospital without any discrimination related to caste, race, religion, nationality etc.

The General Health Assistant should have a **broad understanding of the interventions and treatments** that are available in the hospital. They should have some **computer skills** so as to be able to do data entry and information processing in different areas of the hospital (e.g. OPD, IPD, accounts, records unit, etc.). They should know how to access the internet and obtain data on relevant issues. They should have skills related to **public relations and marketing**.

General Health Assistant should be competent in communication, health care, safety & security; in providing quality service in different departments of hospitals. GHAs should:

- **know when they need help**, so that a physician or nurse is called in time,
- **keep a record of the activities** they undertake in the hospitals,
- understand the roles of individuals working within the **healthcare team**,
- **attend courses** relevant to their own clinical and non-clinical practice to maintain their own **career development**, and
- be ready to develop their own knowledge and skills through **work-based learning**, ensuring all mandatory training is kept up to date.

When working at this level, GHAs are thus required to: 'Contribute to their own Personal Development'.

GHAs should work in a way that is **consistent with legislation, policies and procedures**, for maintaining people's health, safety and security.They should:

- Work in a way that **minimises risks to health, safety and security** of the patients, public and the hospital staff.
- Know when to **summon immediate help** for any **emergency** and take the appropriate action.
- Report immediately to senior staff anything in the hospital that may put people's health, safety and security at risk.
- Ensure safe storage, rotation and disposal of **vaccines and drugs** under their control, and apply the **principles of the cold chain.**
- In emergency situations, they should apply the **general principles of first aid** and

to undertake initial actions, including dealing with someone who has:

- collapsed,
- acute chest pain, or
- hypo/hyperglycaemia, or
- exacerbation of asthma and chronic obstructive pulmonary disease haemorrhage, or
- shock.

They should work with patients and colleagues, adhering to sound infection control measures. They should know and apply **infection control measures**, including:

- **hand washing**
- **universal hygiene/ safety precautions**
- collection and handling of **laboratory specimens**
- segregation and disposal of **waste materials**
- **decontamination** of instruments and clinical equipment
- reporting and treatment of **sharps injuries**
- dealing with blood and body fluid **spillages**.

They should have working knowledge of the following:

- health and safety procedures
- documentation within the workplace
- fire safety procedures
- procedure for monitoring and reporting the **state of the equipment and furniture**.

They should identify risks to health from **microbiological and chemical hazards** within the hospital environment, according to the regulations. They should know how to use the **personal protection equipment** in the workplace.

Contribute to Service Improvement

- The GHAs should comply with **legislation, policies, procedures** and other **quality approaches** relevant to the work being undertaken.
- Work within the limits of their own competence and responsibility, and refer issues beyond these limits to relevant people.

- They should act responsibly as a **team member** and seek help if necessary.
- **Use and maintain resources** efficiently and effectively.
- Report problems as they arise, while resolving them if possible.
- Work **within their limits of competence** through participation in training and adherence to protocols.

Fig: Medical tourism *is increasing in India. That means, people are touring to India, just for getting medical treatment here! Learn about how to deal with overseas (foreign) patients! Learn how to speak English!!*

Pay attention to equality and diversity

Recognise the **importance of people's rights** and act in accordance with legislation, policies, procedures and relevant standards. Act in ways that:

- acknowledge and recognise **people's beliefs**, preferences and choices,
- **respect diversity among people** (religion, caste, race, nationality, etc.),
- value people as individuals,
- take responsibility to **account of their own behaviour** and its effect on others.

Understand and implement with patients, patients' relatives and colleagues the latest guidelines issued by professional bodies, including:

- the need to protect the patients' **confidentiality,**
- people's personal preferences and beliefs,

- the **patient's right** to make their own decisions,
- **being alert to possible signs of:**
  - < family violence
  - < drug abuse and addictive behaviour, and
  - < child abuse (If appropriate, draw it to the attention of a senior colleague)

Understand the basic legal issues related to administrative and clinical aspects in the hospital.

Undertake clinical tasks delegated to them in accordance with the **clinical protocols and guidelines**.

Know **when to refer to a more senior colleague** when situations arise beyond their own level of competence (according to the protocols and guidelines).

- Instruct patients for appropriate collection of **urine for testing**.
- Understand diagnostic interventions, treatments and the principles of care.
- Support and monitor patients during **nebulization therapy**.
- Prepare equipment and support clinicians in **providing minor surgery**.

Contribution to Health Education and Health Promotion activities

They should contribute to **health promotion activities**, by recording the **lifestyle activities** of patients (e.g. smoking, exercise and diet). Offer support in the form of **lifestyle change advice**, provision of health education materials, etc.

9.4 Doctor-Patient Relationship

The **doctor-patient relationship** is central to the practice of medicine and is essential for the delivery of high-quality health care in the diagnosis and treatment of disease. A patient must have confidence in the competence of their doctor and must feel that they can confide in him or her. For most physicians, the establishment of good rapport with a patient is important. This being said, some medical specialties, such as psychiatry and family medicine, emphasize the doctor-patient relationship more than others, such as pathology or radiology. The doctor-patient relationship forms one of the foundations of contemporary medical ethics. Most medical schools and universities teach medical students from the beginning, even before they set foot in hospitals, to maintain a professional rapport with patients, uphold patients' dignity, and respect their privacy.

With increasing access to computers and published online medical articles, the internet has contributed to expanding patient knowledge of their own health, conditions, and treatment options.

If the busy doctor has no time, others can take over:

Clinicians are often not able to offer empathy to their patients. The reasons they mention include:

- "There is **not enough time** during the visit to give empathy."
- "I'm too busy focusing on the acute medical problem."
- "Giving empathy is emotionally exhausting for me."
- "I haven't had enough training in empathetic communication."

So, the other health care personnel like nurses and GHAs have to fill this gap.

Perspectives to doctor-patient relationship:

The four great corner stones of diagnostic medicine are anatomy (structure: what is there), physiology (how the structure/s work), pathology (what goes wrong with the anatomy and physiology) and psychology (mind and behavior). In addition, the physician should consider the patient in their 'well' context rather than simply as a walking medical condition. This means the socio-political context of the patient (family, work, stress, beliefs) should be assessed as it often offers vital clues to the patient's condition and further management.

A patient typically presents a set of complaints (the symptoms) to the physician, who then obtains further information about the patient's symptoms, previous state of health, living conditions, and so forth. The physician then makes a systems inquiry, which is a set of ordered questions about each major body system in order: general (such as weight loss), endocrine, cardio-respiratory, etc. Next comes the actual physical examination and often laboratory tests; the findings are recorded, leading to a list of possible diagnoses. These are investigated in order of probability.

The next task is to enlist the patient's agreement to a management plan, which will include treatment as well as plans for follow-up. Importantly, during this process the healthcare provider educates the patient about the causes, progression, outcomes, and possible treatments of his ailments, as well as often providing advice for maintaining health. This teaching relationship is the basis of calling the physician doctor, which originally meant "teacher" in Latin. The patient-physician relationship is additionally complicated by the patient's suffering (patient derives from the Latin patior, "suffer") and limited ability to relieve it on his/her own. The physician's expertise comes from his knowledge of what is healthy and normal contrasted with knowledge and experience of other people who have suffered similar symptoms (unhealthy and abnormal), and the proven ability to relieve it with medicines (pharmacology) or other therapies about which the patient may initially have little knowledge.

Physicians have been accorded increasingly higher status and respect over the last about

one century. This represents a concentration of power and carries both advantages and disadvantages to particular kinds of patients with particular kinds of conditions. A further twist has occurred in the last 25 years as costs of medical care have risen, and a **third party** (an insurance company or a government agency) now often insists upon a **share of decision-making power** for a variety of reasons, reducing freedom of choice of healthcare providers and patients in many ways.

Quality of patient-physician relationship is important to both parties. The better the relationship (in terms of mutual respect, trust, shared values and perspectives about disease and life, and time available), the better will be the amount and quality of information about the patient's disease transferred in both directions, enhancing accuracy of diagnosis and increasing the patient's knowledge about the disease.

Where such a relationship is poor the physician's ability to make a full assessment is compromised and the patient is more likely to distrust the diagnosis and proposed treatment. In these circumstances, a ***second opinion from another physician*** may be sought. Or, the patient may choose to go to another doctor.

In some settings (e.g. the hospital ward) the **patient-physician relationship** is much more complex. Many other people are involved when somebody is ill: relatives, neighbours, nurses, technical personnel, social workers, etc.

Organized medical staff and hospital governing body are responsible for the provision of quality care, providing a safe environment for patients, staff and visitors, and working continuously to improve patient care and outcomes. These activities depend on mutual accountability, interdependence, and responsibility of the organized medical staff and the hospital governing body for the proper performance of their obligations.

9.5 Staff-Patient Relationship

In modern hospitals, the relationship of the staff and patient is more akin to a **Service Provider and Consumer**. A **happy consumer will return**. Likewise, a **happy patient will return**. By and large, the **staff-patient relationship** is a mirror to the **doctor-patient relationship**.

The staff of a modern hospital should be **friendly, caring and empathic** without compromising on efficiency. This balance may not be easy to strike, but not very difficult.

The **doctor–patient ratio** in many Indian hospitals is very less. So, the care that the physicians may provide in the time available to them may not be much. That is why **paramedical staff and General Health Assistants** have to spare their time for this work. They can ensure that

the patient feels **well-cared-for**. You can do the following:-

- **Spend time with the patients**, and develop a bond with them. This will help you in disseminating health education.
- **Attend to the patient's needs**, in the quickest time possible; and make the patient's life easier and better.
- **Attend to complaints**, if any; and rectify quickly. Do not forget the importance of **good humour**. Your **ready smile** reassures them in depressing and tense situations.
- Any **confidential information** that the patient shares with you should be kept really confidential.

Medical care is enhanced by effective communication between health care person and the patients. Enhanced communication leads to:

- better patient compliance,
- reduction in **medical-legal risk**, and
- improved **satisfaction** of health care persons and patients.

In empathy, the physician identifies with the patient and **at the same time maintains a**

Fig: *A good patient-staff relationship helps the organization in achieving its goals.*

distance. Also, empathetic communication enhances the therapeutic effectiveness of the clinician-patient relationship.

9.6 Empathy Vs Sympathy in Patient Care

The lack of attention to the more humane aspects of care, alongside increased specialization and shortened consultation time **affects the patient-practitioner relationship**.

Empathy is process of **understanding a person's subjective experience**, by variously sharing that experience. Human beings form **meaningful interpersonal relationships**

through **verbal and nonverbal communication**. This principle is the same whether the individual is male or female; an infant, a child, an adolescent, or an adult; or healthy or sick. **Empathic human connections are beneficial** to our body and mind.

Empathy is one of the most important life skills required for effective communication. Empathy means the **ability to understand things from the other person's perspective**. That is, putting one's feet in the other person's shoes. Empathy helps us to understand and accept others (they may be from a very different background than ours). This improves our interaction with people and **helps in building relationships**.

Use of empathy as a **communication tool** facilitates the clinical interview, increases the efficiency of gathering information, and **honours the patient. Effective empathetic communication** enhances the therapeutic effectiveness of the health provider-patient relationship.

Sympathy implies **feeling shared with the sufferer as if the pain belonged to both persons**. When we sympathize with other human beings, we share and suffer with them. Completely shared suffering can never exist between health care person and patient. If the health care person shares the patient's plight, he would be unable to help. **Sympathy** is when the physician experiences feelings as if he or she were the sufferer. Sympathy is thus **shared suffering**.

Pity describes a relationship which separates health care person and patient. It may entail feelings of contempt and rejection. So, **pity is not the proper feeling for us**, who work in the hospitals.

Empathy is used by health care persons to enhance communication and delivery of care. **Sympathy** can be burdensome and emotionally exhausting. **Sympathy can lead to burnout**.

Empathy is concerned with a much higher order of human relationship and understanding. It is **engaged detachment**. In empathy, we "borrow" another's feelings to observe, feel, and understand them--but not to take them onto ourselves. By being a **participant-observer**, we come to understand how the other person feels. An empathetic observer enters into the equation and then is removed.

Can Empathy be Taught?

Empathetic communication a teachable and learnable skill. It has tangible benefits for both clinician and patient. It is a **powerful communication skill**. This skill is often not used enough.

Empathy is now considered as a communication tool of substantial importance in the medical interview. Experts now agree that **empathy and empathetic communication are teachable, learnable skills**.

How to gain empathy in a healthcare consultation?

In a healthcare consultation, doctors and health care workers can:

- **offer social support to patients and give them a safe space.**
- Then, they open up and discuss their problems. Reassure them about their diagnosis or treatment. This relaxes them and lowers their anxiety.

Steps in attaining empathy

To practice empathetic communication, we need to **divide the concept into its simplest elements.**

Steps to attain empathy include:

1. Recognize **presence of strong feelings** in people (e.g. fear, anger, grief, disappointment);
2. Take time and **imagine how the patient might be feeling**;
3. Make a statement of your perception of the patient's feeling ("I can imagine that you are afraid about..." or "It seems you're upset about ...");
4. **Legitimize** that feeling;
5. **Respect the patient's efforts** to cope with the situation; and
6. **Offer support and partnership** (i.e. "I'm committed to work with you to ..." or "Let's see what we can do together to ...").

We get the opportunity from a patient's emotion (either directly expressed by him/her; or implied). This e**motion creates an opportunity** for empathetic response by us. **Clues are often hidden** in the discussion about medical problems. They may be missed by physicians (they are busy attending to biomedical details of diagnosis and management). In fact, when opportunities for empathy are missed by physicians, patients may tend to offer such opportunities repeatedly. This can lead to longer and more frustrating interviews, return visits, and **"doctor shopping"** by patients who feel that they are **"dismissed"**.

When we get an opportunity for gaining empathy, we should **offer a gesture or statement of empathy. Statements that facilitate empathy** may be queries, clarifications and responses. After listening our statement of empathy, the **patient expresses agreement or confirmation** ("You got it !" or "Yes, that's exactly how I feel"). When we have not understood the patient's experience properly, we should **allow the patient to correct our perception**.

9.7 Personal Hygiene of Hospital Staff

Practicing good personal hygiene can prevent spread of unwanted illnesses in the hospitals. Most of these illnesses have been caused by the common and highly contagious bacteria and viruses.

In recent times, nosocomial (or hospital acquired) infections have been rising. These are difficult to treat and may be deadly, especially in the old and the immune-suppressed. The single most effective way of preventing nosocomial infection is the proper practice of hand-washing by the hospital staff.

Proper hand-washing is the most important single issue

Hand washing should be second nature to everyone, especially at key times such as:

- before eating, before preparing food,
- after going to the toilet,
- after handling pets and changing the children's nappies.

In ICU setting, hand washes are performed before and after examining a patient.

Pay importance to practical aspects of personal hygiene

All hospital staff have to learn the **practical aspects of personal hygiene**. The importance of clean hands, hair and protective clothing has to be understood.

The hospital staff have to **report specified illnesses to management** so that their illnesses are not transmitted to others in the hospital. Some of such illnesses are mentioned here:

- Bacterial diseases: typhoid, diarrhoea.
- Viral diseases: infective hepatitis, mumps.
- Gastro-intestinal diseases: diarrhoea, dysentery, food poisoning.
- Skin diseases: infected wounds on the fingers, pyoderma, furuncles (boils).
- Eye diseases: conjunctivitis.
- ENT diseases: discharge of pus from the ear.

Preparing food hygienically in the hospital

People who prepare food should have **nothing on them that can fall into the food** (buttons, pen tops, hair clips etc.). Disposable caps and gloves should be preferably used in kitchens.

Cleaning contaminated surfaces is also an important measure to reduce the spread of infections. Washing down surfaces with **hot, soapy water** followed by **appropriate**

disinfectants will further reduce the risk of spread.

We have to understand the importance of personal hygiene and develop comprehensive measures to ensure that the food we make available in the hospital is the safe.

On returning to work from illness or holidays and before handling any food, all staff should attend a brief meeting, whereby they are required to **fill in and sign a questionnaire** to determine if they pose a threat to the food they handle in the hospital.

Hygiene check by supervisors in the hospital

Before work each day, hospital staff shouled be **checked by their supervisors**, to ensure that they:

- wear clean and fully fitting **protective clothing.**
- that hair is clean, tidy and covered,
- that nails are short and clean
- and that footwear is clean and appropriate for their tasks.

Questions

1. Define public relations. Mention its functions in healthcare.
2. Explain the role of public relations in hospitals.
3. Mention indicators for measuring public relations in a hospital.
4. What are the skills that a GHA should have to fulfill his duties?
5. What is the role of doctor-patient relationship in a healthcare setting?
6. Explain the importance of staff-patient relationship.
7. How is empathy important for a health care person?
8. Describe the role of GHA in a hospital.

Introduction

Public health refers to health interventions addressing more than one individual, such as community hygiene, sanitation, water supply, health education, maternal and child health care, immunization and nutrition promotion and disease control activities. Historically, public health efforts meant health development to be undertaken by the government as a public sector activity. This chapter covers public health, its principles, factors affecting health and disease, natural history of disease, levels of prevention, immunization, and important national health programmes. It also includes data collection, presentation of data, sampling and basics of medical statistics.

Objectives

After reading this chapter you will be able to:

- Define public health
- List the principles of public health
- Identify the major public health problems of our country
- Understand natural history of disease
- Explain four levels of prevention of diseases
- Know the basic concepts of epidemiology
- Learn about immunization, vaccines and the Expanded Programme of Immunization
- Know about the National Health Programmes
- Define the Millenneum Development Goals
- Understand data collection methods, presentation of data and sampling
- Calculate the basic statistical averages

10.1 Public Health

Public health is defined as the science and art of preventing disease, prolonging life and efficiency through **organized community efforts**. It is the process of mobilizing local, state, national and international resources to ensure the conditions in which people can be healthy. It covers **promotive, preventive, curative and rehabilitative** health measures.

10.2 Principles of Public Health

These include:

- Prevention of diseases
- Maintenance of health
- Promotion of health and efficiency through community effort
- Prolonging life in the community.

10.3 Heavy Disease Burden on Indian Society

Public health problems refer to diseases or conditions that affect large number of people leading to death or disability. Diseases like malaria, tuberculosis, HIV/AIDS, respiratory infections, injuries and problems such as maternal and infant deaths have been **the major public health problems of our country**. Factors which contribute to the **persistence of infectious diseases** are poverty, illiteracy, ignorance, poor sanitation, inadequate housing, social inequity, low status of women, limited access to health care, rapid urbanization etc. While infectious diseases continue to be a major public health problem, the prevalence of **non- communicable diseases** that include heart disease, diabetes, cancers and obesity is on the rise. This is due to change in life styles and diet, increased use of tobacco and alcohol and increased longevity of life.

10.4 Factors affecting Health and Disease

Public health practice is based on scientific information on factors affecting health and disease. **Factors affecting health and disease** are:

(a) **Nutrition:** The health of a community is linked to the diet of the community. We are aware of the relation between undernutrition and infectious diseases. The inverse relation between under nutrition and infection is the major cause of death and morbidity in young children. On the other hand consumption of a diet rich in fats and low in whole cereals, fruits and vegetables leads to non communicable diseases like heart disease, diabetes, obesity and cancers.

(b) **Environment**: Environment refers to the physical, chemical, and biological factors external to a person. The environment influences our health in many ways — through exposures to physical, chemical and biological risk factors. Exposure to

outdoor and indoor air pollution has been linked to many diseases, in particular pneumonia among children and chronic respiratory diseases among adults. Unsafe water and inadequate disposal of waste are important causes of diseases like diarrhoea, typhoid and other gastrointestinal diseases. Exposure to noise pollution, radiation and chemicals affect the health of communities. Control of environmental factors is an important part of public health practice.

(c) **Occupation**: Occupational health is closely linked to public health. Workers are exposed to high concentration of pollutants in the work place. They are also at increased risk of injuries. Major work-related illnesses are chronic obstructive pulmonary diseases, asthma, injuries, lung cancer, leukemia, hearing loss and back pain. Protecting and promoting the health of workers is the primary aim of occupational health.

(d) **Socio-economic conditions:**

i) *Income*: The economic status determines the purchasing power, living conditions, family size and thus pattern of disease. The poor are more prone to infectious disease because of their low income, they have poor nutrition and they are exposed to unsanitary conditions. Also their ability to seek health services is low. However, diseases such as heart disease, diabetes and obesity are more likely in the affluent.

ii) *Education*: The health status of more educated is usually better than those who are illiterate or less educated. The more educated are also more likely to utilize health care services in case of illness.

(e) **Lifestyle:** The way people live is an important determinant of health. Their decision about diet, exercise, smoking, alcohol intake etc. plays an important role in occurrence of disease. Lifestyle is learnt through social interaction with parents, peer groups, friends and family. It can also be modified by the mass media. The achievement of health requires the adoption of healthy lifestyles.

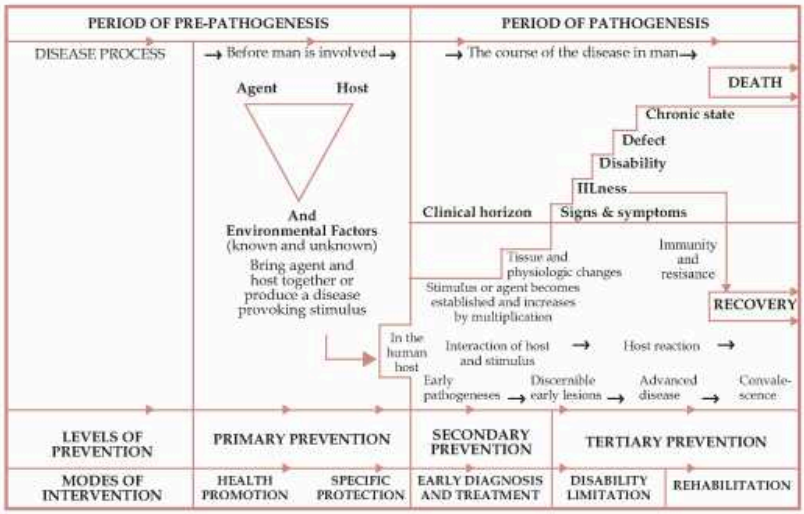
10.5 Natural History of Disease

Disease results from a complex interaction between man, agent or cause and the environment. The natural history of disease is the way in which a disease evolves over time from the earliest stage to its termination as recovery, disability or death.

Pre-pathogenesis phase: This is the phase before the onset of disease. Factors that favour interaction of agent with the human host are present. The causative factors of diseases have been classified as **agent, host and environmental factors**. The interaction of the three determines the onset of disease process.

Pathogenesis phase: This phase begins with the **entry of the disease agent** in the susceptible human host. In this phase, the agent (if an infectious agent) multiplies in the host and induces changes. In the early stage there may be no symptoms which develop later and the disease is manifest. This phase ends with one of the **three outcomes**: recovery, disability or death. The pathogenesis phase may be modified by **interventions** (e.g. chemotherapy, immunization, surgery etc.).

In some diseases the agent may not be identified or established. There may be many factors in the causation of the disease, and then the term **'risk factor'** is used. Risk factor is defined as **an attribute or exposure, significantly associated with development of a disease**. It can be modified by interventions, so as to reduce the possibility of disease (E.g. High blood pressure, diet rich in saturated fats, lack of exercise are risk factors for heart disease).



10.6 The Four Levels of Prevention

The concept of prevention has become broad based. Based on natural history of disease **four levels of prevention** are defined. These are:

(a) **Primordial prevention**: It refers to the prevention of risk factors in population groups in which they have not yet appeared. It is purest form of prevention and this concept is applied in the prevention of chronic diseases. E.g. Adoption of healthy lifestyles during childhood to prevent the development of risk factors

like overweight which can lead to chronic diseases such as heart disease, diabetes, stroke etc. in adulthood.

(b) **Primary prevention**: It is action taken before the onset of disease. It calls for action at the pre pathogenesis phase of the disease. This is further classified as:

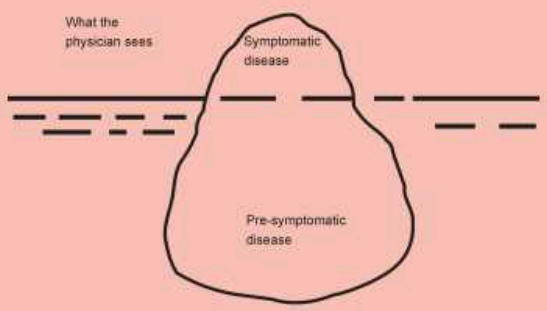
i) **Health promotion**: This includes general measures that promote health e.g. health education and improvement in environmental conditions. Thus it is not disease specific; it is based on non- specific measures.

ii) **Specific protection**: This includes specific measures to prevent a particular disease or group of diseases e.g. administration of DPT vaccine to prevent diphtheria, pertusis (whooping cough) and tetanus.

(c) **Secondary prevention**: It is the action taken in the early stage of pathogenesis phase to arrest the progress of disease and prevent complications. This is done by early diagnosis of the disease and treatment. It also helps in prevention of transmission of the infectious agent to others in the community. It is the main intervention in disease control. E.g. a person with cough is subjected for sputum examination for tuberculosis and if positive, is treated with anti tuberculosis drugs.

(d) **Tertiary prevention**: It is the action taken to reduce or limit disability and minimize suffering caused by the disease. This is done when the disease has crossed the early stage that is in the late pathogenesis phase. E.g. a child whose limb has been paralyzed by poliomyelitis can be rehabilitated by surgery and appropriate aids so that he can walk.

Disease control refers to activities aimed at deducing the incidence of disease, duration of disease, complications of disease and the financial burden caused.



10.7 The Basic Sciences behind Public Health

The basic sciences behind public health are **epidemiology** and **biostatistics**.

Epidemiology

Epidemiology is a science used to describe the distribution, dynamics and determinants of health and disease in human populations. It is defined as study of distribution and determinants of health related states or events in specified populations and application of this study to control health problems. Epidemiology has a wide scope. It not only includes communicable and non-communicable diseases but also covers other **health related issues and events** like injuries, drug abuse, alcoholism, urbanization etc. It measures:

a) **Disease frequency**

Disease frequency refers to measurement of frequency of disease, disability or death and health related events in populations or sub groups of population in relation to possible causal factors. This tells us about the likely causes related to disease. E.g. prevalence of undernutrition is more in children less than 5 years, therefore supplementary nutrition programmes like the Mid Day Meal programme are targeted for this age group.

b) **Distribution of disease**

Distribution of disease and health are not uniformly distributed in populations. The distribution of these in relation to time, place and person is studied. This refers to knowing if there has been an increase or decrease in the disease occurrence over time; if it is more common in certain areas or more in a particular age group or gender. This leads to undertaking measures for control of disease. E.g. malaria transmission is more in the rainy season due to collection of water in which larva of mosquitoes breed; so cleaning of drains is done before the rains to prevent collection of water.

c) **Determinants of disease and health related events**

These are identified by observing the pattern of distribution and verifying the cause-effect relationship. This knowledge is used in the prevention and control of health problems and promotion of health. E.g. smoking is a risk factor for the occurrence for lung cancer. This has been inferred from epidemiological studies.

10.8 Immunization

Immunization is the process by which a person is made immune or resistant to an infectious disease by artificial means. This may be by administration of a vaccine, immunoglobulin or antitoxin. Immunization may be active or passive.

Active immunization is when the body's immune system is stimulated to produce the immune response. The immunity usually appears after an interval of 2-3 weeks (at the first time of immunization). The immunity lasts for a long time.

Passive immunization is the process of conferring immunity by administering pre-formed antibodies of human or animal origin. There is no time lag between the administration and the appearance of immunity. It lasts for a short period of time. It may cause hyper sensitivity reactions in some cases. E.g. **rabies anti serum** is given in cases of dog bite.

Vaccines

Vaccines are substances designed to produce specific protection against a given disease. They stimulate the body's own immune system to protect the person against subsequent infection or disease. Vaccines are classified as:-

(a) **Live vaccines:** These are prepared from live organisms that have been attenuated (by repeated passage in laboratory tissue cultures). They lose their ability to cause full blown disease. But they retain their ability to produce an immune response. Live vaccines are more potent than killed vaccines. Examples of live vaccines are BCG vaccine, measles vaccine, oral polio vaccine etc.

(b) **Killed vaccines (inactivated vaccines)**: These are prepared from organisms that have been killed by heat or chemicals. These are usually less efficacious than live vaccines. So, they require 2-3 doses to produce a primary response. Duration of immunity varies from months to years. So, booster doses need be given. However, they are safer than live vaccines. Examples are Pertusis vaccine, Inactivated Polio Vaccine.

(c) **Toxoids:** These are toxins produced by organisms that have been modified. The capacity to stimulate production of anti-toxin is retained, while the toxic effect is lost. Toxoids are efficacious and safe. E.g. Tetanus toxoid vaccine, Diphtheria vaccine.

(d) **Sub-unit vaccines**: These vaccines are prepared from the cellular fraction of the organisms. E.g. Meningococcal vaccine is produced from the polysaccharide fraction of the cell wall.

(e) **Combined Vaccines**: More than one immunizing agent is constituted in one vaccine. This reduces the number of shots given to the child. This reduces the cost and the number of times the beneficiary has to go to the health system. E.g. DPT vaccine (a combination of Diphtheria, Pertusis and Tetanus vaccines).

(f) **Immunoglobulins:** Immunoglobulins are antibodies produced by the body in response to antigen. Immunoglobulin preparations are used as means for passive immunization. These include:

- **Normal Immunoglobulin**, which are derived from normal healthy individuals (obtained from a pool of at least 1000 donors); and
- **Specific Immunoglobulins**, which have high antibody content against a specific infectious agent. These are made from plasma of patients who have recently recovered from the specific infection or who have been immunized against the specific disease. E.g. **Hepatitis B specific Immunoglobulin** (given to babies born to mothers with Hepatitis B infection).

(g) **Antitoxins** : It is an antibody derived from the serum of animals after stimulation with specific antigens and used to provide passive immunity.

The Cold Chain

The **Cold chain** is a system of storing and transporting vaccines at the recommended temperature from the point of manufacture to the point of use. It is important to maintain the cold chain as vaccines lose their potency if not transported or stored at the required temperature. Oral Polio Vaccine is the most heat sensitive vaccine while BCG and Measles vaccine are to be used within hours of being reconstituted. The DPT, DT, TT and Hepatitis B vaccines are damaged on freezing.

Cold Chain equipment

There are equipments of different capacity that are used for **storage** of vaccines at different levels. These are:

(a) **Walk-In- Coolers**: These are used for bulk storage of vaccines at state and regional stores. They maintain a temperature of 2-8 degrees centigrade.

(b) **Deep freezers:** – These are used for storing OPV and Measles vaccines. They are also used to make freezing ice packs. In case of power failure, it can maintain temperature for 18-26 hours (if not opened).

(c) **Ice Lined Refrigerator (ILR)**: These refrigerators are top opening. They can maintain temperature for 24 hour period even with as little as 8 hours continuous electric supply in one day. This is due to a **lining of water containers** fitted all around the walls. While the refrigerator is operating, the water in the container freezes. If the electric supply fails, the ice lining keeps the inside temperature at a

safe level for the vaccines. The **bottom of ILR** is the coldest place. Measles vaccine and OPV are kept here. The DPT, DT, TT and BCG vaccines should not be kept directly on the floor of ILR (they can get frozen and get damaged). These are kept in baskets, in the **top section of the ILR**. In the top section a temperature of 2-8 degrees is maintained.

The equipment used for vaccine **transport** are:

(a) **Cold boxes**- These are big insulated boxes, used for transport of vaccines. They are available in two sizes. Before the vaccines are placed in the cold boxes, **fully frozen ice packs** should be placed at the bottom and sides of the cold box. The vaccines should be placed in **cartons or polythene bags** and then placed in the cold box. The vaccines should be covered with a layer of fully frozen ice packs. The cold box is then closed.

(b) **Vaccine carriers**- These are used for carrying small quantities of vaccines to the **sub centers** or villages by health workers. These are made of insulated material. **Four ice packs** are laid in the vaccine carrier, the vaccine vials are placed and the lid is tightly closed.

The Expanded Programme on Immunization

EPI was launched in India in 1978 to control **Vaccine Preventable Diseases (VPDs)**. Initially, six diseases were selected: diphtheria, pertussis (whooping cough), tetanus, poliomyelitis, typhoid and childhood tuberculosis. Measles vaccine was included later in the programme and typhoid vaccine was discontinued. The aim of EPI was to cover 80% of all infants. Subsequently, the programme was universalized and renamed as **Universal Immunization Programme (UIP)** in 1985. The UIP envisages achieving and sustaining universal immunization coverage in **infants** (with three doses of DPT and OPV and one dose each of measles vaccine and BCG); and in pregnant women, (with two primary doses or one booster dose of TT). The UIP requires a reliable cold chain system for storing and transporting vaccines. Also India has to attain self-sufficiency in the production of all required vaccines.

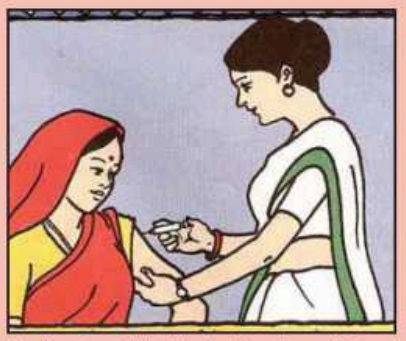


Fig: *Keep in mind the life situation of your client and advise appropriate immunization.*

National Immunization Schedule (NIS) for Infants, Children and Pregnant Women

Vaccine	When to give	Dose	Route	Site
For Pregnant Women				
TT-1	Early in pregnancy.	0.5 ml	Intra-muscular.	Upper Arm.
TT-2	4 weeks after TT-1.	0.5 ml	Intra-muscular.	Upper Arm.
TT- Booster	If received 2 TT doses in a pregnancy, within the previous 3 years.	0.5 ml	Intra-muscular.	Upper Arm.
For Infants				
BCG	At birth; or as early as possible till one year of age.	0.1ml (0.05ml until 1 month age)	Intra-dermal.	Left Upper Arm.
OPV-0	At birth; or as early as possible within the first 15 days.	2 drops	Oral	Oral
OPV 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks.	2 drops	Oral	Oral
DPT1,2 & 3	At 6 weeks, 10 weeks & 14 weeks.	0.5 ml	Intra-muscular.	Antero-lateral side of mid thigh.
Measles	9 months to 12 months (give up to 5 years, if not received at 9-12 months age).	0.5 ml	Sub-cutaneous.	Right upper Arm.
Vitamin A (1stdose)	At 9 months with measles.	1 ml (1 lakh IU)	Oral	Oral.
For Children				
DPT booster	16-24 months.	0.5 ml	Intra-muscular.	Antero-lateral side of mid-thigh.
OPV Booster	16-24 months.	2 drops	Oral	Oral
Vitamin A* (2nd to 9th dose)**	16 months with DPT/ OPV booster. Then, one dose every 6 months, up to the age of 5 years.	2 ml (2 lakh IU)	Oral	Oral
DT Booster	5-6 years.	0.5 ml.	Intra-muscular.	Upper Arm.
TT	10 years & 16 years.	0.5 ml	Intra-muscular.	Upper Arm.

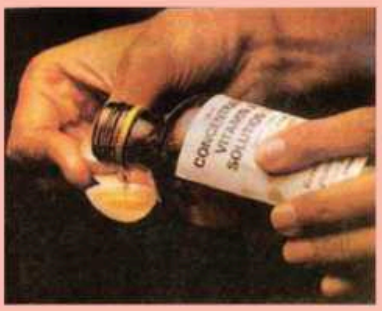


Fig: Vitamin-A Concentrate: *The sealed bottle has a shelf life of one year at room temperature. However, once opened, the bottle should be utilized with in 6 to 8 weeks. Keep vitamin-A solution away from sunlight. Give one dose of one lakh IU to infants of 6 to 11 months of age. Give six monthly doses of two lakh IU to children of 1 to 5 years of age.*

Fig: Prevention of Vitamin-A deficiency*: advise people to consume foods that are rich in Vitamin-A (Papaya, carrot, green leafy vegetables, mango etc.).*

Eradication of Poliomyelitis

Poliomyelitis (polio) is a highly infectious viral disease. It mainly affects young children. The virus is transmitted through contaminated food and water. It **multiplies in intestine**, from where it can invade the nervous system. Many infected people have no symptoms. But they excrete the virus in their faeces, transmitting the infection to others. **Symptoms of polio** include fever, fatigue, headache, vomiting, stiffness in the neck, and pain in the limbs. In a small proportion of cases, the disease causes paralysis, which is often permanent. There is **no cure for polio**. The disease can be prevented by immunization with polio vaccine. Oral polio vaccine (OPV) was developed in 1961 by **Dr Albert Sabin**. OPV is highly effective, safe and inexpensive vaccine.

Global Polio Eradication Initiative

In 1988, World Health Assembly adopted a resolution for worldwide eradication of polio. The number of cases has fallen by over 99%. In 2008, only four countries in the world remain polio-endemic, down from more than 125 in 1988. The remaining countries are

Afghanistan, India, Nigeria and Pakistan. Persistent pockets of polio transmission are in northern India, northern Nigeria and the border between Afghanistan and Pakistan. They are now the current focus of polio eradication initiative.

The **strategies** for eradication of poliomyelitis are:

Routine immunization: Immunization coverage with four doses of OPV in the **first year of life**.

Mass campaign: Supplementary doses of OPV to all **children under five years** of age during **Pulse Polio Immunisation** through National or Sub-National Immunisation Days.

Surveillance for wild poliovirus: All cases of **acute flaccid paralysis** (AFP) are reported and laboratory investigation done for poliomyelitis virus.

Mopping up: OPV given to all children less than five years in **two rounds** (at an interval of 4-6 weeks) in a **target area**. It is conducted when the polio transmission is limited to a small area or when a case of polio is detected.

Polio eradication in India: National Pulse Polio Immunisation campaign was launched in 1995-1996. The number of polio cases declined from 3,263 in 1995 to 66 in 2005. However, in 2006, 676 cases were reported. In 2008, the country reported 559 cases, of which 75 were of (most dangerous) type-1 Polio and 484 type-3 Polio. In 2009, 733 cases were reported, 80 of type 1 and 653 type 3. Majority were reported from **endemic states of Uttar Pradesh and Bihar**. A further decline was seen in the year 2010 - 42 cases were recorded.

Fig: *Pulse Polio vaccination for eradication of poliomyelitis. This is a national priority, in which all health care workers should participate.*

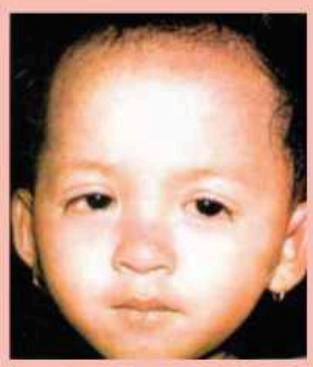


Fig: Child suffering from measles: *red eyes with watering, rash on the spin of the face and fever are some of the symptoms. Measles drags the child into other health & nutritional problems. So, preventing measles is important, by giving immunization at appropriate age.*

10.9 National Health Programmes

A **programme** is an organized set of activities directed towards the achievement of defined objectives. The National Health Programmes were started to address major health problems in the country, as a part of national planned development after independence.

10.9.1 Revised National Tuberculosis Control Programme

Tuberculosis (TB) is an infectious disease caused by **Mycobacterium tuberculosis**. It is spread through the air by a person suffering from TB. It is primarily a disease of lungs. But it can also affect intestines, meninges, bones, joints, lymph nodes etc.

Developing countries account for 95% of the world's TB cases. **India accounts for one third of global burden of TB**. Around 2 million diagnosed every year, 0.5 million die. Thus, tuberculosis is a major public health problem in India. Malnutrition, overcrowding, poor sanitation, poverty, tobacco smoking, alcoholism are factors associated with TB. Now-a-days, HIV infection is the strongest risk factor for tuberculosis.

Relation between TB and HIV

Tuberculosis is one of the earliest **opportunistic diseases** that develop in persons infected with HIV. HIV debilitates the immune system, increasing the person's vulnerability to TB. An HIV positive person is six times more likely to develop TB disease. Tuberculosis can be cured, even among HIV-infected persons.

Cough, fever, weakness, loss of weight, presence of blood in sputum, chest pain, etc are the **symptoms of TB**. Tuberculosis can be diagnosed by microscopic examination of sputum and X-ray of chest. Modern anti-TB treatment can cure virtually all patients. However, it is very important that treatment has to be started early. Also, **treatment should be taken for a minimum of 6 months**. Because treatment is of a long duration and because patients feel better after about 1-2 months of the treatment; many TB patients discontinue the treatment.

The **National Tuberculosis Control Programme** was started in 1962. A review in 1992 revealed poor performance of the programme. Only 30% of cases were being diagnosed and only 30% were completing their treatment. So, **Revised National Tuberculosis Control Programme (RNTCP)**, based on the **Directly Observed Treatment- Short Course (DOTS)** strategy. **Objectives of RNTCP** are:

i) to cure at least 85% of all newly detected infectious cases of pulmonary tuberculosis, and

ii) to detect at least 70% of estimated new sputum smear positive tuberculosis cases.

DOTS strategy

DOTS strategy includes the following:

→ **Case detection by sputum microscopy**: Any person having cough for more than two weeks should have **2 sputum samples** examined for **acid fast bacilli**.

→ **Categorization of cases**: done on the basis of sputum examination. If even one sputum examination result is positive, the patient is labeled as **'smear positive pulmonary tuberculosis'**. If the sputum is negative, **X ray of chest** is done. If X-ray is suggestive of tuberculosis, treatment with anti tubercular drugs is started. The drugs are given thrice weekly in two phases - **intensive phase** and **continuation** phase.

→ **Regular and uninterrupted supply** of drugs: drugs are supplied in prefixed doses in blister packs. Drugs for each patient's full course of treatment are supplied in a box.

→ **Direct observation:** every dose of treatment in intensive phase and at least the first dose in continuation phase of treatment is directly observed. That means, the patient has to swallow the medicine in presence of health worker.

→ **Systematic evaluation and monitoring:** treatment results of each and every patient is assessed.

By March 2006, the entire country has been covered under Revised National TB Control Programme It has consistently achieved treatment success rate of more than 85%.

The World Health Organization has developed a strategy for control of TB. This is called Directly Observed Treatment, Short-course or DOTS. In areas covered by the DOTS programme, a health worker or a volunteer watches a TB patient swallow the tablets in his/her presence. There are certain other benefits of DOTS as well. A health worker ensures that the patient receives a regular supply of medicines. These medicines need to be taken only thrice or twice in a week. The worker also keeps close watch on the patient's progress and looks for any side effects of anti-TB medicines.

If a patient is not living in an area served by DOTS, the following tips may be helpful:

Take medicines at an appointed time everyday.

Ask a family member or a friend to remind you everyday (people have tried reminding through telephone and even used SMS services of cell phones).

Put a mark through the day on your calendar each day after taking your medicines.

10.9.2 National Vector Borne Diseases Control Programme

National Vector Borne Diseases Control programme (NVBDCP) is the common programme for the prevention and control of **vector borne diseases** (i.e. Malaria, Dengue, Lymphatic Filariasis, Kala-azar, Japanese Encephalitis and Chikungunya) in India.

Malaria Control

The National Malaria Control Programme was launched in 1953 and converted to **National Malaria Eradication Programme** in 1958. It achieved success initially but due to some constraints there was resurgence of malaria. In 1977 a **Modified Plan of Operation** was started. Since 2003-04 the ongoing programmes on malaria, filaria and kala-azar have been converged and Japanese encephalitis and dengue have been included under the **National Vector Borne Diseases Control Programme.** Chikungunya fever has also been added under this programme. These are diseases transmitted by **insect vectors**. Kala azar is transmitted through sand fly. In others, different kinds of mosquitoes are the vectors.

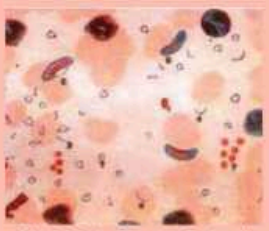


Fig: Malaria Parasite: Patient's blood smear.

Malaria is a serious disease caused by parasites known as **Plasmodium** vivax, Plasmodium falciparum, Plasmodium malariae and Plasmodium ovale. It is transmitted by the infective bite of **Anopheles mosquito**. Man develops disease after 10 to 14 days of being bitten by an infective mosquito. Plasmodium vivax and Plasmodium falciparum, are the most commonly reported parasites from India. Infection with P.falciparum is the most deadly form of malaria.

Inside the human host, the parasite undergoes a series of changes as part of its complex life cycle. The parasite completes its life cycle in liver cells and red blood cells. Around 1.8 million cases of malaria (including 0.86 million P. falciparum cases) are being reported in India every year.

Malaria produces fever, headache, vomiting and other flu-like symptoms. As the parasite infects and destroys red blood cells, the patient becomes anemic. Symptoms of severe malaria are high fever with **prostration (inability to sit)**, altered consciousness or coma. Breathing difficulties, generalized convulsions or fits or severe anemia can also occur.

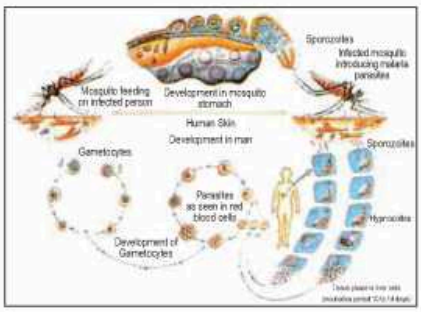


Fig: Life cycle of malaria parasite (Plasmodium vivax).

The Malaria control strategies are:

1. **Early Case Detection and Prompt Treatment (EDPT)**

   EDPT is the **main strategy** of malaria control. **Radical treatment** is necessary for all the cases of malaria to prevent transmission of malaria. In cases positive for P falciparum, **Chloroquin** is given for 3 days and **Primaquine** is given as single dose on the first day. Cases positive for P vivax are given Chloroquin for 3 days and Primaquine for 14 days to prevent relapse. **Drug Distribution Centres** (DDCs) and **Fever Treatment Depots** (FTDs) have been established in the rural areas. Alternative drugs are given for **chloroquine resistant malaria**.

2. **Vector Control Methods**

- Use of **Indoor Residual Spray** (IRS) with insecticides recommended under the programme.
- Use of **chemical larvicides** (like abate) in water.
- **Aerosol space spray** during day time.
- **Malathion fogging** during outbreaks of malaria.
- Use of **larvivorous fish** in ponds, ornamental tanks, fountains etc.

3. **Personal Prophylatic Methods**

- Use of **mosquito repellent creams**, liquids, coils, mats etc.
- **Screening** of the houses with wire mesh to prevent entry of mosquitoes.
- Use of **bed nets treated with insecticides**, to improve their efficiency.
- Wearing **clothes** that cover maximum surface area of the body

4. **Environmental Management and Source Reduction Methods**

- Source reduction i.e. filling of the breeding places.
- Proper covering of stored water.
- Sensitizing and involving the community for detection of Anopheles **breeding places** and their elimination.
- Involving NGOs in programme strategy and implementation.

If the intricacies of malaria control are to be understood, we should know the different **stages of mosquito's life cycle**. The stages are depicted in the figure below.

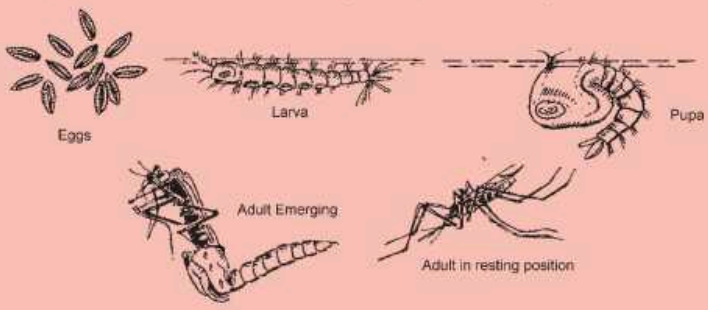


Fig: Life cycle of mosquito: egg, larva, pupa and mosquito.

Dengue

Dengue is a viral disease caused by the **Dengue virus**. It is transmitted by bites of **Aedes aegypti mosquito**. It is a black mosquito with white stripes. It is a day biter that mainly feeds on human beings in domestic situations. It breeds in any type of **man-made containers** (desert coolers and storage tanks). Man develops the disease after 5-6 days of being bitten by an infective mosquito.

Dengue occurs in two forms: **Dengue Fever** and **Dengue Haemorrhagic Fever** (DHF). Dengue Fever is a severe, flu-like illness. Dengue Haemorrhagic Fever (DHF) is a more severe form of disease, which may cause death. Disease is prevalent throughout India in most of the metropolitan cities and towns. Outbreaks of dengue have been reported from rural areas also.

Prevention is better than cure. No drug or vaccine is available for the treatment of Dengue/ DHF. The **control of Aedes aegypti mosquito** is the only method of choice. With early detection and proper case management, mortality can be reduced. **Methods for prevention & control** are:

1. **Personal Prophylactic Measures**

- Use of **mosquito repellent** creams, liquids, coils, mats etc.
- Wearing of full sleeve shirts and full pants with socks.
- Use of **bed nets** for sleeping infants and young children during day time to prevent mosquito bite.

2. **Biological and Chemical Control**

- Use of **larvivorous fish** in ornamental tanks, fountains, etc.
- Use of biocides.
- Use of **chemical larvicides** (like abate) in big breeding containers.
- **Aerosol space spray** during day time.

3. **Environmental Management, Source Reduction etc.**

- Detection and elimination of mosquito breeding sources.
- Management of **roof tops**, porticos and sunshades.
- Proper covering of stored water.
- Observation of **weekly dry day**.
- **Health education** to common people regarding the disease and vector

Fig: Drain the water tanks & desert coolers once a week. *That removes any eggs laid by the mosquitoes in the water, before they complete their life cycle.*

through various media sources like Television, Radio, Cinema slides, etc.

- **Involving the community** for detection of Aedes breeding places and their elimination.

Japanese Encephalitis

Japanese Encephalitis (JE) is caused by a **flavivirus**. It is transmitted by infective bites of female mosquitoes mainly belonging to **Culex group**. They breed in rice fields, shallow ditches and ponds. Mosquitoes become infected by the virus when they feed on pigs and birds. **Pigs play the role of amplifier host**. They allow virus multiplication within their body, without actually suffering from the disease. They maintain **prolonged viraemia** and infect the mosquito when they bite. Japanese encephalitis virus is **not transmitted from person-to-person**.

JE virus infection causes fever and neurological symptoms. Symptoms include headache, fever, neck rigidity, disorientation, coma, tremors, paralysis (generalized), etc. There is **no specific treatment** for JE. **Clinical management is supportive**. It is directed at maintaining fluid and electrolyte balance and control of convulsions, etc.

Inactivated Mouse Brain-Derived JE Vaccine is available against JE in India. Three doses of the vaccine provide immunity, which lasts a few years.

Preventive measures include reducing the mosquito density and using insecticide treated mosquito nets. The reduction in mosquito breeding requires **ecological management**. The role of insecticides is limited.

Kala-azar

Kala-azar is a slow progressing disease caused by a protozoan ***Leishmania donovani***. The parasite lives in bone marrow, spleen and liver. Kala-azar is a vector borne disease that spreads by **sandfly** of genus Phlebotomus argentipes. Sand flies are small insects, about one fourth the size of a mosquito. The patient has recurrent fever, loss of appetite, pallor and weight loss. There is enlargement of spleen and liver. Kala-azar is treated by drugs like Sodium stibogluconate & Amphotericin-B.

Vector control is achieved through **residual insecticide spray** with DDT, up to 6 feet height from the ground, twice a year.

Filariasis

Filariasis is caused by **coiled and thread-like parasitic worms** belonging to the family filaridae. These parasites after getting deposited on skin penetrate on their own or through

the opening created by mosquito bites to reach the lymphatic system. The disease is caused by the parasites Wuchereria bancrofti and Brugia malayi. These parasites are transmitted by Culex and Mansonia mosquitoes.

Lymphatic Filariasis (commonly known as **elephantiasis**) is a disfiguring and disabling disease. It is usually acquired in childhood. In the early stages, there are no specific symptoms. The long term physical consequences are ***painful swollen limbs*** (lymphoedema or elephantiasis). Swelling of the scrotum (**hydrocele**) in males, is common in endemic areas.

The National Filaria Control Programme (NFCP) was launched in the country in 1955. The main control measures were mass administration of the drug Di-ethyl Carbamazine (DEC), anti-larval measures in urban areas and indoor residual spray in rural areas. Anti-parasitic measures include detection and treatment of **microfilaria carriers & diseased persons** with DEC at **Filaria Clinics**.

The National Health Policy goal is to eliminate lymphatic filariasis from India by 2015. The strategy is:

- **Single day mass therapy with DEC** given to all members of community (except children less than 2 years and pregnant women).
- Management of acute and chronic cases.
- Information Education and Communication (IEC) for the community to undertake preventive measures for filaria control.
- Anti vector measures.

10.9.3 National Leprosy Elimination Programme

Leprosy affects skin, mucous membranes and peripheral nerves that can lead to deformities. Leprosy produces social & psychological problems. That is why leprosy is important in public health.

Leprosy is caused by **Mycobacterium leprae**, which resembles Mycobacterium tuberculosis. The **reservoir** of leprosy is an infectious leprosy patient who is in prolonged contact with healthy persons. Only 20% of leprosy patients are infectious to others.

Leprosy bacilli multiply very slowly. So, they have very weak potential of causing the disease. With modern **Multi Drug Therapy** (MDT), leprosy patients become non-infectious very rapidly, so there is no threat of disease transmission to others. It takes **six months to one year of complete treatment with MDT** to cure pauci-bacillary & multi-bacillary type of patients. Under the programme, **domiciliary treatment** (treatment at home) is advised.

National Leprosy Control Programme was launched in 1955 through early detection of cases and treatment with the drug Dapsone. It did not succeed due to very long duration of treatment and irregular compliance by patients. **National Leprosy Eradication Programme** was launched in 1983 with the objective to arrest the disease activity in all the known cases of leprosy. In 1991 the World Health Assembly resolved to eliminate leprosy at a global level by the year 2000.

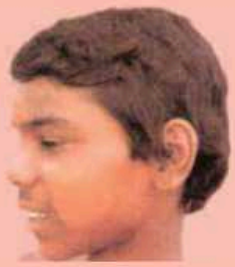


Fig: Anaesthetic patch on the right cheek. It is a leprosy patch. Test it for pain & touch sensation. If the sensations are lost, refer him for investigations.

The National Leprosy Eradication Programme introduced **Modified Leprosy Elimination Campaign** in 1997-98. Whole country has been covered by MDT and prevalence of Leprosy declined from 57 per 10,000 in 1983 to 0.95 per 10,000 in 2005. Thus, **elimination goal has been achieved at national level**.

But still some districts/blocks are having leprosy problem. **Block Leprosy Awareness Campaign** (BLAC) are being conducted in all these blocks. **Leprosy deformity** is not associated with infectivity of the disease. The patients seen with mutilated hands/feet etc. are already cured cases with no active disease. So, they do not transmit infection to others. They should be rehabilitated in the society and any sort of discrimination should be avoided.

10.9.4 National AIDS Control Programme

Acquired Immune Deficiency Syndrome (AIDS) is caused by the **Human Immunodeficiency Virus (HIV)**. It is transmitted through

- unprotected sexual intercourse with an infected partner,
- transfusion of infected blood or blood products,
- sharing of infected needles, and
- from an infected mother to her baby.

Prevention is the mainstay of the strategic response to HIV transmission in India, as 99 percent population is uninfected. The following have disproportionately **higher incidence of HIV infection**:-

- Female sex workers (FSWs),
- Men who have sex with men (MSM), and
- Injecting drug users (IDUs).

The first case of AIDS was discovered in India in 1986 in Tamil Nadu. Now it has spread to all the states. Nationally, the prevalence of HIV is less than 1%. But we have a large population. So, **India is the country with second largest number of People Living with HIV/AIDS**. In six states the epidemic is classified as a generalized one. These states have >1% of **women attending ante natal care** being infected. Also they have a HIV prevalence of >5% among **STI clinic patients**.

The three Phases of the Programme

The National AIDS Control Programme was started in1987. National AIDS Control Programme **Phase-I** was launched for the period of 1992-99. Its main strategies were:

- **Preventing HIV transmission through blood & blood products**: ensuring blood safety by testing all blood samples for HIV, Hepatitis B, malaria and syphilis.
- **Control of hospital infections**: to prevent transmission in the health care settings.
- Increasing people's awareness about HIV.
- Strengthening **clinical services for STDs/HIV** (HIV is more common among patients suffering from STDs).

Phase II of the programme (1999-2006) included:

- **Targeted interventions**: focus on **high risk groups** (e.g. female sex workers, men having sex with men, intravenous drug users and bridge population).
- School AIDS education programme.
- Voluntary Counseling and Testing Centers, and Parent to Child Transmission Prevention Centers established.
- Free **Anti-Retroviral Therapy** (ART) at selected centers.
- Information Education Communication (IEC) activities.

Phase III of the programme (launched in 2007) focuses on:

- Targeted interventions.
- Control of STDs.
- **Condom promotion**: sexual transmission of HIV can be prevented by condom use.
- **IEC** about the disease, modes of transmission, prevention and control.

- Blood safety.
- **Integrated Counseling and Testing Centers.**
- **Prevention of parent to child transmission**: counseling and testing of all pregnant women for HIV is being done. HIV positive mothers are treated with drugs against HIV to prevent transmission to baby.
- **Anti Retroviral treatment**: the programme makes drugs against HIV available to persons with AIDS.
- Post exposure prophylaxis for health care workers.
- **Surveillance of HIV/AIDS**: to detect the spread of disease and plan strategy for prevention and control.

10.9.5 National Programme for Control of Blindness

Blindness is defined as **inability of a person to count fingers** from a distance of 6 meters (20 feet); or **acuity of vision 6/60 or less** with the best possible spectacle correction. The prevalence of blindness in India is 1.1 percent. The main causes of blindness are:

- Cataract (62 % of blindness in India),
- Refractive errors (20 %), and
- Glaucoma (6%).

Cataract is a term applied when the human lens loses its transparency and become opaque. Hence the light cannot pass through the lens so as to produce a clear image. It cannot be treated by giving medicines. The only treatment of cataract is by **surgery**.

National Programme for Control of Blindness was launched in 1976 with the goal to reduce the prevalence of blindness from 1.4% to 0.3%. **The objectives** of the programme are:

- To reduce the backlog of blindness through identification and treatment of blind.
- To develop **eye care facilities** in every district and develop **human resource** for providing eye care services.
- To secure participation of voluntary organizations in eye care.

The main activities of the programme are:

1. **Cataract surgery by Intra Ocular Lens Implantation**: The blind people are identified and listed. Camps are organized to confirm diagnosis of cataract and are transported to hospital for surgery.

2. **School eye screening**: screening is done in schools to identify children with eye problems. Glasses are provided free of cost to the poor.

3. **Eye banking**: eye donation is encouraged.

4. **Eye care education**.

10.9.6 National Rural Health Mission

The National Rural Health Mission (2005-12) seeks to provide effective healthcare to rural population throughout the country. It specially focuses on 18 states, which have weak public health infrastructure. The key components of the Mission are:

- Train and enhance capacity of **Panchayati Raj Institutions (PRIs)** to own, control and manage **public health services**.
- A **village health plan** is prepared through a local team headed by the **Health and Sanitation Committee** of the Panchayat;
- **Strengthening of Primary Health Centers**, Community Health Centers and rural hospitals for effective curative care. The facilities are required to meet the **Indian Public Health Standards** (IPHS).
- **Integration of vertical Health and Family Welfare Programmes** at National, State, District & Block levels.
- **Developing capacities for preventive health care** at all levels for **promoting healthy life styles**, for reducing consumption of tobacco and alcohol, etc.
- Provision of a female **Accredited Social Health Activist (ASHA)** in each village has been made. She is chosen by Panchayat. ASHA is an honorary volunteer, who receives **performance-based compensation**. She promotes universal immunization. She provides **referral & escort services** for Reproductive and Child Health (RCH), construction of household toilets, etc. ASHA facilitates preparation and implementation of **Village Health Plan**. For this, she works with Anganwadi worker, ANM, functionaries of other departments, Self Help Group (SHG) members. The leadership is provided by **Village Health Committee** of the Panchayat. ASHAs will be available all over the country. Special emphasis is being laid on **18 high focus States**. Government of India bears costs related to training, incentives being given and medical kits given to ASHAs.

10.9.7 Reproductive and Child Health (RCH) Programme

Mother and child health (MCH) is a priority in our country. Mothers include women in the reproductive age group, i.e. 15-49 years of age (19% of population). Child includes

children less than five years of age (17%), school going children (28%) and adolescents. In numbers they together constitute almost 70% of the population. They are a high risk group as maternal and child mortality is very high as compared to the developed world. Improving the health of the mother and child will benefit the whole community and will prevent and decrease premature deaths.

India was the first country to launch a National Family Planning Programme in 1952. In 1969-74 it was made an integral part of mother and child health activities of Primary Health Centers and Sub Centers. It was renamed Family Welfare Programme in 1977. The Reproductive and Child Health Programme was formally launched in October 1997. It covers services for women and children. The Reproductive and Child Health Programme phase II was launched in April 2005.

(a) Services for mothers:

(i) Antenatal care: It is the care given to a pregnant mother. This includes:

- early registration during pregnancy.
- three or more antenatal check ups - during each check up, the mother is asked about complaints during the present pregnancy. The weight and blood pressure of the preganant lady are measureed and physical examination is done.
- iron and folic acid tablets to prevent and treat anemia are given.
- two doses or a booster of tetanus toxoid vaccine are given.

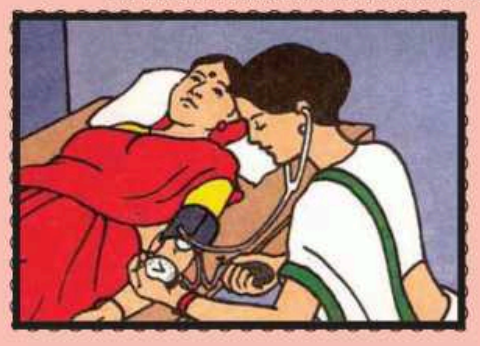


***Fig: Monitoring pregnant women's blood pressure** is very important. This detects eclampsia & pre-eclampsia, which are well manageable when detected early.*

(ii) **Care during child birth**: all deliveries should be conducted in a hospital or health centre and by skilled birth attendants. Five cleans should be observed at the time of delivery.

- Clean hands
- Clean surface
- Clean cord tie
- Clean razor blade
- Clean cord stump

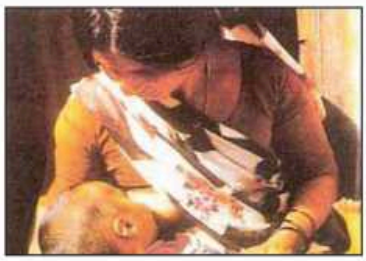


Fig: Breast feeding: *Promoting breast feeding is a priority of every health worker. Colostrum is rich in immunoglobulin and vitamin-A. That is why mother should be advised not to discard it.*

(iii) **Postnatal care**: Post natal period begins from the birth of the baby to 6 weeks after delivery. It is the care of mother and newborn in this period. At least 3 post natal check ups should be done by a doctor or female health worker. During each check up the mother is asked about any complications and both the mother and baby are examined. The mother is advised about -

- Diet with extra calories, protein and iron
- Personal and perineal hygiene
- Iron and folic acid tablets
- Breastfeeding
- Care of the baby
- Family planning

Fig: *ANM addressing a group of Reproductive Age Group (RAG) Women.*

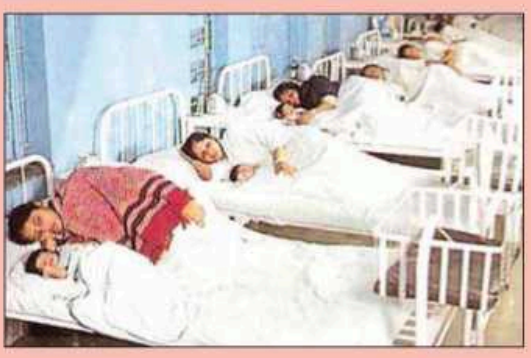


*Fig: **Baby friendly hospital initiative** (BFHI): the baby sleeps besides the mother.*

(b) **Package for Newborn and Child health includes:**

Skilled care at birth: The following to be done to all new borns:

- umbilical cord to be cut by a new blade,
- the cord to be tied by a clean thread,
- cleaning of respiratory passages,
- body temperature to be maintained,
- eyes and skin to be cleaned,
- weight to be recorded, and
- breast feeding to be started within one hour of birth.

Integrated Management of Child Illness (IMCI) Strategy:

Five childhood illnesses- Pneumonia, diarrhoea, measles, malaria and malnutrition are recognized as the **cause of 70% of deaths** in children less than five years. Most of the children present with overlapping symptoms and signs of diseases. This makes a single diagnosis difficult or even inappropriate. To meet this challenge, a strategy known as **Integrated Management of Childhood Illness** (IMCI) was evolved. It is an integrated approach to child health that focuses on the well-being of the whole child. The **IMCI strategy** includes three main components:

- Improving **case management skills** of health-care staff,
- Improving the **health care service systems**, and
- Improving **family health practices** & community health practices.

In health facilities, the IMCI strategy promotes the accurate identification of childhood illnesses in outpatient settings, ensures appropriate combined treatment of all major illnesses, strengthens the counseling of caretakers, and speeds up the referral of severely ill children.

In the home setting, it promotes appropriate care seeking behaviours, improved nutrition and preventative care, and the correct implementation of prescribed care. India has adapted the **Integrated Management of Neonatal and Childhood Illness (IMNCI)** which includes the newborn less than 7 days that were not included in IMCI.

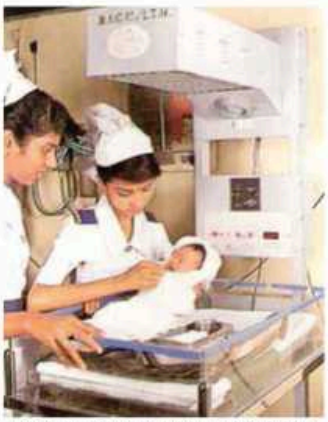


Fig: Care of the new born: *Facilities are being developed for neonatal care under the RCH programme. Special care can substantially reduce neonatal deaths.*

(c) Other services under RCH programme

- Family planning services,
- Reproductive and sexual health services for adolescents, and
- Prevention and management of **reproductive tract infections** (RTIs) and **sexually transmitted infections** (STIs).

10.9.8 National Cancer Control Programme

Cancer is an important public health problem. In India, 8 to 9 lakh cases are occurring every year. At any point of time, there are nearly 25 lakh cancer cases in the country. Every year, about 4 lakh deaths occur due to cancer. About **40% of cancers in the country are related to tobacco** use (smoking or chewing tobacco products). Population based registries are maintained under **National Cancer Registry Programme**. The leading sites of cancer among men are cancer of oral cavity, lungs, oesophagus and stomach. Leading sites among women are cervix of the uterus, breast and oral cavity. **Oral and lung cancers in males**; and **cervical and breast cancers in females** account for more than 50% of all cancer deaths in India.

To collect data on cancer, **National Cancer Registry Programme** (NCRP) was initiated in 1982 by Indian Council of Medical Research (ICMR). **Population-based registries** take sample population in a geographically defined area. **Hospital-based registries** take data from patients coming to a hospital. We have 21 Population-based registries and 6 Hospital-based registries.

National Cancer Control Programme was launched in 1975. Earlier, priority was given for equipping the cancer hospitals. Since 1984, stress is being laid on **primary prevention** and **early detection of cancer cases**. Goals and objectives of NCCP are : -

1. **Primary prevention** of cancers by **health education**: hazards of tobacco consumption are explained. **Tobacco** is the most common and preventable cause of cancer.
2. **Secondary prevention** (i.e. early detection and diagnosis of cancers): Cancer of cervix, breast and oro-pharyngeal cancer can be detected by screening methods. Patients' are educated about self- examination of the breast.
3. Strengthening of **cancer treatment facilities**.
4. **Palliative care** in terminal stage of the cancer.

10.9.9 National Programme for Prevention and Control of Deafness

Hearing loss is the most common sensory deficit in humans today. India has 291 persons per one lakh population, who are suffering from severe to profound hearing loss (NSSO, 2001). Of these, a large percentage is children below the age of 14 years. Even larger percentage of population suffers from milder degrees of hearing loss and unilateral (one sided) hearing loss.

Objectives of the national programme

1. To **prevent** the avoidable hearing loss on account of disease or injury.
2. **Early identification**, diagnosis and treatment of ear problems (**Screening camps** for early detection of hearing impairment and deafness).
3. To **medically rehabilitate** persons suffering with deafness.
4. To strengthen the existing **inter-sectoral linkages** for rehabilitation of persons with deafness.
5. To **develop institutional capacity** for ear care services (by providing support for equipment and material and training for the personnel).
6. To undertake **IEC activities** for early identification of hearing impaired, especially among children (for timely management) and to remove the **stigma** attached to deafness.

A pilot project was implemented in 25 districts till March 2008. The programme is to be expanded to 203 districts, by the end of eleventh five year plan.

10.9.10 National Programme for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS)

National Programme for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS) was launched on 4th Jan 2008. Objectives of the pilot phase of the project are:

- Risk reduction for prevention of **Non-Communicable Diseases** (Diabetes, CVD and Stroke).
- Early diagnosis and appropriate management of Diabetes, Cardiovascular Diseases and Stroke.

Strategies

A. Health Promotion activities for General Population

Targeted to healthy, risk free population and involves development of an effective communication strategy to modify individual, group and community behaviour through media. It also focuses on community mobilization and participation and mainstreaming the health promotion agenda to reach till the village level.

1. **Community Based Interventions**: This involves **health education** about benefits of physical exercise and dietary changes.
2. **Workplace Interventions:** For health promotion, by involving peer educators after providing **initial training**.
3. **School Based interventions**: By giving inputs to school health programme (viz. physical education, nutrition and food services, health promotion for school personnel, health education and health services). The programme envisages to make health promotion a defined agenda, in the school curriculum.

B. Services for High Risk Groups

The **high risks groups** are those who suffer from hypertension, obesity, high blood lipid and glucose levels; and those who already had a cerebral or coronary event. They are provided early diagnosis and management services. This reduces morbidity and mortality among them.

Healthcare providers at all levels will be mobilized and trained to involve in risk detection and screening viz. blood pressure checks, recommending lifestyle modifications, dissemination of information and referring for further management.

Special clinic for Diabetes/Cardiovascular disease/Stroke are established at the District Hospital.

Prompt intervention to **manage a cardiac event** can reduce mortality to a large extent. Identification of referral centres and strengthening the linkages are being done.

10.9.11 Integrated Child Development Services (ICDS)

As per 2001 census, India has about 157 million children below the age of 6 years constituting 15.42% of population. The sex ratio among children (0-6 years) is 927 (i.e. 927 females per 1000 males). Many of these children live in economic and social **environment which impedes child's physical and mental development**. These conditions include poverty, poor environmental sanitation, disease, infection, inadequate access to primary health care, inappropriate child caring & feeding practices etc.

The programme of the **Integrated Child Development Services (ICDS)** was launched in 1975. It provides an integrated package of services for holistic development of the child. The objectives of ICDS are :

- To lay the foundation for proper psychological development of the child,
- To improve nutritional & health status of children of 0-6 years of age,
- To reduce incidence of mortality, morbidity, malnutrition and school drop-outs,
- To enhance the capability of the mother and family to look after the health, nutritional and development needs of the child, and
- To achieve effective coordination among various departments to promote child development.

The Scheme provides for converging basic services through community-based workers and helpers. The services are provided at a centre called the '**Anganwadi**' (literally means a courtyard play centre). It is a childcare centre, located within the village. **A package of following six services** is provided under the ICDS Scheme:

1. Supplementary nutrition
2. Non-formal pre-school education
3. Immunization
4. Health check-up
5. Referral services
6. Nutrition and Health Education

Three services (namely immunization, health check-up and referral) are delivered through **public health infrastructure**, under the Ministry of Health & Family Welfare.

Table: ICDS target groups and service providers

Services	Target Group	Services Provided By
Supplementary Nutrition	Children below 6 years; pregnant and lactating mothers	Anganwadi Worker (AWW) & Anganwadi Helper (AWH)
Immunization*	Children below 6 years; pregnant and lactating mothers	Auxillary Nurse Midwife (ANM)/Medical Officer (MO)
Health Check-ups*	Children below 6 years; pregnant and lactating mothers	ANM/MO/AWW
Referral	Children below 6 years; pregnant and lactating mothers	AWW/ANM/MO
Pre-School Education	Children 3-6 years	AWW
Nutrition and Health Education	Women (15-45 years)	AWW/ANM/MO

*(*AWW assists ANM in identifying and mobilizing the target group.)*

1. **Supplementary Nutrition Services**: This includes supplementary feeding, growth monitoring, ***prophylaxis against vitamin A deficiency and control of nutritional anaemia***. All families in the community are surveyed, to identify children below the age of six and pregnant & nursing mothers. Supplementary feeding is given for 300 days in a year. By providing supplementary feeding, the **Anganwadi attempts to bridge the protein energy gap** (the difference between the recommended dietary allowance and average dietary intake) of children and women.

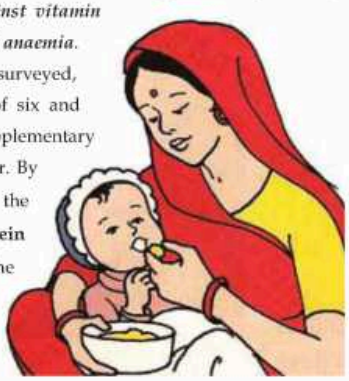


Fig: An infant has a small stomach. But her calories needs are high. So, feed the baby again & again (say, every two hours!).

Growth Monitoring and **nutrition surveillance** are two important

activities that are undertaken. Children below the age of three years of age are weighed once a month and children 3-6 years of age are weighed every quarter. **Weight-for-age growth cards** are maintained for all children below six years. Growth monitoring helps to detect growth faltering and helps in assessing nutritional status. Severely malnourished children are given **special supplementary feeding** and referred to PHCs as and when required.

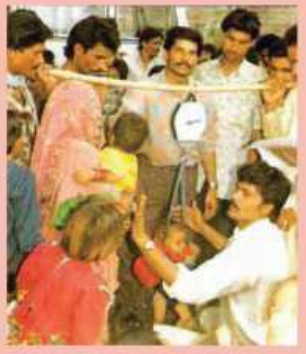


Fig: *Weighing the baby in the field by* ***Salter scale.***

The effort is to provide **daily nutritional supplements** to the extent indicated below:

Beneficiaries	Calories (cal)	Protein (g)
Children 6-72 months	500	12-15
Severely malnourished	800	20-25
Pregnant & Lactating (P&L) Mothers	600	18-20

2. **Pre-School Education Service:** This is for the **three-to six years old children** in the anganwadi. It provide a natural, joyful and stimulating environment for all round development. The methods used are play, group work and development of healthy habits.

3. **Immunisation Service**: Carried out as per the **National Immunisation Schedule** by health worker female. The anganwadi worker helps her in registration, identification and follow up of children.

Fig: Tetanus Toxoid (T.T.) injection: a pregnant woman needs be given TT at least two times.

4. **Health Check up Service**: Done for all pregnant women and children less than six years by the health worker female or Medical Officer.

5. **Referral services**: Severely ill or severely malnourished children are referred to PHC.

6. **Nutrition and Health Education Service**: This is given to women of reproductive age group belonging to 15 to 49 years age. Nutrition education and health education are provided to them by ANM, AWW and Medical officers.

10.10 Millennium Development Goals

The Millennium Development Goals (MDGs) are eight goals to be achieved by 2015. They are drawn from the targets contained in **Millennium Declaration** that was adopted by 189 nations at **UN Millennium Summit** (September 2000). The eight MDGs break down into **quantifiable targets** that are measured by **specific indicators**. The eight goals are listed below: -

Goal 1 : **Eradicate extreme poverty and hunger**

- Target 1a : Reduce by half the proportion of people living on less than a dollar a day.
- Target 1b : Achieve full and **productive employment and decent work** for all, including women and young people.
- Target 1c : Reduce by half the proportion of people who suffer from hunger.

Goal 2 : **Achieve universal primary education**

- Target 2a : Ensure that all boys and girls complete a full course of primary schooling.

Goal 3 : **Promote gender equality and empower women**

Target 3a : **Eliminate gender disparity** in primary and secondary education, preferably by 2005; and at all levels by 2015.

Goal 4 : **Reduce child mortality**

Target 4a : Reduce by two thirds the mortality rate among children under five.

Goal 5 : **Improve maternal health**

Target 5a : Reduce by three quarters the **maternal mortality ratio (MMR)**.

Target 5b : Achieve, by 2015, universal access to reproductive health.

Goal 6 : **Combat HIV/AIDS, malaria and other diseases**

Target 6a : Halt and begin to reverse the spread of HIV/AIDS.

Target 6b : Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it.

Target 6c : Halt and begin to reverse the incidence of malaria and other major diseases.

Goal 7 : **Ensure environmental sustainability**

Target 7a : Integrate the principles of **sustainable development** into country policies and programmes; reverse loss of environmental resources.

Target 7b : Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss.

Target 7c : Reduce by half the proportion of people without sustainable access to **safe drinking water and basic sanitation**.

Target 7d : Achieve significant improvement in lives of at least 100 million **slum dwellers**, by 2020.

Goal 8 : **Develop a Global Partnership for Development**

Target 8a : Develop further an open, rule-based, predictable, non-discriminatory trading and financial system.

Target 8b : Address the special needs of the least developed countries.

Target 8c : Address the special needs of landlocked developing countries and small island developing states.

10.11 Data Collection

Data refers to **discreet observations of attributes or events**. Data as collected from various sources may not allow drawing inferences and conclusions. Data has to be transformed to information, to make it meaningful. This is done by **reduction, summarization and standardization** so that comparisons can be made.

Data Collection Methods

The methods used for data collection are classified as primary and secondary data collection methods.

A. **Primary Data Collection Methods:** Primary data is **elicited from patients/subjects** by interview, examination, investigation, etc. This is done by undertaking a study or a survey.

(1) **Studies:** A study is an investigation in which information is systematically collected. Studies are broadly classified as descriptive, analytic and experimental studies.

- Descriptive studies usually describe a situation e.g. distribution of malaria in relation to age, sex, area, season etc.
- Analytic studies aim to study causal factors and explanations for occurrence of a health related event. E.g. Study the factors associated with the occurrence of diabetes.
- Experimental studies study the effect of exposure or deprivation of a factor. E.g. Study the decrease in cancer cervix with HVP vaccine.

(2) **Interviews:** It is an important part of medical practice. History taking by a physician is usually done by interviewing the patient. The physician asks about the symptoms and details related to the illness. The interview may be **structured or unstructured**. For effective communication, know the **language and education level of the respondent**.

Structured Interview: The line of questioning is determined by the interviewer. Wording and order of questions is decided in advance. The advantages is that it is uniform for all subjects. Compilation and analysis

of data is easy. It is **useful for quantitative data**.

Unstructured Interview: The line of questioning is more flexible, the investigator may have a checklist but he follows leads as they arise. It is **useful for qualitative data**.

Steps in conducting an interview are:

- **Establishing contact**: Greet and introduce yourself. State the purpose of the interview. It is good if a **prior appointment** for the interview could be taken.
- **Starting an interview**: Initially more general discussion of the problem is done. Listen actively.
- **Rapport building**: To develop a rapport with subject and family.
- **Asking probe questions**: To provide encouragement
- **Guiding the interview**: If respondents deviate from the topic, guide them back to the subject.
- **Recording**: Take notes of salient points.
- **Closing the interview**: The interview should not end abruptly. Thank the respondent.
- **Report making**: A report of the interview is prepared.

(3) **Questionnaire Surveys:** The questionnaires may be self-administered or interviewer- administered. **Self Administered Questionnaires** are given to the study subjects. They read the questions and fill the answers themselves. The advantages of a self administered questionnaire are that it is simpler, can be administered to many persons simultaneously and cheaper. However, only subjects having **education and skill** can fill the questionnaires.

Interviewer Administered Questionnaires: The investigator reads the questionnaire and fills it. In this, the respondent need not be educated. A good interviewer can stimulate the respondent's interest. He/she can develop rapport and create an atmosphere conducive for answering questions. He or she can repeat the questions and explain. Observations can be noted down about the expressions and behaviour of the respondent.

(4) **Observation**: This may vary from simple observation to those requiring skills (e.g. clinical or laboratory or radiological examination). The evidence usually is considered more valid than that of an interview.

(B) **Secondary Data Collection Methods:** These involve collection of data from **existing sources of data**. The common sources of secondary data are:

(1) **Census:** It is an important source of health information. In India it is conducted every 10 years (in first quarter of the first year in each decade). Demographic, social, economic, housing and reproductive health data was collected in the census held in 2001.

(2) **Registration of vital events**: Registration of vital events like births and deaths is being done in India by local governments. This provides continuous record of the demographic changes.

(3) **Sample Registration System (SRS)**: It is a dual record system. Continuous enumeration of births and deaths is done **by enumerator**; and an independent survey every 6 months is done **by an investigator-supervisor**. The SRS covers the entire country. This provides reliable information.

(4) **Hospital records**: Hospital records provide some information about the diseases in an area. However, information is available only for patients who come to the hospital. So, the information may cover only the severe forms of the disease. Full community data is not available, as sick people go to different hospitals.

(5) **Disease registers**: Registration is done for certain specific diseases like **cancers, tuberculosis, leprosy** etc. These registers details about the cases (disease pattern, treatment given, response to treatment etc.).

(6) **Population surveys**: Surveys are done in a sample of a population to obtain specific information about certain conditions and factors related to these. These provide reliable population based information. For example, **National Family Health Surveys** (NFHS) are conducted periodically in a representative sample of households throughout the country. The Ministry of Health & Family Welfare of Government of India is conducting these surveys, to provide high quality data on population and health indicators.

10.12 Presentation of Data

The data that we collect needs to be organized in a way that the information they contain **clearly show patterns of variation**. Tables, graphs and diagrams are used in the presentation of statistical data. They are **visual methods of presenting the data**. They enable us have the overall picture, rather than the details.

(1) **Tables:** Tables are simplest method for presenting data. Every table has **rows** (horizontal) and **columns** (vertical). A table can be simple or complex, for measurement of a single or multiple set of items. A table should not be too large. A table should have the following:

i) Table number,

ii) Title of the table (should be brief and self explanatory),

iii) **Headings of rows and columns**, and

iv) **An order of presentation** (it may be by size, by chronological order, by alphabetical order etc.).

Frequency Table: The data is classified into different groups based on a characteristic. The number in each group is depicted in the adjacent column (**frequency**). It tells us about the **pattern of distribution** at a glance. The range and shape of distribution of the data can also be seen at a glance. A table should ideally have 5 to 20 groups. The **class interval** should be equal as far as possible, so that the groups can be compared.

Example of frequency table: **Haemoglobin values** (in g/100ml of blood) of 50 pregnant women in a clinic.

10	11	10	12	13	9	8	13	10	9
6	11	9	10	11	10	9	10	9	11
10	12	8	9	5	12	11	10	9	12
10	7	12	11	10	9	10	11	10	9
12	8	10	12	10	5	11	9	10	10

Using intervals, the data may be presented in a frequency distribution table as:

Table: Frequency distribution table of haemoglobin levels.

Haemoglobin values (in g / 100 ml of blood)	Number of observations in the clinic
3-5	2
6-8	6
9-10	26
11-13	16

(2) **Charts and Diagrams**: Charts and diagrams are widely used to present simple data. The advantage of these is that the **visual impact is better** than that of tables. They are a popular method of presentation in the mass media. Only simple data should be presented. If the data is complex, there may be risk of misinterpretation by the observer. The charts and diagrams that are commonly used are:

(a) **Bar diagram:** Used for visual comparison of data between different time periods, different populations or different groups. The **length of the bar** determines the frequency of the characteristic to be presented. They are commonly used in the mass media as these are easy to prepare and understand. There are **three different types of bar charts** : -

- **Simple bar charts**: These represent a simple table. There is **space between bars for clarity**. The scale chosen should be able to include the minimum and maximum values.
- **Multiple bar charts**: Here **two or more bars** are grouped together. It is used when data on two or more characteristics is presented.
- **Component bar chart**: Here, each bar is divided into two or more parts. Represent each part a characteristic. It also shows the proportion of the characteristic to the whole.

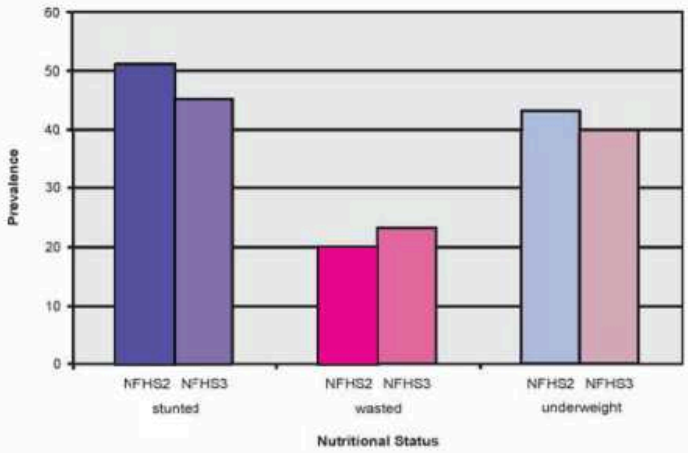


*Fig: **Multiple bar-chart:** Trends in nutritional status of under five children (National Family Health Survey 2 and 3). Vertical column shows prevalence of the problem.*

(b) **Histogram**: It is a diagrammatic representation of a frequency distribution. The class intervals are presented on the horizontal axis and the frequency along the vertical axis. It consists of bars that represent the frequencies of the characteristic; there is no space between the bars.

(c) **Frequency polygon**: This is another diagrammatic representation of the frequency distribution. Here, the midpoints of the histogram bars are joined to form a polygon.

(d) **Line diagram**: It is a graphical representation that shows change in events with passage of time. It consists of a line (or series of lines) representing **data values over time**.

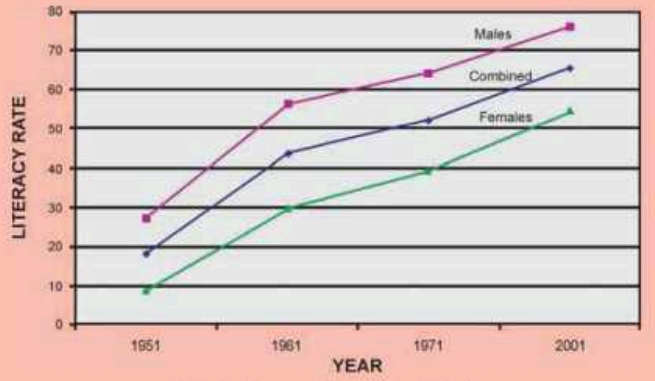


Fig: Line diagram: *Literacy Rate in India.*

(e) **Pie diagram:** A pie diagram is used for representing relative (i.e. proportionate) frequencies for comparison between groups. The frequency is represented by area, which is proportional to the segments of a circle.

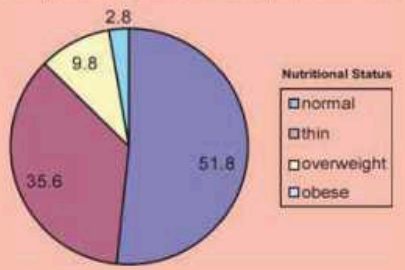


Fig: Pie Diagram: *Nutritional status of women in India.*

(f) **Pictogram:** In pictograms, pictures represent frequencies of the characteristic. A picture indicates a unit (such as 10, 50, 100, 1000 etc.) as required. The number of pictures tells relative magnitude of the problem.

10.13 Sampling

A sample is a **subset of a population**, whose properties are generalized to the **larger population** (or set).

Sampling is the process of picking a sample from a population. **Sampling unit** is a unit of selection in the sampling process for example, a person, a household, a place.

Methods of sampling

(a) **Simple random sampling**: This method gives all the sampling units an equal chance of being picked up for inclusion in the sample. This is done by picking up chits, by using a random number table or a computer. The advantage is that it ensures a good representation of the population. However certain minority groups may not be represented.

(b) **Stratified random sampling**: The population under study is divided into groups or strata according to a characteristic of interest (e.g. age, sex, occupation etc.). **A simple random sample is selected from each stratum**. The advantage is every unit has an equal chance of being included. The representation of **minority subgroups** is ensured by stratification.

(c) **Systematic sampling**: **Every K^{th} unit** in the sampling frame is selected, at regular interval. The first unit is selected at random, from among the k units. The method is simple to carry out.

(d) **Cluster sampling**: The population is first divided into **clusters of homogenous units**, usually based on geographic contiguity. **A sample of such clusters is selected**. All units in the selected cluster are studied. It is a faster and cheaper method.

(e) **Multistage sampling**: Selection is done in stages until the final sampling unit e.g. person, household etc. is reached. At the first stage, a sample of the state or district is selected. At the second stage, a sample of the block or village is selected. This process is repeated till the final sampling unit is selected.

10.14 Basics of Medical Statistics

Biostatistics is a branch of statistics that is applied to biological or medical sciences. It is the application of statistical methods to solve biological problems.

Statistical averages

Average refers to a value in the data around which the other values are distributed. It denotes the central value. The commonly used averages are:

(a) **The Mean:** The arithmetic mean is the most commonly used calculation. It is calculated by adding the individual observations and dividing the sum by the number of observations. The formula is:

$\overline{X}$= total of individual values $= \frac{X_1, X_2 + \ldots . X_n}{N}$

E.g. the incubation period of a disease is 5, 4, 6, 8, 7 days in 5 children. The arithmetic mean or mean is:

$\overline{X} = \frac{5+4+6+8+7}{N} = 6$

Advantages: It is easy to calculate and understand. Also it takes all the values into account and is not affected by sampling.

Disadvantages: It is affected by extreme values in the data, so that on calculation true mean is different from actual mean. The value calculated may appear absurd for the characteristic e.g. mean number of sick children is 4.5.

(b) **The median:** The median is the middle value of a data that divides the values into two equal parts when the values are arranged in ascending or descending order of magnitude.

E.g. the incubation period of a disease is 5, 4, 6, 8, 7 days in 5 children. On arranging in ascending order, the values are 4, 5, 6, 7, 8. The middle value is 6. Here the number of values is odd so the middle value divides the data into equal parts.

If the number of values is even, the median is the arithmetic mean of the middle values. E.g. the incubation period of a disease is 5, 4, 6, 8, 7, 9 days in 6 children. On arranging in ascending order the values are 4,5,6,7, 8, 9. The middle values are 6 and 7. The median is 6+7/2=6.5.

Advantage: It is easy to calculate and is not affected by the number of observations and extreme values.

Disadvantage: It is not based on all the observations in the data.

(c) **The Mode**: The mode is the most commonly occurring value in the data.

E.g. the incubation period of a disease is 5, 4, 6, 8, 7, 6, 9. As 6 occur most frequently the mode is 6 days.

It is easy to understand and is not affected by extreme values. It is used in data with wide variation.

Questions

1. Define public health.
2. Write the principles of public health.
3. Mention five major public health problems of our country. List the factors that contribute to their existence.
4. Describe the natural history of disease.
5. Explain the four levels of prevention of diseases in relation to natural history of disease. Give examples for each.
6. Define epidemiology. What do you understand by disease frequency and distribution of disease?
7. Explain the basic concepts of epidemiology.
8. Define immunization.
9. What is a vaccine? Mention different types of vaccines.
10. What is cold chain? List the cold chain equipment in the UIP.
11. Describe the Expanded Programme of Immunization.
12. List the National Immunization Schedule.
13. Explain the objectives and strategies of the ICDS.
14. Name any four National Health Programmes.
15. Mention the strategies for eradication of poliomyelitis.
16. Explain DOTS.
17. Explain the components of the DOTS strategy under Revised National Tuberculosis Control Programme.
18. What are the malarial control strategies under the National Vector Borne Diseases Control Programme?
19. Mention the components of the National AIDS Control Programme.
20. What is NRHM?
21. Define the Millennium Development Goals.
22. Mention four data collection methods.
23. How do you calculate the mean, median and mode?

CHAPTER 11

ORGANIZATIONAL BEHAVIOUR

Introduction

Organizational behaviour is an applied behavioural science. That means it is built on contributions from other behavioural sciences like psychology, sociology, social psychology, anthropology and political science.This chapter deals with organizational behaviour, group behaviour, conflict management and customer relations.

Objectives

After reading this chapter you will be able to:

- Describe organizational behaviour and the need to study organizational behaviour
- Know factors affecting human relations in an organization
- Describe different organizational structures and designs
- Understand group behaviour and group decision making techniques
- Describe team and team effectiveness
- Describe conflicts, its types and conflict management techniques
- Explain customer relations and the Consumer Protection Act

11.1 Organization Behaviour

Organizational behaviour is the study of human behaviour in organizational settings. It studies the interaction between human behaviour and the organization and applies the knowledge gained to the improvement of the organization. Thus, organizational behaviour deals with what people do in an organization and how their behaviour is related to the organization's performance.

Each individual working in an organization brings to the organization an individual set of personal characters and experiences from other organizations and that may influence their own organization. The individual working in that organization also changes with the organization. Thus, organizational behaviour considers **the way individuals interact with the organization**.

11.2 Need to study Organizational Behaviour

1. The workforce of our organizations is becoming more diverse. So, managers have to be aware of the differences and respond to these differences in such a way that there is **increased productivity** of the organization and **greater retention of workers** in the organisation. This includes providing appropriate training and benefit programs.

2. The customer seeks **quality and timely service. Customer satisfaction** is assuming greater significance in all the fields. So, all organizational processes have to be improved if the customer has to be satisfied better. Study of organizational behaviour makes employers think about their decisions and makes them more involved in the organization.

3. There is a **shortage of skilled personnel** all over the world. Apart from good salaries and benefits, employees need **methods to retain the employees**. This is possible if managers understand human behaviour and treat them well. No organization can be successful without the involvement of its employees.

4. **Customer service**: No organization can exist without the customers. In all service organizations, the management has to ensure that the customer is happy. Organizational behaviour helps in keeping the customer pleased by showing that the employee's attitude and behaviour are associated with customer satisfaction. The employee must be friendly, courteous, accessible, and knowledgeable and should respond to the customer's needs.

5. **New ideas and change**: In the ever changing world, newer ideas are emerging rapidly. A successful organization must encourage new ideas and master the art of change. The employees play an important role in bringing new ideas and creativity which should be encouraged by the organization. Organizational behaviour helps in realizing new ideas and change in an organization.

6. **The hours of work** are increasing the world over. Work now is not restricted to the work place. Due to advances in the communication system, we often work at places other than our work places. This **affects the personal life of the employees**. Organizations must try to achieve a balance between the work and other activities in the life of the employee. The field of organizational behaviour offers suggestions to **design workplaces and jobs** in a way to help employees deal with problems at work and life.

11.3 Factors affecting Human Relations in an Organization

Human relations is an important part of the organization development. It involves **motivating people** in the organization, in order to **develop teamwork** that effectively fulfills their needs and achieves organization's goals. Various factors affecting human relations in an organization are:

1. **Social factors in enhancing work output**: An organization is a social system. So, it is influenced by social factors. It is not just a formal structure but it is governed by **social norms**. The social characteristics of the people determine the output and efficiency in the organization. Not only economic awards, even the non-economic awards and sanctions influence behaviour of workers and their productivity.

2. **Influence of informal groups**: Social groups form in the organization. They are different from the official/formal groups. These groups may determine the behaviour of the employees.

3. **Conflicts**: There may be conflict between organization and the informal groups created. Sometimes groups may help in achieving organizational objectives.

4. **Leadership**: Leadership is important in group behaviour. There may be informal leaders who may become more important. For example, an efficient doctor may be accepted as a leader. A person in a superior position in an organization is more acceptable as a leader if he/she follows the **human relations approach**.

Fig: *Staff Training is important for organization development.*

5. **Supervision:** A friendly, concerned and attentive supervisory approach promotes production in an organization.

6. **Communication:** This is an important aspect in an organization. Through communication, workers participation can be improved. Their involvement in decision making concerning them and problems faced by them can be identified.

7. **Individual behaviour:** Variables that determine individual behaviour of employees are:

   - **Age:** Age does not have a significant effect on productivity. Older employees are less likely to resign from the organization than the younger employees.
   - **Marriage :** Among married employees, absenteeism is less and employee turnover is less. Job satisfaction is also more in married employees.
   - **Ability:** It is an individual's capacity to perform the various tasks in a job. It influences the employee's level of performance and his/her satisfaction. It is broadly divided into intellectual and physical ability. Intellectual ability is needed to perform mental activities. Physical ability is the capacity to do tasks that demand stamina, strength, skill etc. The performance of an employee increases when his/her ability fits the job.

11.4 Organizational Structure

Organizational structure is defined as the formal division, grouping and coordination of job tasks in an organization. The organizational structure depends on:

(a) **Work specialization:** It means subdividing a task into separate jobs, which are done by different individuals. Different people specialize in doing activities, leading to **increased productivity**. But this may cause boredom, fatigue and poor quality work.

(b) **Departmentalization**: It is grouping of jobs together so that common tasks can be coordinated. Most common way to group the activities is by the functions being performed. E.g. A hospital has various departments –Medicine, Radiology, Accounts etc.

(c) **Chain of Command:** It is the line of authority that extends from top of the organization to the lowest level. It clarifies who reports to whom.

(d) **Span of control**: It is the number of subordinates a manager can direct effectively and efficiently.

(e) **Centralization and decentralization**: Centralization is the extent to which decision making is concentrated at a single point in the organization. If the top management makes decisions without (or, very little) input from lower levels, it is centralized. In a decentralized organization input is provided by lower level. Problems are likely to be solved faster in a decentralized organization as more people are involved. For example, under the National Rural Health Mission, there is increased decentralization with involvement of Panchayati Raj Institutions and community health workers.

(f) **Formalization**: It refers to the degree to which jobs within the organization are standardized. If a job is highly standardized, the inputs are handled in similar way with consistent and uniform output. In less formalized jobs, employees have more freedom in dealing with their work.

The effect of organizational structure on human behaviour is complex. Some employees are more satisfied when there is standardization. Their productivity increases. Others may prefer more freedom and a flexible structure. Organizations that are less centralized have more **participative decision making** that is positively related to job satisfaction. Individual differences like experience and personality are important factors that determine a person's behaviour in an organization. These should be considered.

11.5 Organizational Designs

Organizations have three forms of organizational designs/structures.

a. **Simple structure**: It has a low degree of departmentalization, with a wide span of control. Authority is centralized to a single person and low formalization. The advantage is that it is simple, fast and effective. E.g. A small **Nursing Home owned by a Doctor**.

b. **Bureaucratic structure**: It has a high degree of specialization. It has formalized rules and regulations. Tasks are grouped into functional departments. Authority is centralized, with a narrow span of control. **Chain of command** is followed. The advantage is that **standardized activities** are performed efficiently. However due to **functional departments**, work may be slowed down. **Rigid rules** may also hinder efficient work.

c. **Matrix structure:** This combines two forms of departmentalization: functional and product. It is a popular form of organizational structure in many organizations. Its advantage is that **specialists are shared**, across various functions of the organization. However there may be difficulties in coordination. E.g. a **specialist doctor in a teaching hospital** is involved in patient care, in teaching and in training medical and paramedical students.

11.6 Group Behaviour

A group is defined as two or more individuals who are interacting and interdependent and who have come together to achieve specific objectives. Groups can be formal or informal.

- **Formal groups** are those that are defined by the organizational structure and their work assignments are well defined. E.g. **Lab attendants** working in the Hospital Laboratory.
- **Informal groups** are not formally structured or defined by the organization. These are alliances that form at the workplace, in response to need for social interaction. E.g. Employees from different departments, who meet and have lunch together.

The groups can also be classified as follows:

- **Command group:** It is determined by the organization. It is composed of the individuals who report directly to a given manager. E.g. the Medical Officer and the staff in a Primary Health Center.
- **Task group:** This is also determined by the organization. It constitutes all the members who are working together to complete a job task. It may extend beyond a department. E.g. Team at a Pulse Polio Booth.
- **Interest group:** Includes all people working together to attain a specific objective, with which each one is concerned.
- **Friendship group:** They are formed because they share one or more common characteristic.

Stages of Group Development

(a) **Forming stage:** This is the first stage of group development. In this there is lot of uncertainity about the purpose, structure and leadership in the group. It ends when members think they are part of the group.

(b) **Storming stage:** In this stage, there are intra group conflicts as people get used to being a part of the group. Also there are differences over control in the group. It ends when the leader of the group is decided.

(c) **Norming stage:** In this stage close relationships and bonding develop in the groups. The members identify with the group and come to know each other.

(d) **Performing stage:** This is the fourth stage in group development. In this, the group is fully functional. Here the task is actually performed. It is the last stage in permanent work group.

(e) **Adjournment Stage:** In temporary work groups that are of limited duration there is an **adjournment stage**. Here the group prepares for its closure. The activities are wrapped up. Some members may be happy about the achievements and others may feel sad about the friendship gained.

All groups may not follow this model. The start and end of each stage may not be well defined.

The performance and satisfaction of a group depends on-

- **Group member resources** - The composition of the group to a large extent determines its level of performance. The knowledge, skills and abilities of its members are important for group performance; however these are not the only factors.
- **Interpersonal skills** - These include conflict management and resolution, collaborative problem solving techniques.

Group Decision Making

Many decisions in an organization are made by groups, teams or committees rather than individuals. Group decision making has certain **advantages**. These are:

- A group is the combination of more than one individual, thus resources are more. Also the knowledge and information available is more complete.
- The decision obtained by a group is of higher quality.
- The solution derived is acceptable to more people.

It also has certain **disadvantages**:

- Group decision making is more time consuming. More time is taken to derive at a decision, when more people are involved.
- The group may be dominated by one or few members. The other members may not be able to give their opinions, due to presence of dominant members.
- No one may take responsibility in a group.

Techniques for Group Decision Making

(a) **Interacting group**: This is the most common form of group discussion. In these groups, members meet face to face and interact. But, in this method, all members may not be able to voice their opinion (due to pressure from other members). Also, **members with different views may keep silent** (to avoid going against the **group's consensus**).

(b) **Brainstorming:** This is a technique in which ideas are generated to encourage all kinds of thoughts. This is done to have many creative alternatives. In this, about 6-12 people meet. The group leader states the problem clearly for all members. The members then give many suggestions. No criticism is allowed. **All ideas and suggestions are recorded, for later discussion and analysis**. It is a method of generating ideas.

(c) **Nominal group:** It is a group decision making technique, in which individual members meet face to face to pool their judgment in a systematic manner. The steps involved are:-

i) Members meet as a group. But before the discussion takes place, **each member writes down his or her ideas** about the problem, independently.

ii) After this **'silent period'**, each member presents one idea to the group. No discussion takes place till all ideas have been presented.

iii) The group **discusses the ideas** for clarity and evaluation.

iv) **Each group member ranks the ideas** in an order, independently. The **idea with highest ranking score** is the final decision. The advantage of this method is that it encourages independent thinking.

(d) **Electronic meeting:** It is a combination of the nominal group technique and computer technology. It is also known as **computer assisted group**. Here, up to 50 people sit around a **horse shoe shaped table**. with their computer terminals. Issues are presented on their computer screens, on which **they type their responses**. Individual **comments and scores are projected on a screen**. Its advantage is that it is honest and fast method.

Each of these four group decision making techniques has its own strengths and weaknesses. The choice of the technique to be used depends on the task, need, cost etc.

The Team

Team is a group whose **individual efforts result in a performance that is greater** than the sum of individual inputs. It generates positive synergy. The different **types of teams** are :

i) **Problem solving teams:** Group of 5-12 employees of the same department meet for a few hours each week to discuss ways of improving quality, efficiency and work environment.

ii) **Self management work team:** Group of 10-15 employees who perform related or inter dependent jobs. They take on responsibilities of their former supervisors. The work includes planning and making schedules work, assigning tasks, looking after place of work etc.

iii) **Cross functional teams:** This type of teams consist of employees of almost same hierarchal level of different disciplines, who come together to complete a task.

iv) **Virtual teams:** Teams that use computer technology to bring together members and working for a common goal. They may be physically dispersed. They share information, make decisions and complete tasks through the computers.

Enhancing the Team Effectiveness

The effectiveness of a team can be enhanced. It depends on:

(a) **Team's work design:** Effective work design provides freedom and autonomy to all the members. It provides opportunity to use different skills, talents and abilities of the team members to complete the task.

(b) **Team's composition:** The team size should not be too big, preferably less than 10 members. If too large, there may be decline in cohesiveness and mutual accountability. The members should have technical skills, problem solving skills and inter personal skills. The members should have a **proper personality**. They should be agreeable, conscientious, extrovert and emotionally stable. The **team members should be diverse**, so that roles are filled.

(c) **Resources for the team:** Resources that the team receives should be adequate if the team has to be an effective team. The resources may be in terms of information, technology, finances, staff etc.

*Fig: **Continuing education of staff** needs be given priority. This improves staff competencies and morale. Also it builds up the team spirit.*

(d) **Leadership and structure of the team:** There should be an agreement among team members about who has to do what (**'role clarity'**). All members must contribute equally and share the workload. It should be clear who is the leader of the team.

(e) **Element of Trust:** Members have to trust each other and the leader.

(f) **Purpose of the team:** An effective team has a common and meaningful purpose that provides direction and encouragement to the members.

(g) **Confidence level of the team:** Effective teams are confident of achieving success. Confidence can be enhanced by **skills training**. The skills include both technical skills and inter-personal skills.

11.7 Conflict Management

Conflict is defined as a process that begins when one party perceives that another party has affected or is about to affect something that the first party cares about.

Different Views about Conflict

- There are various views about conflict. **The traditional view** of conflict believes that all conflict are harmful and conflict must be avoided. It is seen as an outcome of poor communication, lack of openness and trust; and failure of managers to respond to the needs of the employees.
- The **human relations view** of conflict believes that **conflict is natural** and an inevitable outcome of any group.
- **The interactionist view** of conflict believes that conflict is not only a **positive force** in a group but it is necessary for a group to perform effectively.
- Conflicts that support the goals of the group and improve its performance are constructive forms of conflict. These are called **functional conflicts. Dysfunctional conflicts** are those that hinder group performance.
- An **optimal level of conflict** is one in which there is no stagnation, creativity is encouraged, new ideas are encouraged, but does not cause disruption or slowing of activities. **Excessive/inadequate levels of conflict** can hinder the performance level of the group or organization.

Types of Conflict

Conflicts are classified into different types. **Task conflicts** are those related to the content and goals of the work. **Relationship conflicts** are related to interpersonal relationships while **process conflicts** relate to how work gets done.

Relationship conflicts are mostly **dysfunctional**. Low levels of process conflict and low levels of task conflict are **functional**.

Conflict Management Techniques

Dysfunctional conflict can be reduced by certain **conflict management techniques**. These are:

- ***Problem solving***- In this, **meetings between the conflicting groups** are held to identify the problems and resolve them through discussion.
- ***Super-ordinate goal***- A **common goal to be achieved** is created that cannot be achieved without the **cooperation** of the conflicting groups.
- ***Expansion of resources***- If the conflict is due to **shortage of resources** like money, promotion, space etc; expansion of resources can resolve the conflict.
- ***Avoidance***- The conflict can be reduced by withdrawal and avoidance by the conflicting parties.
- ***Smoothing***- The **differences are down played**, while the common interests are highlighted between the conflicting groups.
- ***Compromise***- The conflicting groups **gives up something of value**, to reach a compromise.
- ***Authoritative command***- The management uses its formal authority to resolve the conflict and communicates the decision to the concerned groups.
- ***Changing human behaviour***- **Behaviour change techniques** are used to change attitude and behaviour that cause conflict.
- ***Changing organization structure***- The organization structure and pattern of interaction of conflicting groups are changed by transfers, creating new positions etc.

11.8 Customer Relations

Over the centuries, the **medical profession has been accorded respect by the society**. Over the last few decades, increasing **commercialization of the profession** has eroded this faith. A member of a profession is required to show a **standard of care** which a person of that profession is expected to possess.

A customer relation is the approach of an organization for winning their customers and retaining the customers. The most critical activity of any organization that is wishing to stay in business is its approach to dealing with its customers. **Putting customers at the center of all activities** is seen by many as an integral part of quality, pricing, and product differentiation. On one level, customer relations means;

- keeping customers fully informed,
- turning complaints into opportunities, and
- genuinely listening to customers.

On another level, being a **customer-focused organization** means ensuring:

- that all activities of planning, design, production, marketing and after-sales of a product/service are built around the customer, and
- that every department and individual employee **understands and shares the same vision**.

Only then can an organization deliver continuous customer satisfaction and experience good customer relations.

11.9 The Consumer Protection Act - 1986 (COPRA)

Consumer rights have become an important issue. **The Consumer Protection Act - 1986** (COPRA) provides consumers a forum for speedy redressal of their **grievances against medical services**. According to this Act, the **Consumer Courts** should take decision within 3 to 6 months. There is no court fee payment and the person can plead his own case. COPRA is a piece of comprehensive legislation and recognizes **six rights of the consumer**, namely right to safety; right to be informed; right to choose; right to be heard; right to seek redressal, and **right to consumer education**.

Questions

1. Describe organizational behaviour.
2. Why is it important to study organizational behaviour?
3. List the factors affecting human relations in an organization.
4. What is meant by group behaviour?
5. Explain any 2 group decision making techniques.
6. List advantages and disadvantages of group decision making.
7. How will you resolve conflicts in hospitals?
8. Explain the importance of customer relations.

NOTES

Central Board of Secondary Education

Shiksha Kendra, 2, Community Centre, Preet Vihar, Delhi-110092, India
website: www.cbse.nic.in

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Health Education, Public Relations and Public Health