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for class IX & X from the academic year 1997**

Home Economics

For Class IX & X

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Preface

Education is the key to development. A progressively improved education system largely determines the pace and the quality of national development. To reflect the hopes and aspirations of the people and the socio-economic and cultural reality in the context of the post independent Bangladesh, new textbooks were introduced in the beginning of the 1980s following the recommendations of the National Curriculum and Textbook Committee.

In 1994, in accordance with the need for change and development, the textbooks of lower secondary, secondary and higher secondary were revised and modified. The textbooks from classes -VI to IX were written in 1995. In 2000, almost all the textbooks were rationally evaluated and necessary revision were made. In 2008 the Ministry of Education formed a Task Force for Education. According to the advice and guidance of the Task Force, the cover, spelling and information in the textbooks were updated and corrected.

To make the assessment more meaningful and in accordance with the need of the curriculum, Creative Questions and Multiple Choice Questions are given at the end of each chapter. It is hoped that this will reduce the dependency of students on rote memorisation. The students will be able to apply the knowledge they have gained to judge, analyse and evaluate real life situation.

Home management, child management, family relationship, food and nutrition, textiles and clothing are closely linked to our everyday life. All these topics have been included in the Home Economics textbook so that learners can grow up as confident and good citizens. The learners can gain knowledge on how to build a prosperous and good home, bring up children properly, socialise and become aware about proper food and nutrition. It is important to create skilled and creative manpower as well as to teach learners applied knowledge. So that they develop a respect for labour. All these issues have been addressed in this textbook.

This book of Home Economics for class IX & X is the English Version of the original textbook entitled 'Garahasthya Arthaniti' written in Bangla.

We know that curriculum development is a continuous process on which textbooks are written. Any logical and formative suggestions for improvement will be considered with care. On the event of the golden jubilee of the independence of Bangladesh in 2021, we want to be a part of the ceaseless effort to build a prosperous Bangladesh.

In spite of sincere efforts in translation, editing and printing inadvertent errors and omissions may be found in the book. However our efforts to make it more refined and impeccable will continue.

I thank those who have assisted us with their intellect and efforts in the writing, editing and rational evaluation of this book. We hope that the book will be useful for the students for whom it is written.

Professor Md. Mostafa Kamaluddin

Chairman

National Curriculum and Textbook Board, Dhaka.

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Part – I

Home Management

Chapter-I

Home and Home Management

Since the very beginning of civilization, it has been found that each and every human being has been engaged in making a home of his own. As a social being, a man creates his family. Home is the dwelling place of the family. Except shelter, all the basic requirements of life are being fulfilled through the home. Every human being feels the need of creating home due to some personal and social reasons. By dint of honest and sincere efforts and consideration of the head of the family, the members of the family enjoy peace at home. At the day time most of the family members are engaged in different types of activities outside their home and after a tedious day's work they come back home for getting rest and peace. An ideal home gives shelter, meets different needs and demands of the family, provides security, ensures privacy and honour of the family members.

A home helps to fulfil all the desires and aspirations of human life. It supports to develop all external and inner qualities of a human being. To make a positive homely environment, adequate money, time and energy, etc. are highly required. These are the most desirable family resources. These resources are needed to be properly utilized, otherwise it will not be possible to fulfil the demands of the family. So, we can say that by utilizing the family resources properly, a desired homely atmosphere can be attained. In this regard, a proper home management is highly required. It makes a home attractive, peaceful and pleasant. In fine, we can say that the ability to manage a home properly, helps a home manager to take care of the home with all the resources that the home possesses.

Home management is the administrative part of the family. Its success depends fully on energy, capability and experience of the home manager. We can define the term home management in various ways. The well-known home economist Nichel stated, "Home management is the administrative aspect of a family. To attain the desired family goals, home management helps in planning, assessing integrating and evaluating human and material resources and ensure their best use for the betterment of the family members."

To use the family resources properly, a proper planning is essential. During planning, the expected demands are needed to be anticipated. That is which one is mostly

desirable, which one is highly expected to keep hold the honour and desire of the family, are needed to be well specified and at the same time the availability of adequate resources to meet all the demands are required to be well calculated. In this regard, a proper decision making is highly desired. In fine, we can say that home management is an intellectual process and this can be attained through proper planning, organizing, controlling and assessing the family resources for their best use and thereby fulfilling the expectations of the family.

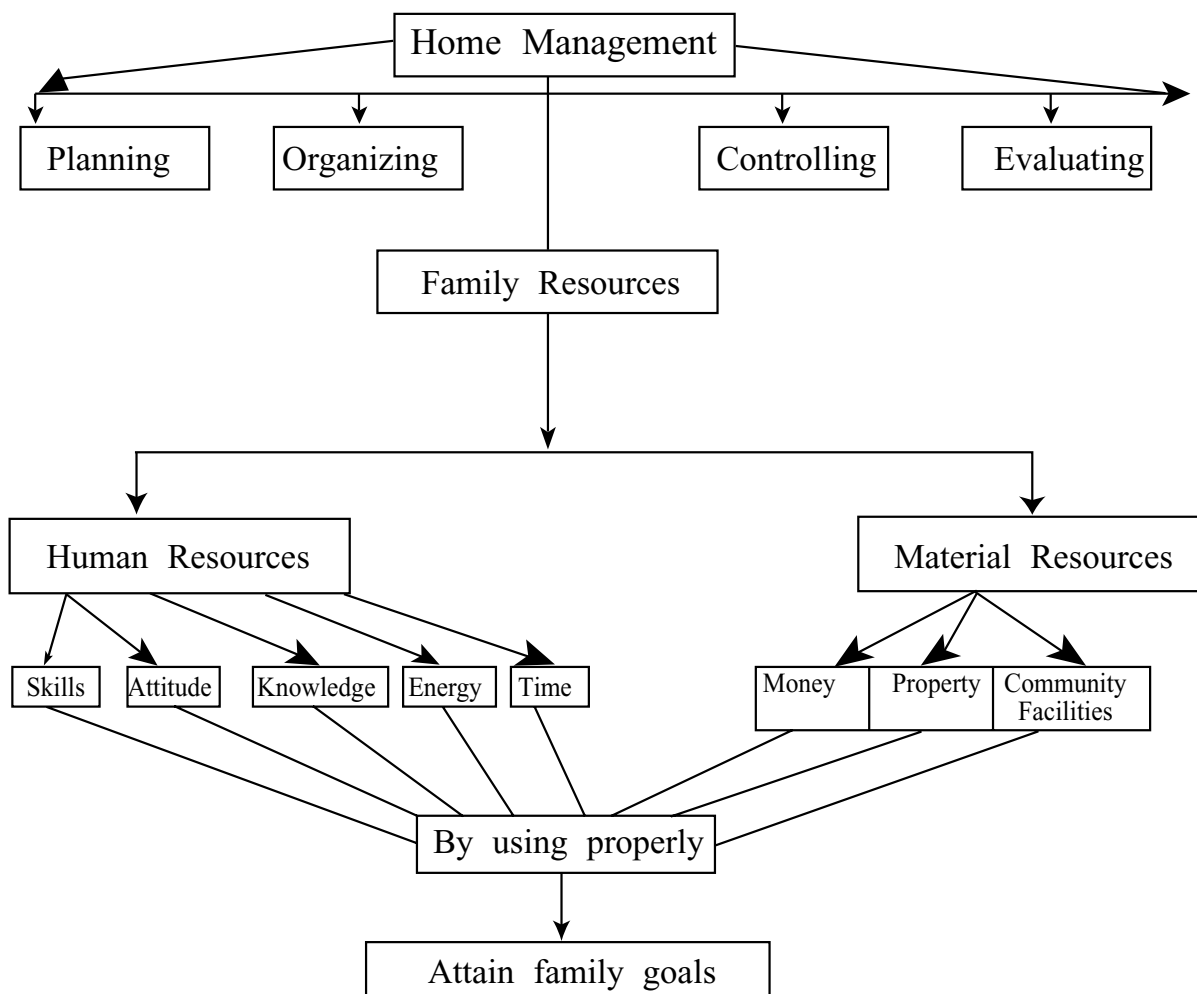


Fig: Home Management

The Qualities of a Home Manager

To make the home management effective, each of the members of the family has his/her specific roles. The home manager is the person who bears the main responsibility of home management. She is the key person of the family and the peace and success of the whole family fully depends on her. To bear this huge responsibility, she has to possess some basic qualities after making remarkable efforts with honesty and sincerity. The qualities are-

- 1. Intelligence**
- 2. Enthusiasm**
- 3. Understanding of human nature**
- 4. Creativity**
- 5. Judgment**
- 6. Perseverance**
- 7. Adaptability**
- 8. Self-control**
- 9. Personality**

The qualities are analyzed below : -

Intelligence

A house wife or a home manager must be intelligent. The power of observing, thinking, remembering and thirst for knowledge can make an individual great. Intelligence is an immeasurable quality. By dint of it an individual becomes able to simplify any situation, control the situation and can make a proper judgment. That is the ability of understanding, analyzing, referring and making judgment on various issues are related to intelligence. To tackle any day to day situation, the quality like intelligence is highly required. If any one fails to show appropriate intelligence in appropriate time, crisis may occur. So, the desired family goals might not be achieved. For example, to make the home more beautiful and attractive, the quality like intelligence is highly desirable. To take decisions on various aspects like how and where to place any object and how this is to be used, the quality like intelligence is very much needed.

To keep peace and discipline in home, that is deciding when some actions are needed to be undertaken and how these will be done etc. and for finishing all these activities, intelligence is essential. To make the family budget, to keep the account, to buy the necessary items etc. and finally to take the decisions regarding

all these aspects intelligence is highly desirable. To spend money as per the income and to make some savings for the future, intelligence is a must. For example intelligence plays a vital role in deciding how much money is needed for studies of the children, how much will be saved, what will be the purpose of savings, how these will be spent and what is the importance behind all these etc., considering the family income.

Enthusiasm

Enthusiasm is such a quality which is needed to be possessed by every successful home manager. Success does not come in life if there is no enthusiasm. But utilization of this quality depends on physical and mental fitness of the home manager. Enthusiasm relates giving importance to any work, acting seriously and completing the work with due attention, etc. This quality can also inspire the other members of the family. For example, if the home manager is interested to invite others on any special occasion or in shopping and if she can do it with enthusiasm, this very quality can inspire the children of the family as well. Parents can inspire their children in various ways. If the parents place all the furniture and goods nicely and in due order, this habit also inspires the children to work in the same way. Undoubtedly enthusiasm is an excellent quality for making a home manager successful in her family life.

Understanding of human nature

To become a successful home manager, the ability of understanding human nature is highly required. Every individual in many ways is different from others. In every family, different types of people live. The attitudes, nature, dealings, liking-disliking, behaviours etc. of every individual is quite different from those of others. To keep the family in peace, the home manager should know the temperament of each individual. She will not be able to understand all these aspects in a day. To acquire the knowledge of understanding human nature, the quality like keen observation is highly needed. This ability will help the home manager to tackle any situation which might take place at home. To keep the home in order, there is a need to instruct the children to do their jobs accordingly and there is also a need to take the advice of the elders while doing something difficult. Besides, there is a need to distribute suitable work to each of the male and female members of the family according to his/her ability and interest. This will help to keep the home in good order.

Creativity

Creativity is an essential quality of a home manager. By virtue of this quality, she will be able to make her home more attractive and well arranged. If a home manager possesses this quality, she will be able to draw the attention of others. In this regard,

the power of imagination and the power of creation run side by side. By dint of imagination and creative power, a home manager will be able to make the future plan and imagine the outcomes. If she wants to make any change of the preplanned action, she will use her imagination and creative power. For example, an efficient home manager with creative power can provide an appropriate guidance to buy and set new pieces of furniture, while entering a new house. Besides, if there is a possibility of budget shortage, the home manager applying her creative power will take alternative measures beforehand. Moreover, by virtue of creative and imaginative power, a home manager can predict any problem earlier and prepare herself to solve the approaching crisis. In addition, to create a wonderful and attractive homely atmosphere, a home manager should be creative and should possess the power of imagination and creation.

Judgment

The power of judgment is a desirable quality. By this quality an individual is able to judge properly right or wrong, good or bad, and evils or blessings. The ability of judgment helps an individual to lead a peaceful life in home and in society. It is quite natural that in a family, problems may arise in any time coming from any direction. These problems can easily be solved if the home manager has the ability of critical judgment. To give proper importance on every household activity and the way to perform that depends on the capability of perfect judgment and the home manager should possess this ability. For example, deciding on the selection of school for the young children, considering the standard of the school, the distance of the school etc. all these are included in proper judgment. However, the ability of judgment increases with the passing of time and experience.

Perseverance

Perseverance is also a special quality of the home manager. Without perseverance no one can be successful in family life. The person who possesses it is willing to work continuously until she succeeds. It is said that by virtue of perseverance any difficult work can be done. With this, devotion, tolerance, concentration etc. are needed. Perseverance enriches these qualities. There are some activities in domestic life which cannot be performed by the housewife easily. For example, if a housewife is not able to cook a new item of food, she must try to make it again and again. In order to finish every household activity successfully, a home manager must possess this quality. It plays an important role in looking after the children and the members of the family.

Adaptability

We all are living in a changing environment. While performing various tasks of domestic life, we have to face different challenges. The capacity to adapt oneself with the changing situation is termed adaptability. A housewife should possess this quality. It is quite natural that in a family life various incidents may occur. If the housewife is not able to adapt herself with all the changing situations, there will be a possibility of confusion. For example, if any member of the family gets sick, there will be a need of timely treatment. Sometimes, the doctor may advise to hospitalize the patient. In this case, there is a need to change the whole time table of the family. The members of the family should adapt themselves with the new situation. The home manager should adjust herself and try to pursue the other members of the family to adjust themselves with the new routine. If she does not do so, there will be the possibility of disorder.

If the home manager does not possess the quality like adaptability, a chaos will be created in the family. Sometimes, the home manager does not get proper response from all the family members in doing any work. In that case, she will manage others tactfully and tackle the whole situation. The quality like adaptability is reflected here. In the family, it sometimes happens that the behaviour of a family member does not please all. In this case, the home manager should adjust herself with that member, otherwise there will be the possibility of disorder which may disturb the peace of the whole family.

Self-control

Various problems may occur in a family. In this regard, the quality like controlling one's sentiments is needed and if a person possesses this sort of quality, it is called the quality of self-control. If a home manager is able to show this power, she will be appreciated as an efficient house wife. By dint of this quality, a home manager will be able to tackle any adverse situation. This quality will help her to maintain a cordial relationship with the family members. For example, sometimes it may happen that the husband or other members of the family misunderstand the housewife on any particular point. In this situation, the home manager can act tactfully by dint of her self-controlling power, she can proceed pleasantly and can again bring back the harmony in the family.

Personality

Personality can be termed as the sum total of various human qualities. By practising different human qualities, the personality of a person grows gradually in a harmonious way. To develop this quality, a proper grooming is needed. If a home manager acquires this quality, she will be able to behave well with others and convince all.

A home manager having an attractive personality, is respected by all the members of the family. To make herself a woman of striking personality, a home manager should possess some other qualities like impartiality, patience, cheerfulness, righteousness and flexibility.

Exercise

Multiple Choice Questions

1. What type of process is home management?
 - a. mental
 - b. social
 - c. political
 - d. familial
2. Which of the following can help to adopt oneself with a new situation at ease?
 - a. perseverance
 - b. adaptability
 - c. self control
 - d. power of judgment
3. Which of the following is the most essential for a home manager?
 - i. self control and creativity
 - ii. adaptation with new situation
 - iii. respect to other family member's opinion

Which of the following is correct?

- a. i & ii
- b. i & iii
- c. ii & iii
- d. i, ii & iii

Creative questions

Swarna, the most important member of a family, is a good manager. She has a happy family with her husband, in laws, and two children. Her father in law and mother in law have been suffering from diabetes and high pressure. Her brother in law and sister in law are studying in universities. Her children are school goers. Her husband has a Govt. job. Swarna listens to everyone's need and problems patiently and solve them. Everybody is charmed with her behaviour.

- a. What do you understand by home management?
- b. Explain the necessities of good management at Swarna's family.
- c. Identify the activities of good home management in Swarna's family.
- d. Explain that Swarna is the most important member in the family.

Chapter–II

Duties and Responsibilities of a Home Manager

In the previous chapter, the qualities which are needed to be possessed by a home manager have been discussed. In spite of having all these qualities, a home manager may not be able to run the family smoothly and ensure its happiness. She must realise duties and responsibilities and she should engage herself in performing those activities. A careless home manager can bring disaster to the whole family. The duties and responsibilities of a home manager are of different kinds. However, for the welfare of the family, a home manager should carry out her duties and responsibilities properly. It can be said that most of the household activities of the family are revolved round the home manager. The husband remains the only earning member of the family and home is the only place of his inspirations. Now-a-days, due to some socio-economic reasons, the housewives are also engaged in various income generating activities outside her home. But in the true sense, home is the most important working place of a housewife. So, one can easily understand, the importance of a housewife in running the family. It does not mean that she will perform all the responsibilities by herself. It is her duty to look after the tasks to be done. In order to maintain the family well, the home manager should set some goals to fulfill the basic demands of the family in a proper way.

For example, a balanced diet should be selected for the family members. The selection of dress should be according to the needs and social customs. The environment of home should be pleasant and there should be the scope of grooming the personality of all the family members. To fulfill all these objectives, the housewife should take the right decision and try to bridge the gap between the dreams of the family and means of fulfill them.

She should take steps to fulfill demands of family within scarce resources. Who will do some specific works, how will these be done, when will be done, why are these to be done etc., all these are related to her duties and responsibilities. The duties and responsibilities of a home manager towards her family can be classified into two groups. One is the duties and responsibilities towards the family and the other is the social responsibilities.

Responsibilities and duties of a home manager towards the family

1. To maintain good relationship among the members of the family
2. To create an attitude of equal sharing among the family members
3. To make a proper distribution of household work among the family members
4. To make a balance between income and expenditure
5. To ensure peace and security of the family
6. To follow the home management process for fulfilling the demands of the family

1. To maintain a good relationship among the members of the family

According to our social tradition, the housewife has the responsibility to look after her father-in-law, mother-in-law, husband and children. At the early stage, it is difficult for a housewife to perform all the duties properly. As a newcomer to the family, she has to adapt herself with the new environment. She is needed to be accepted not only by her husband as a dear one but also by the rest of the family members. Then she becomes a mother of her children. In this way, gradually the duties and responsibilities of a housewife expand. She has to shoulder and manage various responsibilities to run the family in proper order. She has to take proper steps to meet the demands of her father and mother-in-law maintaining a good relationship with them at the same time. Sometimes, the concepts of elders differ from that of the younger. Thus a strained relationship may grow. In this case, it is her duty to tackle the whole situation keeping herself cool and calm. Otherwise, disorder and indiscipline will grasp the whole family. A housewife is also responsible to ensure good health and mental peace of the family members. Her responsibilities also involve fulfilling the psychological demands of the family.

A housewife must be careful in fulfilling the demands and needs of her brothers and sisters-in-law in a judicious manner. She must be careful of her husband and children. It is her foremost duty to make the home habitable. She has to take care of the physical and mental health of her children according to their age. In addition to this, it is her prime responsibility to make her children well educated and good natured as the future of the family and society depends on them.

2. To create an attitude of equal sharing among the family members

In this age of modern science and technology, the duties and responsibilities of a housewife have increased. A housewife has to observe whether her children are growing up mentally as well so that they can cope with the changing world. To meet the basic demands of the family, she will have to take the right decision in choosing resources and making their best use. For example, for the family, she will choose a

balanced diet, select clothing according to the needs and urge the family members to abide by the social customs and values. She will try her best to make the home habitable and a place where the personalities of all the family members can grow. To ensure all these, a housewife should take concrete decision to make a balance between the demands and resources of the family. Moreover, she will make a proper planning for using the limited resources for the betterment of the family.

3. To make a proper distribution of household work among the family members

It is also the duty of a housewife to distribute all the tasks of the family among the family members properly. There are some activities, for example, cooking and serving food, furnishing home, washing clothes, sewing, cleaning, helping the children in their studies, nursing the elderly members of the family, providing recreation to the family members, etc. and these are needed to be performed within the home. Besides, there are some activities which are needed to be performed outside the house, such as, shopping, laundry work, gardening, visiting relatives, etc. To perform all these activities, a good house-wife should choose the right person to do the right job according to his/her ability and eagerness and distribute the jobs accordingly. Her responsibility does not end only by distributing the work. She should supervise their work accordingly as well.

In our society, we see that the household chores, like serving food, furnishing the house, washing clothes, sewing, attending guests, etc. are done by the teenage girls of the family. They also help their mothers in cooking and performing other domestic chores. The head of the family and the male family members usually perform the outside activities. In this respect, it can be said that if the tasks are distributed according to the capability of each member, it will encourage him/her to perform the tasks to the best of his/her ability and skills helping him/her become self-reliant. Such an active participation in household activities, will raise the sense of responsibility of the children of the family. They could be able to understand the value of time and work. Intimacy will grow among the member's of the family. The housewife should also be able to create diversity in normal routine work. So, she should create the scope of entertainment by arranging picnic, site-seeing and some sort of family amusements. This will help to drive away monotony and increase eagerness of the family members in performing new tasks.

Ethically, a home manager has enough duties towards the servants of the family. To get release from hard work and save time, sometimes she has to purchase labour by spending money. So, the servants are appointed. It is the duty of the home manager to take proper care of them. As one of the members of the family, a servant has also some desires and demands. The housewife should pay due attention in fulfilling the

basic demands of the servants as because, they do a lot of physical labour in carrying out the commands of the family members. The members should not be given any scope to speak ill with them. If they are several in numbers, the housewife should distribute the household work among them properly. It improves the quality of work. Sometimes, jealousy may occur among the servants if they are several in number. The housewife should tackle the situation with due patience. In fine, it is the duty of a housewife to express kindness towards the servants by measuring their physical ability and psychological attitude. The mental attitude and power of a housewife can be assessed by this. To develop a sense of humanity among the children is also a responsibility of a housewife.

4. To make a balance between income and expenditure

Keeping a peaceful homely environment is one of the most important responsibilities of a housewife. In this regard, at first, she would select a proper residence for keeping the members of the family in a healthy condition. Based on the requirements and capacity of the family, she will take decision regarding proper accommodation for each of the family members. Again, when she thinks about the basic requirements of the family such as food, clothing and shelter etc., she must think about the family income and resources. Then she needs to think about the requirements of each of the family members according to his/her age and demands and should try to fulfill all the needs accordingly.

The housewife should also be concerned about the family income and budget. She should make a proper purchasing policy in accordance with the limited resources for fulfilling the basic requirements such as food, clothing and lodging etc. of the family members. After spending money for fulfilling all these demands, she has to make some savings for future and for all these she has to make a proper planning. For example, it is the main responsibility of a housewife to ensure proper education of the children, arrange their marriages in due time and help them to get established in society. In doing all these, a home manager should make a balance between the income and the expenditure of the family.

5. To ensure peace and security of the family

The responsibilities of a home manager are manifold. To ensure the security and safety of the family members, she should make an arrangement of first-aid at home. She should be in touch with the physician and should keep all the instrument and medicines in right place. She should ensure a proper security system in placing and preserving all the instrument. Besides, the security system should be made in such a way that every member could be able to find all medicines and equipment in due time and in proper place. For the safety of the home, she should make a proper arrangement of fire extinguishing and drainage system and dumping of the refuse.

6. To follow the home management process for fulfilling the demands of the family

A housewife is responsible for executing, controlling, implementing and evaluating all the household activities and for performing all these tasks appropriately, a proper planning is required at first. To finalize the planning, implementation stages occur. The impact should be judged after that and then decision is needed to be undertaken. The decision making is a very important area divided into various stages. All the stages are needed to be well clarified to the family members and then the final decision can be made.

So, it is the duty of a home manager to start and finish a work accordingly. Here, she has to consider the demands, willingness and unwillingness of the family members. She has to take active steps in implementing the activities according to the plan and monitor the implementation process taking proper steps. In this stage, she has to observe whether the work is being done accordingly and if it is not, she should take decision about further measures. She has to take appropriate and timely decisions in this regard. After completing the work, she has to evaluate the quality of work. Based on all these, she has to take the next step of future planning and thereby fulfill her responsibilities towards her family. The job cycle of a home manager can be explained in this way. For example, in preparing the list of food for the family, planning is required at first. At this stage, she has to make planning in keeping with the demands and choice of the family members and afterward she will take decision. At the stage of implementation, she has to take decision on how, by whom and where these jobs will be done. Then the activities like shopping and cooking are started. The home manager at this stage controls, supervises and observes the progress of the job so that she could complete the tasks as per the planning. Here, she has to finish the tasks with great efforts. Then she has to assess the activities as per the planning and based on this she decides the next step. Besides these daily activities, a home manager has to arrange a variety of functions related to various occasions and seasons and in performing all these activities, she has to make herself responsible from the beginning to the end. These are the responsibilities and duties of a home manager towards her family.

Social responsibilities and duties

1. To associate the family members with various social organization

The social responsibilities and duties of a home manager involve associating herself and the other members of the family with several social organizations like Leo Clubs, Rotary Clubs, Girl Guides etc. and thereby making the family an integral part of social development. The family is a unit of the society and it is also a base unit of the society. Society helps a person to nurture his/her customs, idealism and social values.

2. To teach social customs and manners

It is also the duty of a home manager to encourage the family members in mixing with various people of the society and also to join with various programmes of the society. Side by side, she should teach the family members the social customs, manners and ideology and also encourage them to exercise those properly.

3. To encourage the family members in attending social development activities

For the betterment of the society, the members of the family have to perform various activities. In this way social development is made. Now-a-days not only the educational institutions but various social organisations are also engaged in imparting education.

These social organisation are working together with government, non-government and international organisations. For example, Bangladesh Shisu Academy works for the intellectual development of children of different ages. The Mass Education Centre is providing education to the aged people. The Shandhani and the Red Crescent are engaged in different social activities and at the critical hours of the state perform special social services. Besides, as a cooperative organisation, many social organisations are engaged in diverse social development activities. So, it can be said that the responsibility of a home manager is to encourage the members of the family in participating in all these activities. It is also the duty of a home manger to create an opportunity for the members of the family to involve themselves with the social activities for the betterment of the society as well as for the family. This will help to develop social attitudes and rapport. In this way, a person can perform his/her duties as a social being.

4. To encourage the participation of the family members in national programmes

It is the social duty of a home manager to encourage the family members to participate in various national programmes. It is the common responsibility of every citizen to become aware of the national programmes. The national programs like the Independence Day, the Victory day and the Amar Ekushay have special significance. The nation, along with various socio-cultural organisations, celebrate these days with due honour and fevour. It helps to unfold national identity and heritage. So, in participating in all these programmes, the feeling of nationalism grows among the family members.

5. To help become aware of various national activities

The right of voting is one of the fundamental national rights. Every citizen has the right to cast his or her votes. Moreover, for the betterment of every citizen, many roads, highways, clubs, playgrounds, sanitation facilities are being provided by the

state. For enjoying all these facilities, it is also the duty of every citizen to preserve all these properly. For example, keeping roads neat and clean, protecting libraries and play grounds properly are the duties of a citizen.

So, every citizen should have proper knowledge of his/her duties and responsibilities. If he/she does not know all these, he/she will fail to carry out the responsibilities. In this regard, the responsibility of a home manager is immense. About the national programmes, the home manager should aware the family members beforehand so that as dutiful citizens they could ensure their presence in all the programmes and avail the rights of a citizen. If all these are done, we can rightly say that a home manager has been performing her social responsibilities well.

Exercise

Multiple Choice Questions

1. Which one is the responsibility of a home manager?
 - a. To ensure cloths for everyone
 - b. To cook for everyone.
 - c. To tidy up home.
 - d. To create proper home management situation.
2. Social customs, ideals, and values are inculcated in
 - i. the family
 - ii. the society
 - iii. the sports field

Which one of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer questions no 3 and 4 according to the following write ups:

Farid has joined the Boys Scout being inspired by his father. He takes part in different scouting activities in his school. But he is upset to see the bad condition of the road and the dirty drain on his way home from the school.

3. Which type of responsibility has helped Farid's father to inspire him to join Scouting?
 - a. familial responsibility
 - b. social responsibility
 - c. responsibility as a citizen
 - d. responsibility to his country

4. What should Farid do to clean the road?
- i. He should organise his Scout friends.
 - ii. He should take steps so that throwing rubbish on the road is stopped.
 - iii. He should raise social consciousness.

Which of the following is correct?

- a. i & ii
- b. i & iii
- c. ii & iii
- d. i, ii & iii

Creative questions

Mr. Laskar is an employee of low income. His family comprises of his ever sick wife, two daughters, and two sons. The academic activities of his sons and daughters are going to be stopped due to the illness of his wife. At this stage, his intelligent, patient and perseverant eldest daughter is sharing some family responsibilities simultaneously with her studies. She does different kinds of duties for her family properly. This makes Mr. Laskar hopeful.

- a. Who is usually a family manager?
- b. Who is the home manager in Mr Laskar's house? Why?
- c. Narrate how the girl can reduce her work load?
- d. Explain the importance of intelligence, patience, and perseverance of a home manager.

Chapter–III

Family Resources

Definition of Resources

Generally, by the word resources, we mean some objects by which different needs of human being can be fulfilled. Property, money, gold and household equipments etc., are treated as resources. According to Home Economics, however the word family resource has some special meaning. In Home Economics, only those resources which are possessed by the family are termed as family resources i.e the family resources are those by dint of which some specific objectives of the family can be fulfilled. These may be tangible or intangible. For example, money is directly needed for maintaining the family, that is, for buying rice, fish, meat, vegetable, utensils and so on. On the other hand, there are some kinds of human quality which are needed to run the family and these include energy, time, skills, knowledge etc. However, all these types of resources are used to achieve the family goals. In short, both the tangible resources, such as money, materials, equipments etc. and the intangible resources like time, knowledge, ability and aptitude, etc. which are possessed by the family and used for achieving the household goals are termed as family resources.

In home management, the proper utilization of family resources is highly needed. Without family resources, the goals of family cannot be achieved. But these family resources are needed to be used in an appropriate way having proper planning and controlling and assessing the requirements of the family. Each type of resource has its own characteristics which are mentioned below.

1. Utility of Resources

According to the definition of resources, each and every resource has some utility. That is, every family resource has got some capacity to meet the family demands. But this capacity differs from one resource to another.

2. Scarcity of Resources

Scarcity is another important characteristic of resource. This differs from one resource to another. That is, some resources are scarce and some can be achieved easily.

3. Resources are interconnected

The family resources are interconnected. By integrating all types of resources, specific family goals can be achieved. For example, to achieve a specific family goal, money is not the only requirement. The other resources like time, energy and ability are also needed. So, it can be said that by integrating all the resources, the family goals can be achieved.

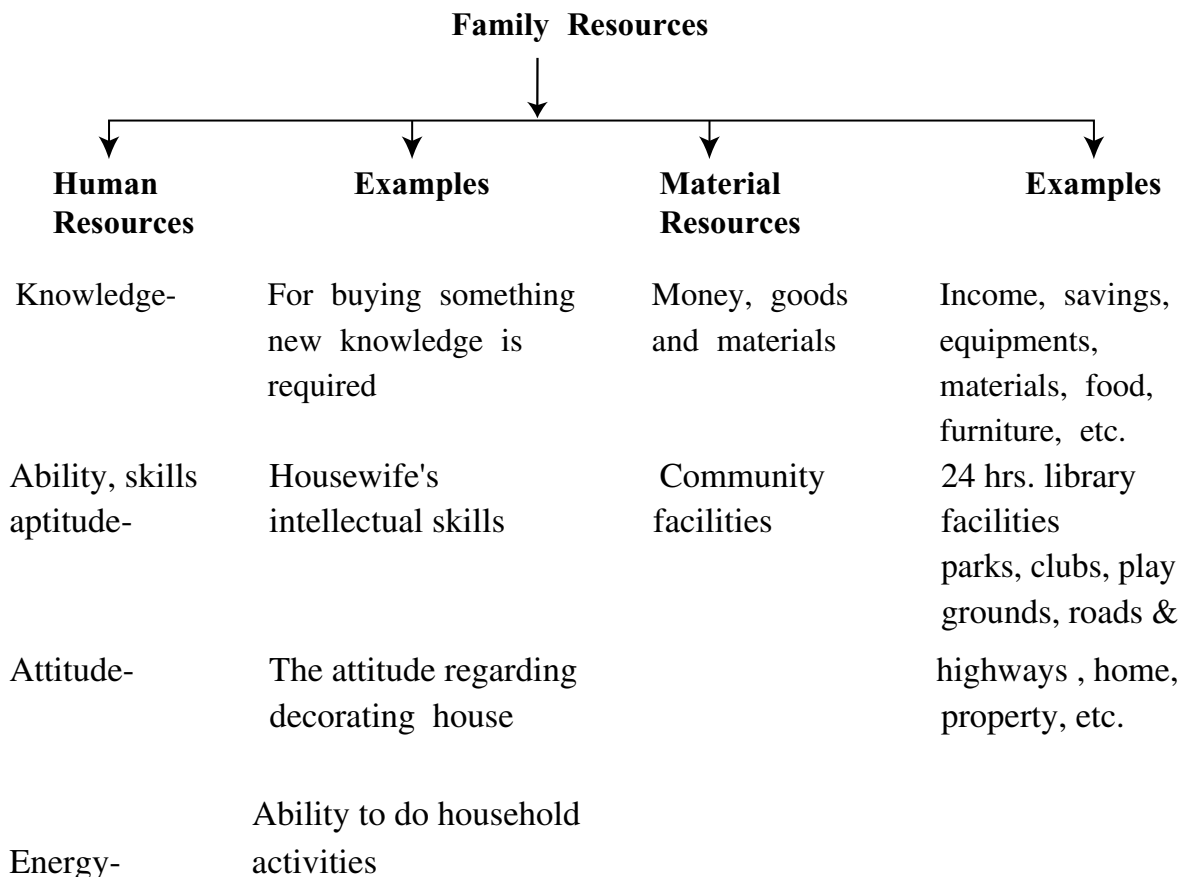
The Classification of Resources

According to home management, the resources can be classified into two groups: human resources and material resources. The classification has been made based on the sources of the resources.

Human resources are not tangible and cannot be easily attained. These are related to the inner quality of an individual. The quality like knowledge, professional reputation, skills, attitude, personality, ability, hobby etc. are the most important human resources. Besides, time can also be considered a human resource because it is used by the individuals as per the requirements and needs. Human beings can control time and make its best use although time is limited. To some people time is precious but to some people it is useless.

It is a human resource, because we can ask a person, 'Would you be able to give me some time'? On the other hand, the material resources are those resources which are tangible and are not a part of human quality. We use material resources for home management and these resources are money, dwelling place, materials, time and community facilities, etc.

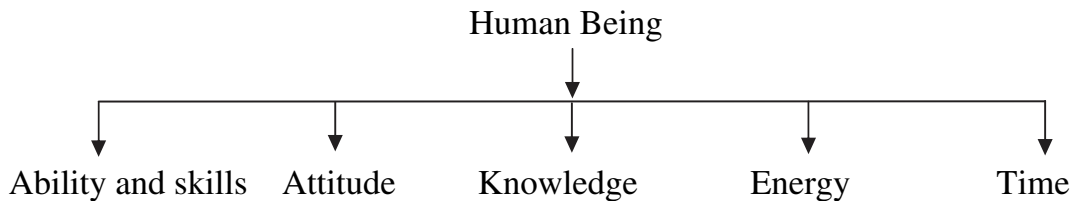
The classification of resources is shown below:



Time- The span of one's life, place the control of people over time and punctuality

Human Resources

Human resource is the most important part of the family resources. An individual by dint of his/her ability, skills, attitude, knowledge and energy could be able to make the home unique.



Ability and skills

The capacity to perform any task skillfully and efficiently is termed as ability and skills.

Attitude and Knowledge

The attitude and knowledge of a home manager is very much related to bring peace and prosperity in home. These qualities can be achieved through sincerity, experience and practice. If a home manager is aware of the individuality of the family members, she will be able to use human resources properly. For example, one may have some special taste in purchasing new items. Again, one may have some artistic sense and ability in decorating the house, all these are human resources and these are needed to be used properly.

Energy

Energy is also a very important human resource. We can use it while performing our day to day household activities. It varies from person to person. For example, without any tiredness, a particular member of the family can work for a long time.

Time

It means, the command of people over time, life expectancy, etc.

Material Resources

Various material resources are used to manage home. Among them, time and money are the most important material resources. Moreover, there remains a difference between these two resources. For example, although money is limited, but it is quite natural that some people possess it more or less than others. But time can be shared equally by all. Regardless to rich and poor, low and high, 24 hours is allotted for all and nobody can lend his or her time to others. It is totally a personal property. People can accumulate material resources in various ways. For example money which is a material resource, can be accumulated by people through income, savings, preserving

gold and silver etc. Again goods can be collected by procuring different types of equipments, consumer goods, goods, clothes and furniture. Then comes community facilities and people can share it using libraries, parks, clubs, play grounds, roads, etc. The properties like houses and land, etc. can be owned by the people in various ways.

Exercise

Multiple Choice Questions

1. Which of the following is the basic characteristic of wealth?
 - a. availability
 - b. salability
 - c. necessity
 - d. transferability
2. The characteristic of human resource is
 - i. it cannot be counted
 - ii. it cannot be transferred
 - iii. it is based on a person

Which of the following is correct?

- a. i & ii
 - b. i & iii
 - c. ii & iii
 - d. i, ii & iii
3. Wealth at home can be divided into
 - a. two
 - b. four
 - c. five
 - d. eight

Answer questions no 4 and 5 based on the following write ups :

Mr. Farid is an intelligent man who used to buy lands and cows at a cheap rate during off season and sell them at higher price afterwards. Thus he maintains his family by the money received as profit.

4. What is the human resource of Mr. Farid?
 - a. land
 - b. cow
 - c. money
 - d. intelligence
5. In terms of Home Economics Mr. Farid is
 - i. the head of a family
 - ii. home manager.
 - iii. businessman.

Which of the following is correct:

- a. i
 - b. i & ii
 - c. ii & iii
 - d. i, ii & iii

Chapter– IV

Resource Management

In a family, the most important resources are money, time and energy. A family utilizes all these resource in different ways. According to the common characteristics of resources, every resource is limited to some extent. Family resources are very much needed for the proper home management. The goals of a family can not be attained without adequate family resources. As the resources are scarce, these are needed to be utilized and managed properly to achieve family goals. So, we can say that the knowledge and ability of using the scarce family resources according to the requirement, objectives and goals of the family is called Resource Management. One constantly needs to take decisions to utilize the family resource properly as it is an important part of home management.

The areas which are needed to be considered for the proper utilization of family resources

1. The supply of resources can be increased.

If there is a scarcity of material resources, the use of the human resources like intellectual power, physical power, etc. can be increased to solve problems. By dint of it, with a little material resources, the family requirements can be fulfilled.

2. The utility of resources can be increased

It involves the increase of the utilization of the resources in different ways. For example, by adding a shelf with the reading table, books can be kept. Training can be provided to expand knowledge and skills of the family members.

3. The alternative use of resources

By using resources alternatively, that is, if there is a shortage of time in completing any task, the task may be completed in other ways within time by using additional physical power. Due to financial crisis if a new sari cannot be purchased, the old one can be embroidered for a new look and in this way the demand of a new sari can be mitigated.

4. The balanced utilization of resources

All the resources should be used in a balanced way. Sometimes to finish an activity, material resources may be required more than the human resources. In this case, to make a balance, human resources like intelligence, thoughtfulness etc. can be added. For completing any sort of activity, money is highly required and with it human resources like intelligence, judgment, memory and innovation etc. can be used so that a balanced utilization can be made.

5. Satisfaction by using resources properly

The resources should be used in proper ways so that satisfaction can be made. For example, food enriched with protein is needed for the growing children and if it is kept in the food menu of children, more satisfaction will be achieved. Moreover, if a sari fades, for satisfaction we can use it to make a quilt.

Monthly Budget of the Family

Money is the most important of all the material resources. Each family, for its survival, keeps some money or properties. But this resource is very much limited and within this limited resources, a family maintains all its expenses. However, to spend the limited resources properly, a proper planning is required. If we spend the money in a planned way, the wastage will be checked. To make an appropriate planning, the source of income and its quantity as well as the areas of expenditure are needed to be well specified. So, we can say that a monthly budget is a plan of spending money for the family based on the monthly income and expenditure of the family. Plainly, we can say that a budget is a written plan for using the monthly income of the family which reflects the family needs, time and areas of expenditure.

Importance of Budgeting

1. Budget helps to increase awareness regarding income and expenditure of a family

After preparing a budget, if the expenditure is made, it will make an individual aware of the source and quantity of income as well as the areas of expenditure.

2. A balance can be made regarding income and expenditure

If there is a budget, it will help to reduce or extend expenditure depending on the family income.

3. It helps to make savings

As savings is an integral part of a budget, a budget encourages savings whether the income is more or less.

4. It helps to save time and energy

A budget helps the members of the family to spend money within the time and thus it helps to save time and energy.

5. It helps to meet the important demands

In a budget, the important areas of expenditure are specified and so there remains nothing to be unfulfilled. For this reason, the family does not suffer in paying house rent, income tax, electricity bill, etc. in due time.

6. The satisfaction and solvency of the family grows

By calculating the demands of the family members, the budget is usually made and so everybody remains satisfied. If the budget is made in this way, the satisfaction and peace of the family is maintained.

Rules of preparing a budget for the family

There are some rules which are needed to be considered while preparing a budget for the family. These are:

1. Knowing the probable monthly income of the family.
2. Knowing the number of family members and their special needs.
3. Identifying the main sectors of the family expenditure e.g. food, clothing, housing, medical, education, recreation and savings etc.
4. Deciding how much money should be spent on each of the sectors of expenditure.
5. Deciding the expenditure based on the sectors and their sub-sector.
6. The budget is to be flexible by allowing the scope of changes and readjustment from one sector to another

An example of a monthly budget for a family : Monthly income Tk: 7965/-,
Number of Family Members : 4 (husband, wife, a 7-year old child and a servant).

Food			
1.	Groceries cost (rice, pulses, spices, onion etc.)	Tk:	1600/-
2.	Daily Marketing (fish, meat and vegetables)	Tk:	1700/-
3.	Fuel cost	Tk:	250/-
4.	Milk	Tk:	600/-
Clothing			
1.	Buying clothes	Tk:	250/-
2.	Laundering	Tk:	80/-
Housing			
1.	House building loan or house rent	Tk:	1300/-
2.	Electric bills	Tk:	300/-
3.	Salary of Servants.	Tk:	200/-
4.	Tiffin and transportation cost	Tk:	525/-
Household operation and other expenses			
1.	Educational expenses	Tk:	250/-
2.	Medical care	Tk:	100/-
3.	Recreation	Tk:	50/-
4.	Guest entertainment	Tk:	100/-
5.	Newspaper bill	Tk:	120/-
6.	Gifts	Tk:	20/-
7.	Others	Tk:	100/-
Savings			
1.	Life insurance	Tk:	150/-
2.	Bank deposits	Tk:	260/-
3.	Other savings	Tk:	10/-
Total		Tk:	7965/-

Teacher must be explain this budget in the classroom according to current market price.

Time & Making a Time Schedule

Time is such an important resource of human life that does not stop or wait for any one. As time is running continuously, the individual who tries her/his best to relate herself/himself with the time can shine in life. The value of time depends on how an individual uses it. That is, a person who sits idle, to him/her time is valueless. On the other hand, the person who uses time effectively, to him/her time is invaluable. By using time properly, a human being can prosper in his/her personal and social life and can contribute to the economic development of the country as well. But, this resource is so much limited that for every day life, only twenty four hours have been fixed. No body can expand or lessen this twenty four hours or can lend it to others. So, one should be very careful in utilizing one's time. For using twenty four hours properly, everybody should make a plan. What sort of activities are needed to be completed from dawn to dusk, when these are to be completed, how much time is needed for the completion of specific jobs etc, are considered while making a plan. So, a proper planning of time can be called the 'time schedule'. As time is fixed for each individual, the time schedule will also be different. It has been noticed that the needs, habits, likings and disliking of each individual in a family is quite different. Moreover, needs and desire of each family are not the same. So, the time schedule of each of the family will be different. The importance of time schedule is mentioned below :

The importance of time schedule

1. It provides a clear understanding about the works to be performed

If we make a time schedule, it helps us to understand clearly the works to be or not to be performed because the time schedule is usually prepared by scrutinizing all tasks and responsibilities.

2 .It helps to finish the tasks in a scheduled time

In the time schedule, the time to finish tasks is clearly mentioned, and thus it helps to finish the tasks in proper time and eventually it becomes a practice.

3. It helps to interrelate the tasks with the time

If we make a time schedule, it will help us to have a proper understanding of the time of the work, that can or cannot be altered depending on the needs. For example, the time of visiting a doctor or attending school cannot be changed. But the time of going to bed, leisure time and time of study can be changed.

4. It helps to finish a specific job timely

In time schedule, it is mentioned how much time will be allotted to finish a specific job. So, it will help us to have a proper understanding the time fixed for completing each activity.

5. It helps to have leisure time

In a time schedule, a balance can be maintained regarding leisure time, time of working and resting time. So, leisure can be availed by preparing a time schedule.

6. It helps to increase expertise and rapidness to perform activities

If there is a time schedule, it makes some obligation to perform elementary tasks in due time. By performing the tasks timely, it helps to develop a habit of timely action. It also enhances expertise and rapidness. It also promotes to perform innovative activities.

The points to be considered while preparing a time schedule

1. The daily activities which are needed to be performed should be mentioned
2. Based on the importance of the activity, priority should be made.
3. Considering the facilities which are to be provided for the family, the habit of the family members should be considered
4. To perform any work jointly, the convenience of others should be considered.
5. Time schedule should be made in consultation with the members of the family.
6. Time schedule should be made specifying the time that will be needed to finish each activity
7. By performing some tasks jointly, time may be saved. Time schedule should be made in such a way that there remains some scope to perform any task jointly.
8. The tasks of the family should be divided on daily, weekly and monthly basis. For example, there are some tasks which are needed to be performed in weekly and monthly basis and these tasks should be separated from the daily time table.
9. In a time schedule, there should be enough time for resting, sleeping and leisure.
10. In the time schedule, there should be the provision of performing light jobs after finishing a heavy work. This helps to create attention and removes fatigue.
11. Each of the tasks of the family should be done in an appropriate time and so in a time schedule, the timely completion of the work should be ensured.
12. In preparing the time schedule, there should be the scope of flexibility to meet emergencies and this additional time can be adjusted with leisure time.

Daily time table of a student (on a school day)
An example of a time schedule

Activity	Working time limit (from---to)	Working Period
Rising early in the morning	5.30	-
Evacuation	5.30-5.45	15 min
Brushing teeth, washing and praying	5.45-5.55	10 min
Making bed tidy	5.55-6.05	10 min
Learning the lesson by following the class routine and packing up the books	6.05-7.05	1 hour
Breakfast and getting ready for the school	7.05-7.30	25 min.
School hours including transportation time	7.30-2.00	6 hrs.30min.
After returning home from the school changing dress and taking some rest	2.00-2.20	20 min.
Bathing and praying	2.20-2.35	15 min.
Lunch	2.35-2.50	15 min
Resting	2.50- 4.00	1 hr. 10 min.
Doing home work	4.00-5.00	1 hr.
Washing hand and faces and praying.	5.00-5.15	15 min
Combing hair and getting ready	5.15-5.40	25 min
Helping the family or having a chat with the family members and discussing something with others.	5.40-6.40	1 hr.
Washing hands and face and praying	6.40-7.00	20 min.

Activity	Working time limit (from---to)	Working Period
Helping mother in serving light food	7.00-7.30	30 min
Learning the lesson	7.30-8.45	1 hr. 15 min
Watching television	8.45-9.40	55 min
Supper and preparing bed to sleep	9.40-10.00	20 min
Listening to the news	10.00-10.15	15 min
Finishing the rest of the lessons	10.15-11.00	45 min
Washing hands and face and praying and then going to bed	11.00-11.15	15 min
Sleeping	11.15-5.30	6 hrs.15 min.
Total		24 hrs.

A student's (holiday) time table

Activities	Working time limit (from---to)	Working Period
Rising up early in the morning	5.30	-
Evacuating, brushing teeth, washing	5.30-5.45	15 min
Praying	5.45-5.55	10 min
Making bed	5.55-6.05	10 min
Helping mother in preparing breakfast and having breakfast	05-7.20	1 hour 15min
Helping the younger brother and sister in their studies	7.20-8.05	45 min.
Separating the dirty clothes and getting ready for washing	8.05-9.05	1 hr.
Helping mother in household works and cooking	9.05-10.05	1 hr.
Watching television	10.05-11.35	1hr.30min.
Cutting the nails, shampooing hair, washing clothes and bathing	11.35-1.05	1hr.30 min.

Activity	Working time limit (from---to)	Working Period
Personal grooming	1.05-1.35	30 min.
Having lunch, serving the food and also helping mother in preparing dinning table	1.35-2.35	1 hr.
Spending some time with the family members	2.35-3.35	1 hr.
Doing the home work of the week	3.35-4.35	1 hr.
Washing hand and face and praying	4.35-4.50	15 min
Moving around and shopping	4.50-6.10	1 hr. 20 min
Washing hands and faces and praying	6.10-6.30	20 min
Helping the younger in their studies	6.30-7.45	1 hr. 15 min
Preparing the lesson	7.45-9.00	1 hr. 15 min
Watching television	9.00-9.55	55 min
Having the supper and preparing bed to sleeping	9.55-10.15	20 min
Finishing the rest of the lessons	10.15-11.00	45 min
Washing hands and face and saying prayers and going to bed.	11.00-11.15	15 min
Sleeping	11.15-5.30	6 hr. 15 min
Total		24 hrs.

A student has to maintain two types of time schedules (one is for the school day and the other is for the holiday) and these are mentioned above. But the time schedule may be revised in different seasons because in winter the days become shorter and the nights become longer. Besides, the prayer time also changes because of the change of season. So, the time schedule should be adjusted in accordance with seasons, special jobs on special occasions. Thus, the time schedule can play an important role in making one's private and family life more effective.

Proper usage of energy

Like money, time and energy are also essential assets of the family. The physical and mental health of the family members depend on the proper utilization of all these assets. The family should maintain the proper usage of energy, otherwise monotony, fatigue, displeasure will create problems for the family and side by side physical and mental health of the family members will be affected.

Some important techniques of energy adjustment

1. Maintaining the balance between the position of the body and the speed required while performing a job.

The working atmosphere should be made in such a way that anyone can work keeping his/her body posture in a good position. The working place and materials should be kept within the range and it will help to save energy.

2. Proper selection of working place and tools

There will be less wastage of energy if a proper place is selected for working. For example, if washing is done in a washing place, meals is taken in the dining place, it will save time and energy. If we keep all the materials near hand, it will also help to save time and energy. If we use proper tools, it will also assist to save energy. For example, if we use proper broom or mop for cleaning the floor, it will help us to work keeping our body in the right posture and will save energy. If we clean the floor bending our body, it will need extra energy and create health hazards.

3. Work in a proper process

There is a proper system of doing each and every work. If we work following that system, it will help to save energy. For example, while washing, we can use liquid detergent and wash all the clothes together in an integrated way. The process will help to save time and energy. We can use this process while cutting vegetables or sweeping the floor. Sometimes if needed, we can mop the floor without sweeping it first.

4. By changing the used materials for different purposes.

We can also save energy by changing the used materials for different purposes. For example, on the dining table we can use plastic table cloth instead of cotton table cloth and can use synthetic sarees instead of cotton one to save energy.

5. By changing the quality of the products

We can save energy by changing the quality of the thing produced at home. For example, in stead of making omelette, we can poach eggs and this will save time and energy.

Exercise

Multiple choice questions

1. A family budget is
 - a. planning of income and expenditure of a family
 - b. keeping accounts
 - c. taking initiatives for savings
 - d. planning for higher income

2. Time schedule should be prepared
- through discussion among the family members
 - according to one's own thinking only
 - according to the habits and abilities of the family members

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i & ii | b. i & iii |
| c. ii & iii | d. i, ii & iii |

Answer question no 3 to 6 from the text below :

Rahela Begum is Mr. Karim's wife. They have a happy family with their son Rahim and daughter Rabeya. Rabeya helps her mother in cooking and Rahim helps his father in shopping. Their monthly income is 10,000/- taka. Mrs. Karim has her monthly budget and time schedule for every month to run her family. So they do not have any insolvency. Moreover they have opportunity for leisure and entertainment. They can also save some money for future.

3. Mr. Karim's family has opportunity for leisure because
- everyone does his/her own work.
 - they finish their work timely.
 - they love spending their leisure time.
 - they follow a time schedule for doing their work..
4. Mr. Karim's family is happy. The main reason behind it is
- Mr. Karim has a monthly income of Taka 10,000/-.
 - He maintains a budget.
 - His son and daughter do some work for them.

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i | b. i & ii |
| c. ii & iii | d. i, ii & iii |

5. Who is the home manager in Mr. Karim's family?
- | | |
|--------------|--------------|
| a. Mr. Karim | b. Ms Rahela |
| c. Rahim | d. Rabeya |

6. Why does Rahela begum make a Budget?
- so that there is a balance between income and expenditure
 - so that they do not need to borrow money from others.
 - so that their son and daughter has a better future.

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i | b. i & ii |
| c. ii & iii | d. i, ii & iii |

Creative questions

(Based on Chapters 3 and 4)

1. Mr Rafiq has a happy family with his wife and two children. The children are primary school goers. He lives at his paternal house in Dhaka. His monthly income is 9000/- taka. As he has his family budget and work schedule, he can run his family smoothly with his little income.
- What is wealth/property?
 - Why do we need a family budget?
 - Prepare a monthly budget for Mr Rafiq's family.
 - "Monthly budget and work schedule are the main reasons of peace and happiness in Mr. Rafiq's family"- Evaluate.

2. Mr. Rafiq lives in a village. Following is an example of his monthly budget:
Monthly income: Taka 10,000/-
Family members: 4 persons (husband, wife, and two children. One is seven years old and the other is ten).

Food	5000/-
Cloths	300/-
House rent	4000/-
Entertainment	500/-
Savings	200/-
Total	10,000/-

- What is called family budget?
- Which sector has been prioritized in the above mentioned budget?
- Edit the budget and resubmit.
- How will the budget affect the academic activities of Mr. Rafiq's son and daughter? - Explain.

Chapter– V

Appropriate Technology for Post Harvest Processing and Storing of Crops

Processing of Crops

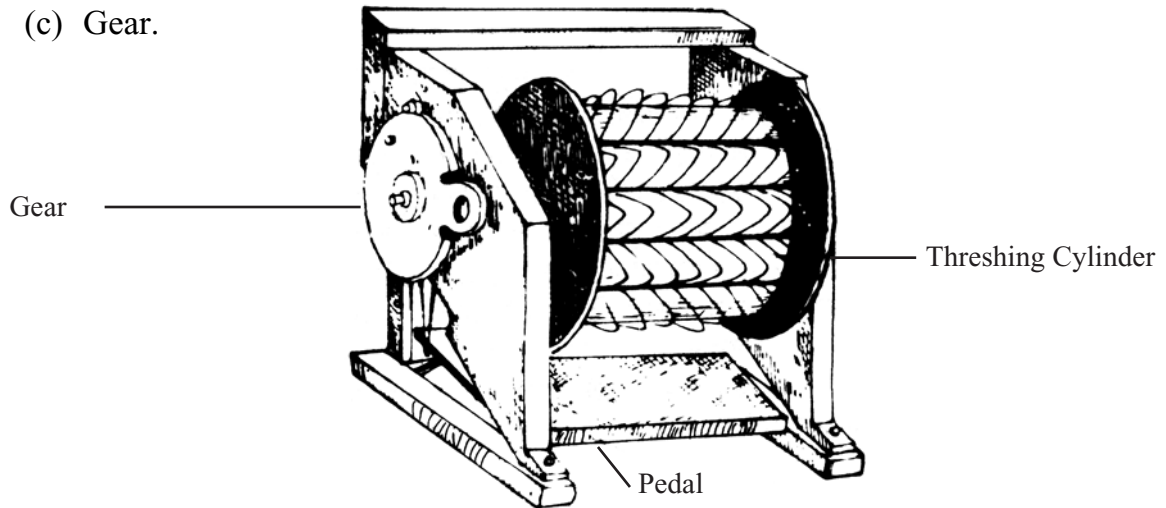
To meet the daily demand of food, the farmers produce different kinds of food by working very hard. Bangladesh is a country with a variety of seasons. Paddy, wheat, corn, pulses, oilseeds etc. are grown widely in the country in different seasons. Considering their use, food value and sources, these crops are categorized in different groups; i.e. the cereal group-paddy, wheat, corn etc, the oilseeds groups and the pulses groups. After harvesting, these are needed to be processed and stored properly to be used as food. Generally, these activities are done by the rural women and usually all these activities are performed by applying traditional methods. As a result, this affects quality and quantity of crops. The post harvest loss of crops in Bangladesh is estimated to be 15% to 20% of the total amount. At present, efforts are being made to use modern technology in every stage for processing crops. Post harvest processing of crops includes threshing and drying. Appropriate technology are being used in most of the cases. Post harvest loss of crops may be reduced to a great extent by applying the appropriate technology. So, in this chapter, concentration will be given on some of the essential aspects of post harvest processing, like threshing, drying and storing of crops.

Threshing of Paddy

If there is a small quantity of paddy, few bundles of paddy are taken together and the paddy from the stalks are separated by repeatedly throwing them on a solid place or on pucca floor. When there is a large quantity of paddy, the bundles are loosen and placed in a circular shape on a neat and clean courtyard and then these are threshed under the hoof of the cows. In this method, 4-6 cows are driven on the heap of the paddy stalk in a circular manner. This is called threshing of paddy. The rural womenfolk along with men usually participate in this activity. The separated paddy are blown against the wind with the help of winnow or sieve. By this method, paddy is separated from the immature paddy and broken straw. This is called winnowing. This is the traditional way of threshing. Presently, to reduce wastage of paddy, the threshing machine is being used. The machine is propelled by foot, but in some cases power driven thresher is also used. It helps to thresh a huge quantity of paddy by using a minimum time and energy and this sort of threshing minimizes the wastage.

This machine is widely used in the villages at present. It has three main parts :

- (a) Pedal
- (b) Threshing Cylinder
- (c) Gear.



The Pedal Thresher

One person is enough to drive this machine. Teeth with spikes are arranged on the cylinder of the paddle thresher. When the paddle is pressed, the cylinder begins to move rapidly. The bundles of the paddy are placed on the cylinder by moving them upward and downward. The bundles of the paddy move forward and backward against the revolving cylinder. Thus the grains are separated from the stalk and these fall on the ground. The formation of the power driven thresher is almost the same as the paddle thresher. It is driven by engine or motor. The bundles of the paddy are put on the cylinder in the same way as it is done in the paddle thresher. Some power driven thresher are fastened with a revolving chain. There are four parts in it :

1. Feeding Chute
2. Threshing Cylinder
3. Winnowing Fan
4. Sieve.

One person continuously puts the bundle of paddy in the feeding chute where the cylinder revolves round 520 times in a minute and threshes the paddy while the grains and the straws are separated by the winnowing fan. Threshing and winnowing are done nicely at the same time by this method.

Drying

After threshing and winnowing comes drying. Generally, the paddy sheafs are dried under the sunshine by spreading them out on the floor of a clean yard or pucca floor.

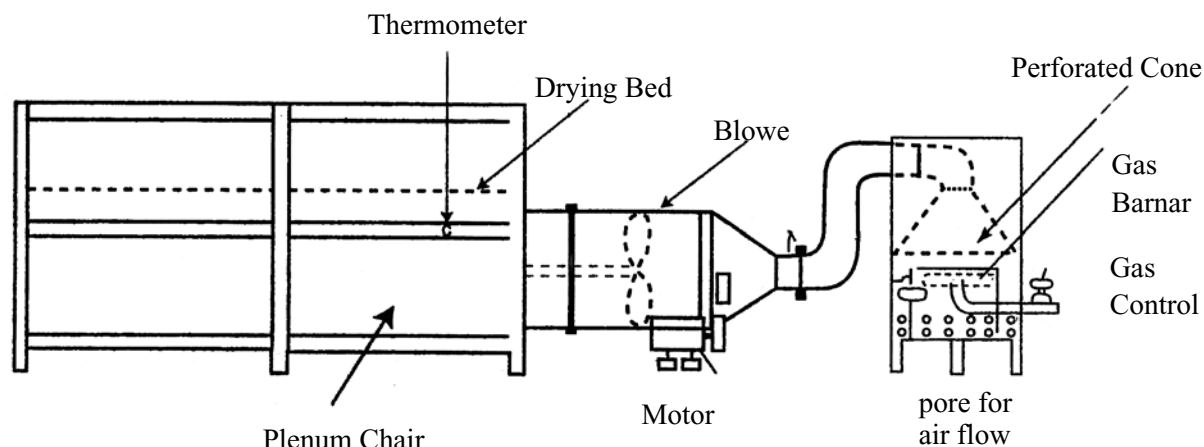
If the weather is bad, the paddy cannot be dried in this way. As a result, the crops might get damaged. Besides, the part of the crops may be wasted by cows, goats, hens and ducks if it is dried in the yard in this way. For that reason modern method of drying is used. That is the drying machine is used. This machine can be used for drying all kinds of cereal crops.

Threshing and Winnowing of Wheat

Wheat is an important cereal crop in Bangladesh. To prevent losses of crops, after collection, care should be taken in the process of threshing and winnowing of wheat. When the wheat attains maturity, the stalks dry up. After harvesting, the bundles of wheat are heaped up in the yard for threshing. Threshing should be done as early as possible. Sunny days are suitable for threshing wheat. Placing the bundle of wheat on a piece of wood or on a pucca floor, the grains of wheat are separated from the stalks by hitting them with a bamboo stick. Besides, the wheat can also be threshed under the feet of the bullock as in the case of paddy and then winnowing is done by pouring them against the blowing wind using the winnow or sieve. But, now- a- days, threshing and winnowing of wheat can also be done by using machine. This reduces the loss of the crops and also saves time and energy. That is, more wheat can be threshed using less time and labor. This machine can be driven manually (using foot) or by power. Same threshing machine can be used for both wheat and paddy. But the machine is used differently in the case of wheat. The threshing machine used for paddy has got the cylinder with spikes. These spikes are not required in the cylinder during the threshing of wheat. The cylinder revolves anti clockwise and a bent sieve is placed below the cylinder. The bundles of wheat are put in the machine as the machine runs, the cylinder revolves continuously and the grains get detached from the stalks by friction. Then the grains of wheat are cleaned by sieve.

Drying of wheat

After separating and cleaning, the grains of wheat are dried. Generally, the wheat grains are dried in sunshine by spreading them on a clean yard or pucca floor or on a mat. The grains are stored after drying them several times. If the weather is unfavourable, wheat grains can also be dried up by using modern drying machine. When the water content of the grains comes down to 12%-13%, it is considered that the grains dried up enough and they become suitable for storing. The rural womenfolk can check the dried grains by pressing them under the teeth. If these give a crushing sound, these are well dried.



Drying Machine

Pulses

In Bangladesh different kinds of pulses like masur, mung, muskalai, chola, motor, khesari, arahar etc. are grown throughout the year at different times. Post harvest processing and storing methods for all kinds of pulses are almost the same. But care should be taken to keep the threshing and drying place of the yard in a good condition. To keep the threshing and drying place in a good condition, a coating of cow dung may be used. The threshing and drying place should be disinfected, otherwise, the pulses might get infected and become unfit for human consumption. The low quality of pulses fetches low prices. After harvesting the pulses, it is better to keep them in heaps on the yard for 2/1 days. When these are dried with the plants, the pulses are separated by striking them with a stick. But if the quantity is a large one, these may be threshed by cows. Then the grains are separated and cleaned by using a winnow and sieve. Now-a-days, modern threshing machine is also used for threshing and winnowing of pulses at the same time. This expedites the whole process and prevents the post harvest loss. The pulses are dried up in the sun shine for several days and then they are stored inside a container having a good lid.

Oil seed

The oilseeds like mustard, linseeds and peanuts are grown abundantly in Bangladesh. These are grown in different seasons. The seeds of mustard, linseed, til, sunflower are very small in size. So, for avoiding the loss of the crops, extra care is needed to be taken for collecting these seeds from the field and then threshing and drying them out. The threshing and drying process of mustard, til, linseeds etc. are almost the same. But threshing and winnowing process of peanut is different.

Threshing and Winnowing of Mustard, Sesame and Linseeds

After harvesting, these crops are needed to be dried well in the yard for several days. Then the seeds are separated from the beans by striking them smoothly with a stick. If the quantity of crops is huge, these are threshed with the help of bullocks. Then these are cleaned with the winnow or sieve. These oil seeds can also be threshed by the threshing machine. This prevents the loss of the crops and threshing could be done by using less time and labor. The paddy threshing machine can be used for threshing oil seeds but the method of using is a little bit different. The spikes which are used in the cylinder during the threshing of paddy are removed when the oil seeds are threshed. The cylinder revolves anti clockwise. A tray is placed below the cylinder. The stalks are put against the cylinder and the seeds are separated from the bean through friction. Winnowing is done with the help of the sieve at the same time. To avoid the scattering of seeds, the threshing machine usually has a cover. This cover helps to prevent the loss of seeds.

Drying

After threshing and winnowing, the oilseeds are dried on a clean yard or pucca floor or in dala or mat. Otherwise, there may be a risk of wastage. These will be well dried up if they are spread under the sunshine for 2/3 days. If the weather is not favourable for drying, the drying machine can be used for drying the seeds.

Threshing and Winnowing of Sunflower Seeds

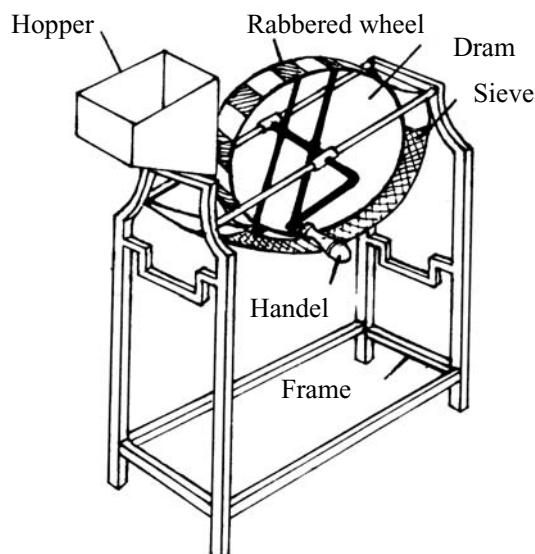
If the dry sun flower is rubbed with another dry sunflower, the seeds will be separated. Besides, the seeds can also be separated by striking the flower smoothly with a stick. Then the seeds are cleaned by winnowing.

Drying

The separated sun flower seeds are dried up by spreading them thinly on the pucca floor using mat, dala, etc. and then these are stored.

Collecting and Threshing of Peanut Seeds

Groundnut contains 48%-50% fat and 24%-25% protein. Groundnut seeds are quite different from other oil seeds. Though oil is extracted from groundnut as edible oil, seeds are directly consumed in many countries of the world. It is a common practice in Bangladesh to take fried seeds. The seeds of groundnut are grown in the roots of the plant under the ground. So care is needed to be taken to uproot the plant from the ground and then to separate the seeds from the plant. After collecting the nuts from the field, these are needed to spread on the yard for drying. If the groundnut seeds have soils on the body, they are needed to be cleaned as far as possible.



Groundnut crushing Machine

The groundnut seeds contain 50%-60% water just after harvesting. So they are allowed to dry up in a mild sunshine for 4-5 days and then stored in the godown. The groundnut seeds with a thin skin are processed for making them suitable for use. The water content of the groundnut seed is needed to be reduced down from 50%-60% to 20%-25% before crushing. Both manual and power driven machines are available for crushing groundnut seeds. Here is the groundnut crushing machine. This machine is suitable for separating the seeds from the nuts. There are three parts; (a) hopper, (b) wheel attached with rubber and (c) sieve. For threshing, groundnut seeds are put in the hopper and the driver rotates the handle to make the wheel revolve, both the threshing and winnowing are done due to friction of wheel with the sieve. The hand driven wheel revolves 65 times per minutes and the machine can thresh 70-80kg. groundnut per hour. The structure and main parts of the power driven machine are almost the same as the hand driven one, but it is larger in size. If the machine is driven by power, the wheel revolves 300 times per minute and 209 kg. groundnuts can be threshed and winnowed in one hour.

Corn

Corn is a cereal crop. Each plant generally has got one shoot. But some plants may have more than one shoot. The grains of the corn are arranged in the shoot in an elongated way. The grains cannot be separated by hand from the shoot. Grains from the shoot are separated mechanically. Then the shoots are allowed to dry and then kept in the open air for that purpose. The coverings of the shoot are separated first and then grains are opened for drying. If it rains during the harvesting period, the covering of the shoot should be separated and in this way they should be protected from rain.

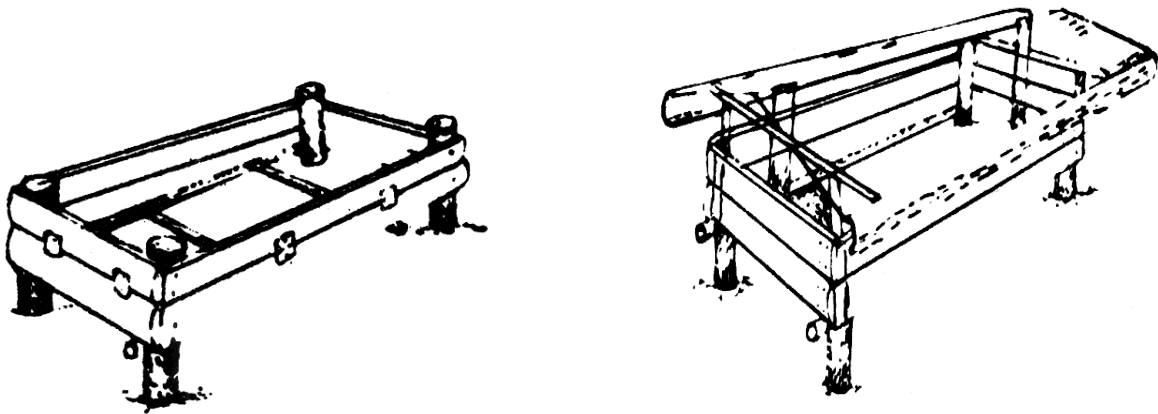
If the shoots get wet they should be dried in the air for 1/2 days rather than putting them in the sunshine. The shoots can be dried in many ways :

A . Spreading in the sunshine

Like the drying of paddy, pulses and other cereal crops, the shoots of corn can also be dried by spreading them loosely on a dry yard or clean floor and moving them to and fro after some time of interval.

B. Use of tray for drying

The drying pot or tray made of metal is placed above the ground for drying the shoots of corn. Then the shoots are placed in 2-3 layers keeping provision for adequate ventilation so that air can pass from bottom to top and through the layers of shoots. If these are covered with plastic sheet as a tent, drying can be done even in the rainy season.



Tray of Drying Corn

C. Drying of shoots by hanging them on the fence, wire or post

This system is like the process of drying bamboo leaves. In this method the coverings of the shoots are not completely separated from the shoots; rather they are tied on the opposite direction and hung. 2-4 shoots are twisted together and they are allowed to dry up hanging on the fence, hanging wire or rope. When the shoots are dried up well, the grains can be separated from the shoots. It is difficult to separate the grains from the shoot by hands. So threshing machine is used. It may be a small hand driven machine or a big power driven one. The three main parts of the corn threshing machine are: (a) handle, (2) a cylinder attached with an iron bar and (3) frame.

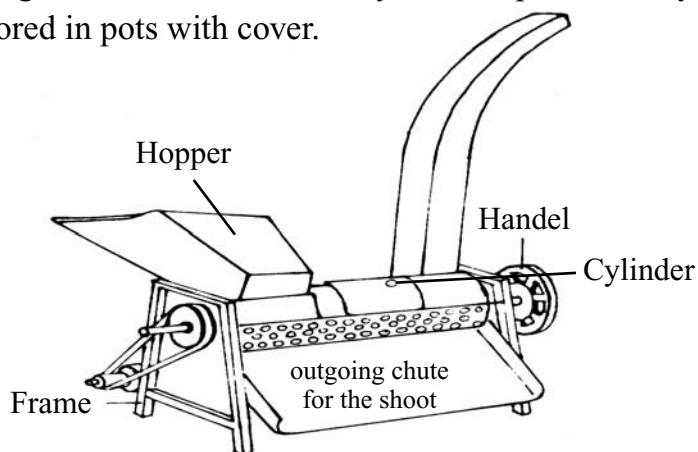


Hanging Method of drying corn

Sitting on the seat, the driver of the machine can move the handle by the right hand and place put the shoots inside the cylinder and can separate 30-35 kg. of corn per hour. Many shoots can be put at a time in the power driven threshing machine. The machine has four parts and these are : (1) hopper, (2) threshing Cylinder, (3) outgoing chute for the shoot and (4) winnowing fan. The threshing machine is run by electric motor. One person pours certain quantity from containers, trays or sacks inside the hopper and the grains are separated due to the friction produced by the revolving cylinder. The shoots come out by a separate passage and the grains are collected on the tray under this cylinder through the holes.

Drying

If the grains are not fully dried up at the time of separation from the shoots, they are needed to be spread on the clean floor, yard or on a mat. As the grains of corn are little bit bigger than the other grains, it takes several days to complete the drying process. After drying, they are stored in pots with cover.



Corn Threshing Machine

Storing of Crops at Home

For meeting the daily demands of food, different kinds of food crops, such as rice, pulse, wheat, pea etc. are needed. Again for making them suitable for human

consumption and for cooking, different kinds of spices like turmeric, pepper, coriander, ginger, onion, garlic, mustard, etc. are also required. These crops grow in different seasons of the year. In the harvesting season of the year, the crops are easily available and the price is also comparatively low. So it is better to purchase those essential commodities in that season. But it is not enough to procure the commodities, they have to be stored in such a way so that their food value is maintained and these are suitable for consumption throughout the year. Otherwise, there is a risk of loss rather than profit. Both the crops and spices are to be stored properly for that purpose. Besides, the service holder families who live in town and cities, usually purchase essential food crops and spices for 1/2 months at a time. How these commodities can be stored properly in their environment are discussed below :

Rice :

We get rice after husking paddy. The rice which we get after husking the parboiled paddy is called the parboiled rice. We can also husk paddy without parboiling. This kind of rice is called atap rice. Whatever may be the kinds of rice, if they are not properly stored, fungus may grow in it and then the rice becomes discoloured. Besides, without proper storing, different kinds of insects may grow in rice which deteriorate the quality of rice. Thus the food value of rice will decrease and the taste will lessen as well. It has been seen that during rainy season, the probability of fungus and insect attack becomes much more higher. These aspects should be considered carefully for storing rice. After husking, if the rice is stored along with husk and bran, they remain in good condition for a long time. The winnowed rice may also be stored in drums or tin containers with a good lid. If some dried pepper/chili, some garlic and some dried Neem leaves are kept in the rice drum, the rice is protected from the attack of insects. It should be kept in mind that rice for daily consumption should be stored in a separate pot. Stored rice should be checked after some interval of time and if needed, these rice should be dried again in the sunshine and stored in a drum or a tin container.

Pulses

After fully drying up, the pulses like masur, mung, mushkalai etc. can be stored at home in a drum or tin container with a covering and those remain in good condition for a long time. These can be used during bad days and serve the whole year till the harvesting of new pulses. It will be in a good condition if these are stored without husking. In that case, a small amount of pulse may be husked at a time and then stored in a tin container considering the requirement for 2/1 months.

Wheat

Wheat can also be preserved like rice in drums or tin containers after drying them up fully. These should be dried in the sunshine after some intervals. Delicious foods like kichuri and halim are prepared from wheat. Besides wheat is also used for preparing bread and different kinds of snacks. Suji and flour are made from wheat. So wheat should be stored in such a way that it can be used as flour in any time through crushing.

Gram

Gram grows well in Bangladesh. In our country, these are used in preparing various breakfast and iftari items. Peeling off the cover of the gram, it is widely used as pulses. After drying properly during the harvesting time, these are to be stored in a tin container with cover. Insect attack may happen in the stored gram if the humidity in the air is high or the water content of the gram becomes high in some ways. So care should be taken in this regard. The preserved gram should be checked after some intervals and these should be dried again and preserved in a tin container.

Pea

Like gram pea is also widely used in our country. Pea is used for preparing Chatpati. It is also used as pulse after crushing. After drying well, peas can also be preserved in drums or tin containers having with good cover. It should be checked after some intervals and dried up again and stored in a drum or a tin container.

Mustard

The preservation of mustard is quite easy. After harvesting the crops, if these are dried up well and stored in a tin container with lid, these remain in good condition for a long time.

Coriander

Like mustard, coriander can be preserved in a tin containers after drying them up well.

Turmeric

After harvesting and processing, turmeric is to be dried up and then can easily be stored in a clean tin container with lid. This spice is to be crushed before using. Many of the housewives get the turmeric crushed at a time for the requirements of 2 to 3 months. The crushed turmeric can be preserved in a glass or plastic jar.

Pepper/Chilli

More care is needed to be taken for storing chillies, as chillies absorb water from the air and easily get spoiled. So, chillies should be properly dried up and kept in a container with lid or cover. It should be checked after some time intervals and dried up again. Chillies are used in cooking after crushing by hand or machine. The crushed chillies are to be preserved in a glass or plastic jar. Otherwise, there is a risk of coagulation of chilli powder.

Ginger

Ginger is a perishable commodity. It is an important spice for preparing any Bengali dish. Special cares are needed to be taken for its preservation. Otherwise, gingers get dried. Matured ginger should be stored and kept in a cool place of the house. If it is kept in an earthen pot with sand, it will remain in good condition for a long time. Many people preserve ginger in a tub and use it throughout the year.

Onion

Onion is also a perishable crop. If the shredded, crushed or more juicy onions are preserved, these can easily get spoiled. Besides, if the storing place is a bit hot, the onions may get spoiled easily. These should be stored in a cool place with adequate

air after drying up the excess juice of the onion. These remain in good conditions for a long time. The stored onion should be cleaned after some time interval. If there are some spoiled onions in the store, these should be discarded and then the rest will be in good condition for a long time.

Garlic

Since the ancient age, garlic is used for making the dish delicious. Preservation of garlic at home is a bit easier than that of onions. After drying them up in the sunshine, if the garlic is hanged in bundles, it remains in good condition throughout the year. Besides, the garlic may also be separated from the plants like onions and preserved for a long time keeping them on the floor or a platform.

Disadvantage of preservation of crops at home environment

There are some disadvantages in preserving the crops in a home environment and these are as follows:

1. It is not possible to preserve more crops at a time at home. There is a problem of space. Most of the time, a limited quantity of crops is stored due to the shortage of manpower.
2. Lack of proper knowledge of preservation may hamper the storage process
3. If there is lack of knowledge about the crops to be preserved, they cannot be preserved for a long time.
4. Lack of applying modern scientific method of preservation of crops at home.
5. Problems arise in preserving crops during natural calamities like cyclones, floods, rain fall etc.

Measures needed to be undertaken to overcome the disadvantage

1. Appropriate measures should be taken at the right time to overcome all the disadvantages. Prior to the harvesting time of particular crops, preparation for harvesting and processing and preservation of crops should be undertaken.
2. Adequate manpower should be employed.
3. Proper guidelines should be formulated for the preservation of crops. Arrangement should be made so that different kinds of crops could be stored in the house. Some crops like potato, onion etc. are perishable commodities. So, in this regard precautionary advice may be taken from the agricultural experts.
4. For the preservation of crops during natural disaster like cyclone, flood, etc. the people should come forward and may develop some strategy jointly to overcome the situation.
5. The tools of preservation like glass, tin pot, plastic pot, etc. should be washed with hot water, dried up and used.
6. The names of the spices should be written on the body of the jar or container for using them properly.

Exercise

Multiple Choice Questions

1. What is the percentage of protein in peanuts?
 - a. 20 - 22%
 - b. 22 - 23 %
 - c. 23 - 24 %
 - d. 24 - 25 %
2. Which of the following is part of a nut threshing machine?
 - a. plenum chamber
 - b. gas burner
 - c. rubbery wheel
 - d. teeth of cylinder
3. It is not possible to preserve more crops at home due to
 - i. lack of space
 - ii. shortage of manpower
 - iii. shortage of containers

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer question no 4 and 5 based on the following text:

There is plenty of rain every year during the rainy season in the month of Baishak. As a result, farmers try to reap and thresh their crops at a time but labours are not available. It causes huge damage of crops.

4. Which of the following is part of a paddy threshing machine?
 - a. a plenum chamber
 - b. a rubbery wheel
 - c. a gas burner
 - d. teeth of cylinder
5. In this situation, which is the right way for rice threshing?
 - a. beating rice plants on a drum
 - b. following 'molon' process
 - c. using foot operated thresher
 - d. using power operated thresher

Creative questions

Gafur Mia is a successful farmer. Every year he produces huge crops. He uses foot operated thresher to thresh paddy and bamboo made container 'dole' for the preservation of his rice grains.

- a. How many parts does a foot operated harvester have?
- b. Describe the procedures of threshing paddy.
- c. Explain how can the problems of preserving paddy in the 'dole' be solved?
- d. Explain the importance of proper preservation of paddy.

Part – II

Child Development & Family Relationship

Chapter–1

Child Care in the Family

A child of today is the father of tomorrow. This universally true maxim tells us to rear and take care of the helpless child properly as soon as it is born. All of us know it well that an enormous potentialities remain hidden in a newborn baby. Certainly, it can be said that a child is born with a lot of potentialities that comes into reality with proper attention and nourishment. So, if we fail to fulfil our primary responsibilities towards the child, its talents will not develop properly. As a result, the future of the nation will be at risk. Hence, in order to build a better society and a responsible generation, we all need to take appropriate care of the new born child. Such a proper development of a child is possible only through suitable care. It is known to all that a child does not become self-dependent or is not be able to meet its physical needs just after its birth. In comparison to other animals, human child is more helpless and more dependable on others. This situation continues for a long period. It is due to such dependence, the mother of the baby should be aware of the principal requirements of the child and ensure proper care of the baby during the early stages. The major responsibility of a mother is to ascertain the needs of the child and find out ways and means to meet the needs. It is only then consciousness will be created among each of the member of the family about the process of growth of the child. The needs of a child are : food, getting rid of breast milk habits as well as gradually getting dependent on weaning foods, clothes, bathing, sleeping, exercise and sunlight. Finding ways to meet all these demands is known as child care, and by dint of it the absolute physical and mental growth of a child becomes possible. In this chapter, the care of children from birth up to five years has been discussed.

Food

Feeding is one of the most important preconditions of child care. To get a beautiful and healthy baby, proper food is essential. A child takes only liquid food up to the age of two or three months. Afterwards, it gradually begins to take semi-solid and solid foods. After birth, mother's milk is the best food for the child. This is particularly so due to the fact that mother's milk is liquid, easily digestible, nutritious and suitable for the growth of the child. The necessary elements for the physical development of a child like protein, carbohydrate, fats, vitamins, mineral salts and water are present proportionally in mother's milk. So, in various research and studies it has been found that breast feeding directly and indirectly benefit both the child and the mother. For its existence, a baby gets its nourishment from mother's milk. There is no substitute for

mother's milk because the other kinds of milk that we get from cows or goats or tinned powdered milk cannot ensure resistance and fitness concurrently to the child. It is only mother's milk that can be termed as a full and complete food.

Remarkable properties/merits of breast milk

- Mother's milk is produced naturally for the baby. It contains the requisite amount of various growth elements that are necessary for the development of the child. Iron is present in breast milk as a mineral and it can be easily absorbed to from blood. As a result, it protects the child from the adverse effects arising out of iron deficiency. Vitamin C present in mother's milk in a proportionate way, is necessary for the child. A child reared through mother's milk does not need extra vitamins and irons.
- Mother's milk is easily digestible and so there is no scope of constipation. This is because the fatty materials are present in mother's milk in liquid form and the lactoalbumin (protein of mother's milk) is also present in it in a maximum quantity and is easily digested whereas casein (protein of cow's milk) is not.
- The child's habit of sucking milk helps to develop the lower part of its face properly.
- Mother's milk is pure as it is produced inside the mother's body. For this reason, there is no possibility of germs and bacteria entering into it. This cannot be said with confidence in case of other sources of milk.
- There is no possibility of mother's milk getting decomposed. It remains fresh as ever.
- Mother's milk helps to develop the power of resistance to various diseases and protects the child from them. The milk that is first produced in mother's breast just after child birth is known as colostrum. Colostrum appears to be sticky and is yellow in colour. This contains more protein in it than it does at later stages. Colostrum produces disease resistant power within the child's body. The protein of milk that we get from cows generally cause allergies which may lead to eczema and other types of skin diseases as well as asthma. However, the children receiving mother's milk up to the age of five to six months are less likely to get such diseases.
- Mother's milk does not cost anything. Keeping her mental and physical health intact through regular and requisite food, a mother can provide sufficient milk to her child. This does not need any extra expenditure.
- Mother's milk saves both time and energy and does not require any of these in excess. But this is not the case of other sources of milk.

- Quite a significant number of mothers believe that they will be confined to their homes if they do breast feeding. Although such an idea is partially true, and examples against it can be cited. One of such an example is that during the time of traveling, this habit of breast feeding makes the journey easy and comfortable to a great extent and is safe for both the mother and the child. Besides, the mother can easily breast feed the child at night, too.
- Breast feeding helps both the mother and the child in attaining emotional fulfillment. It also helps in the development of interrelationship between the mother and the child in a better way. A heavenly comfort prevails between the giver and the receiver of breast milk. The child finds happiness, comfort and assurance within the mother's lap.
- Breast feeding helps to develop a sense of security in the child. It has been found that children reared through breast feeding have less tendency of thumb-sucking. This type of thumb-sucking is a symbol of insecurity among the children.
- There is a common belief that a mother will not conceive again so long as she continues breast-feeding to her child. In other words, it can be said that breast feeding acts as a contraceptive too.
- Some mothers believe that breast feeding may harm their physical beauty. But such an idea is wrong. Moreover, it has been found that the possibility of deadly cancer becomes less if breast feeding is done.
- The uterus and the abdomen of the mother return to their normal shape because of breast feeding.

Rules of breast-feeding

After birth, the baby should be cleansed and taken to the mother's lap and allowed to suck her breasts as soon as possible. This will hasten the supply of milk into mother's breasts, increase its emission through them and as such, the flow of milk will become continuous. From then on, the following rules are needed to be followed during breast feeding.

- The mother should drink a glass of water before breast feeding her child and be mentally ready.
- Both of the breasts are needed to be cleansed each time before breast feeding.
- The psychology of the mother is an important factor during breast feeding. Hence, she should start breast feeding the child with a favourable intentional set up as well as with a quiet mentality.
- She should breast feed her child in a calm and peaceful environment as well as in a position full of love and affection for the child.

- When the child completes its taking milk up to its satisfaction, it will stop sucking the breasts by itself. At this stage, the child should not be disturbed but should be allowed to lie quietly on the bed.
- Both the breasts should be used alternatively during each breast feeding.
- The mother should never breast feed the child in a lying position. The mother's breast may block the child's nostrils and the milk enter inside them as well.
- It is not wise to breast feed the child each time it cries. The child may cry for a number of reasons. Hence, the reason why the child cries needs to be ascertained first before breast-feeding.



Breast Feeding of the Child

Often milk from other sources (bottle feeding) is needed to be given to a child instead of mother's milk. Circumstances which might lead to such alternative feedings can be as follows : (i) when the mother is seriously ill, (ii) when the secretion of milk from the mother's breasts becomes insufficient, (iii) when working mothers need to go out of the house frequently. Such milk from various sources may be of different kinds; for example tinned powder milk, cow's milk or buffalo's milk. Such kinds of milk can be fed to the child through bottle feeders or spoons and cups. During the early stages, many mothers prefer bottle feeding. But according to modern science, it is better to habituate the child in spoon and cup feeding rather than in bottle feeding for a long period. In whichever way the child is fed, one has to keep various items for preparing milk in a neat and clean way.

Items necessary for bottle feeding :

A bottle / cup

A nipple (made of rubber)

Two spoons of two sizes (one teaspoon and one tablespoon)

A measuring glass

A bottle cleaning brush

A funnel, a strainer, and a forceps

A container with a plastic cover

A Saucepan

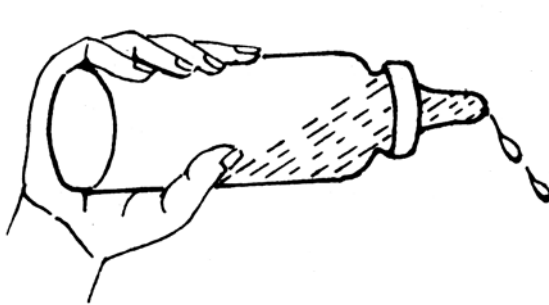
Detergent or soap, etc.

These items should be sterilized every time before feeding milk. First, all the items should be washed carefully with the help of brush and detergent. The inner and the outer side of the nipple has to be cleaned. Sometimes the hole of the nipple becomes blocked. In such a case, it should be cleaned with the help of a tooth peak or a matchstick. Then all the items are needed to be rinsed well with clean water. After this, all the items are to be immersed in water in a saucepan and boiled for 10 to 15 minutes. Then each of the items is to be brought out of the boiling pan with the help of forceps and should be kept in a pot (the pot to be cleansed previously in hot and boiled water). These items, thus cleansed and sterilized, have to be covered with a plastic cover within the pot so that flies or mosquitoes cannot sit on them. Sometimes, nipples may not be of good quality. In such a case, it is wise to sterilize the nipple by boiling it separately for five minutes rather than for ten to fifteen minutes. However, while traveling, sterilizing of the items in the above method may not be possible. In such a case, sodium hypochlorite solution may be utilized. Sodium hypochlorite is available in the market. This solution can be used in sterilizing the above items.

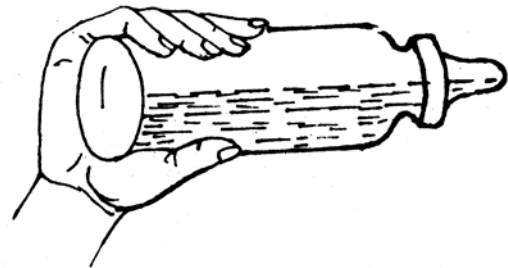
Precautions to be taken while preparing for bottle feeding

Both the hands have to be washed with a soap each time before preparing milk. The inner side of the bottle, both sides of the strainer or that of the measuring cup should never be touched. In case of cow's milk, it has to be boiled to make it ready for drinking. Then it has to be poured in the bottle through the filter. In case of powdered milk, firstly, hot boiled water is to be mixed with it to form a paste. Particular care is needed to be taken so that the powdered milk does not form lumps while mixing it with hot water. After the paste is made, the rest of the boiled water should be poured while stirring constantly. Generally one measure level (through the spoon provided in the tinned container) of powdered milk is mixed with one ounce (30cc) of water. For 4 ounces or 120 cc of milk, 4 level measure of powdered milk has to be mixed with 4

ounces of water. The quantity of milk, when necessary, can be increased or decreased according to this proportion. When milk is prepared and is needed to be poured inside the bottle, the bottle is to be closed with the cap along with the nipple. In doing so, care must be taken not to hold the nipple but the side of the cap. This will keep the nipple safe from contamination. When, the bottle is closed it is better that the nipple-end is tilted and is washed by pouring hot boiled water on it. Afterwards the amount of milk flowing through the nipple is to be ascertained according to age and health of the child.



**Correct position of holding
the bottle during feeding**



**Incorrect position of holding
the bottle during feeding**

When the hole of the nipple is small, the child will have to use more force in sucking the nipple. This will make the weak child tired of sucking. Again, if the hole is wide, flow of milk through it will be more than is necessary. The child, in such cases, will find trouble in swallowing the milk.

Hence, the mother needs to be very particular about it. During bottle feeding, the child should be taken in the lap with care as it is done while breast feeding. The head and shoulders of the child have to be raised slightly by placing an arm beneath them. This will prevent milk from rolling down the back of the child. It is wise to decide whether temperature of milk suits the child before the bottle feeding. The bottle is needed to be held at the child's mouth in a sloping position in such a way that the milk fills in the nipple-end of the bottle. Otherwise, the child will suck air along with milk.

Post-feeding care of the child

Burping the baby- During the breast feeding or feeding in other ways through bottle or cup and spoon, each time some air enters into the baby's stomach. Air can also enter if the baby cries during feeding. This air takes a space inside the stomach. Therefore, the baby can feel uneasiness during feeding. If any measure is not taken this time, pain in the stomach will be caused and the baby will start crying. Many a times, if this situation continues, the baby will vomit. Then the baby will feel hungry much earlier

than the next feeding time and may start crying. Hence, the air which it swallows along with milk is needed to be released through its mouth. This process of taking out this air through the child's mouth is called burping. In order to release the air in such a way, the child has to be held in an upright position on one of the shoulders of the mother. Then gentle pressure is applied on its back and the child burps out the air. The child feels comfort instantly after burping.



Burping the child

During feeding if the baby gets slow in taking food or expresses disinterest, it is to be naturally understood that air is needed to be expelled. This process should be continued till the baby is three months old. After attaining the age of 3 to 4 months, the baby tries burping itself. During the age of 5 to 6 months of age, the baby learns how to burp.

Child's need for milk

A healthy child needs adequate quantity of milk. During the early months after birth, the nutrition of child is mainly met from milk. The quantity of milk consumed by a child during each time of feeding on a day can easily be measured if it is fed using bottle. In case of breast feeding, however, it is somehow hard to find out whether the child gets the required quantity of milk. The child's getting of the required quantity of milk can be ascertained mainly in two ways. Of these, one way is to observe the weekly gain in the child's body weight. The other way is through observing the behaviour of the child during feeding. A hungry child expresses its uneasiness when it does not get the sufficient amount of milk it needs. Besides, the child will start crying between the feeding times, that is, much earlier than the next feeding time. If such is the case, one has to understand that the child is not getting sufficient quantity of milk. Under these circumstances, if the breast milk is not sufficient, the rest of feeding will be made through bottle. Generally, up to two months of age after birth, the rate of child's weekly body weight gain should be 113-170 gms (4-6 ounces). Thereafter, from 2 months to 6 months of age, the weekly gain in body weight should be 170-227 gms (6-8 ounces). Thus, one can easily understand whether the child is getting its required quantity of milk through observing weekly gain in its body weight. The following chart shows a child's need for milk at the stage up to six months of age. After, the age of six months, the need for milk decreases. The reason behind this decrease is that the child begins to take other foods.

The frequency of feeding and time table for feeding the child will also be discussed at a later stage.

Chart : The Child's need for milk

Age	Quantity of milk
1st week	28 gms (1.01 ounces)
Up to 2 months of age	113-170 gms (4.09-6.15 ounces)
Up to 4-6 month of age	142-198 gms (5-7 ounces)

Time Table of Child feeding

The daily frequency and intervals of feeding child depend completely on the age and health of the child. During the primary stages, the child does not have any definite time when it feels hungry for food. In fact, as the child grows up, it needs to be fed according to certain time table. Physicians, for this reason, generally advise to maintain a flexible feeding timetable during the early weeks. The time-table which is followed for one child may not suit another. However, it is wise to develop feeding habits according to a definite time table among the children. As a result, a child will cry or express its need for food at particular times. With varied conditions of age, health, climate and individuality of a child, there are variations in feeding time-tables as well. It can generally be said that a new born baby of our country during its first two weeks is needed to be fed altogether seven times a day with intervals of two hours and then till two months of age starting from the third week, the interval should be of three hours. From the second month up to the age of six months, the child is to be fed six times a day and after six months of age, five times a day through breast or bottle feedings with intervals of three hours and four hours respectively between feedings.

Both the mother and the child need rest at night. Some inconveniences may be experienced during the first two or three months. It is better to develop a habit gradually in the child so that feeding is not done to it after 10.00pm and before 6.00 am. In case that child wakes up during this period, it can be made to drink cooled boiled water.

Getting the child rid of milk: Weaning food for the child

Milk is the ideal food for a child. When the child grows up, the need for food enriched with various food values becomes essential. At this stage, neither the mother's milk nor the bottle alone can meet the need of extra elements necessary for the growth of the child. Hence some other food should often supplement milk that provide nutrition

needed for its growth. It is due to this reason that the child needs to get rid of the habit of taking milk only as its food. In a simpler sense, sometimes quitting milk means habituating the child in drinking milk from a cup in place of sucking mother's breast or bottles. In a greater sense, it means the child getting the habit of eating through chewing and biting rather than sucking foods from some other source. According to the modern concept, a child should get rid of sucking habits during four to five months of its age. The child's normal growth will be hampered if the process of removing its sucking habit is delayed. Many of the mothers do not pay much importance on this aspect. They make their children dependent on mother's milk or bottle milk for a long period. Many children, too, like to suck bottles idly and leisurely. A number of children are found to suck bottles up to their school going age. This habit spoils the child's sense of taste. As a result, the demand for other types of food does not grow in the child. This hampers its total growth. Hence, the child should be familiar with semi-solid or solid foods suitable for it. This may be done by giving the child semi-solid and solid foods steadily along with breast-feeding or bottle feeding during three or four months of its age. This changed habit is needed to be developed in the child because the essentials necessary for its nutrition are largely present in various foods other than milk. For example, mother's milk is a complete food for the child up to age of six months meeting the requirements of iron and vitamins. But as the child grows up, the need of these elements also increases. Neither mother's milk nor any other milk can meet this extra need. It is needed to be borne in mind that foods enriched in various nutritional elements is essential for all round growth of the child. For this reason, the child needs to be gradually habituated with other types of food along with milk from four months of its age. The child should be allowed to develop its changed habit steadily. Nutritionally enriched food items other than milk which are gradually fed to the child as it grows in age are called the weaning foods for the child. Due to this weaning food, the proportion of milk in the child's daily food habits slowly decreases. A list of weaning foods to be given to a child is given below as an example :

A list of weaning foods to be given to a child

Fruits	: Bananas, papayas, pineapples, mangos.
Cereal	: Boiled pulses, bread, milk, suji, ghee
Pulses	: Pulses, bean seeds.

Vegetable : Green papayas, carrots, pumpkins, boiled beans.

Egg, fish, meat : Soft and boiled.

Besides, hotchpotch can be cooked with oil and fed after making it soft. Soup of meat, vegetable and pulses can be given to the baby as well.

New Food for the child

A mother needs to take some aspects into consideration while making the child familiar with such new foods. Only one new food should be given to the child each time and should be continued for several weeks that follow. There are two reasons behind following this practice. Firstly, the child quickly gets the habit of new food provided to it. Secondly, the mother can recognise how far the new food becomes satisfactory to the child. At first a little amount of the food is to be served to the child. If the child accepts the new food, the quantity may gradually be increased. Besides, the new food is needed to be made attractive to the child. Force, in any form, should not be applied on the child in taking any food. If the new food is found to cause the child to vomit, cause allergic reactions on the child's skin or develop symptoms of diarrhoea, it should be excluded from the diet chart of the child for at least some time. It will be easy to get the child rid of milk and make it familiar in weaning foods if we follow this practice. It has been observed that a child like adults, at the age of three to four years can take all that foods of the diet chart according to the feeding time table. It has been observed that a 3 or 4 years old baby can take all food of the list like adults according to the time table. As per the daily time table of one year old child, the child can be provided food three times daily after its nine month. It can be given any foods like juice of some fruits, soup, biscuit, bananas, mangos etc. in between breakfast and lunch and in between lunch and supper. A cup of milk should given to the baby before it goes to sleep.

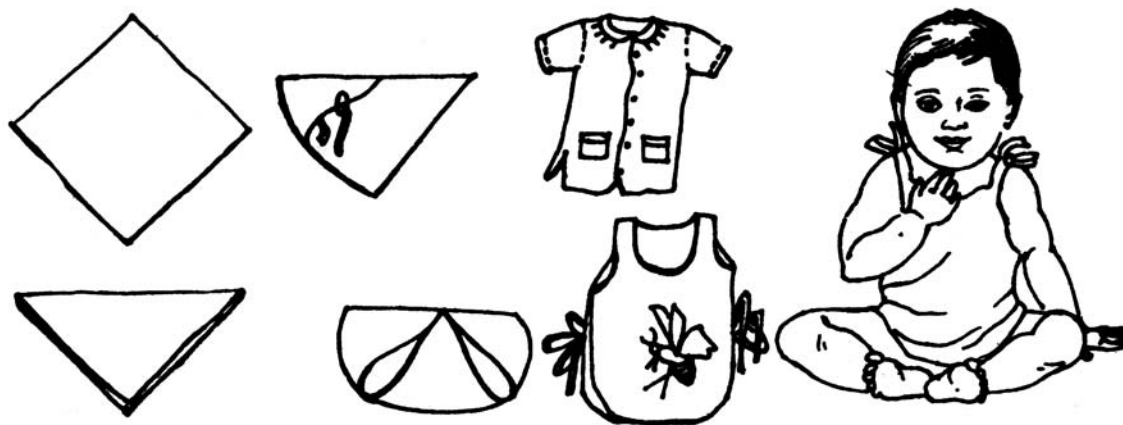
Sample daily diet chart (for a one - two year old child)

Breakfast	Between 6 am and 7 am	Carbohydrate food, such as, suji milk, egg, fruits.
Lunch	10 am 1.00 pm	Fruit Juice/ biscuit/ potatoes/ Rice/ hotchpotch, pulse/ vegetable paste, fish/ meat, milk
Tiffin supper	5.00 pm 7.00 pm 10.00 pm	Semai/ biscuits/soups/noodles Rice/ bread paste with pulse/ meat, milk

At this stage, it is essential to note that the child is needed to be served with milk along with the foods listed in the diet chart each time. The milk may be mother's milk or milk from other sources. During meals, the child has to be served with solid foods (weaning food) first and then with milk. Any quantity of milk it drinks during this time will be enough. On the other hand, if the milk is served first, the child will express its unwillingness to take solid foods and its attraction for milk will remain. Above all, one has to be particular that protein, carbohydrates, fat and other food elements are presents in the child's daily diet. The child, in this way, needs to be made to develop good eating habits. Later as the child grows up in age, only the amount of food in the sample diet chart may be increased and continued as such till the child attains the age of five years. But care must be taken so that the child gradually develops the habit of taking liquid first and the semi-liquid foods and afterwards all types of solid foods.

Clothes

Child's clothes occupy a large portion of child's nurture and care. The primary aim of wearing clothes is to maintain a balanced warmth in the child's small body. A helpless child comes to the world completely bare bodied.



Nappies, diaper and other apparel suited to the child

When the child is born after staying nine months inside its mother's womb, it is exposed to a temperature different from what it had been used to. The bare bodied new born child begins to shiver in cold. During the initial stage of its birth, the child is cleansed and then, depending on the season, it is wrapped in a blanket, quilt or towel. These are the clothing of the child during this particular period. Hence, it can be said that keeping the pace between increase in age and changing need of the child, the types of clothing also change. One of the necessary clothing for a baby is the nappies

or the diapers. The nappies are made at home with soft and absorbent fabrics. Most of the nappies can be washed but do not need ironing. Besides, there are some nappies made of special kinds of paper (these are available in the market) which are thrown away after single use. Nappies made of soft and absorbent fabrics are folded, led between the thighs of the child and their ends are tied into a light knot.

Besides, it is better to clothe the child with a vest or an apparel of the design of a kimono made of thin soft fabrics. The open end of such apparel should be at the shoulders up to such an age till which the child sleeps lying on its back or its chest. The open ends should have laces instead of buttons or hooks for fixing. Such an arrangement will protect the child from getting pinches at its back or on its chest. The child is needed to be clothed in this manner up to the age of five or six months. From the age of two years onwards, when the child just learns to walk, it does not need nappies or diapers during the day time. Simple skirt and pants are enough for it. This will help the child acquire the habit of toilet training. Care should be taken in clothing the child with nappies or diapers, so that rashes do not appear on the child's skin due to prolonged wearing of nappies wet with urine. While changing the diapers, each time the back and lower part of the child's body which are covered with diapers, need to be wiped with wet and clean piece of fabric. Thereafter these parts of the child's body are wiped dry with the help of another piece of clean and dry fabrics, later powder or lotion is applied on them. The child's clothing must always be of light colour, should be loosely fitted and soft, although a child may look beautiful in tight fitting clothes. As such, synthetic fabrics, such as, nylon, dacron, etc. being resistant to passage of air through them, need not be used in making clothes for the child. Synthetic fibres cause harmful effects on the soft and delicate skin of the child. It is only the cotton fabrics which is good for infant clothing. For the clothing of a very young child, it is better to put laces instead of pins or buttons. The open end of the clothes should better be at the chest side. Sleeping apparel of the child should be light and loosely fitted. But apparels to be used during play time should be of bright colour. This will make the child cheerful.

The clothes of the child should be different in different seasons. For example, the child's apparel during summer season in a topical country like ours should be light, thin and loosely fitted. The normal body temperature of the child should be between 98.4 and 99 during both winter and summer seasons. The child is needed to be clothed following this rule. Clothing of the child should be made of flannel or warm fabrics for winter season and depending on the coldness of the weather, it should be made to wear pyjamas or similar type of clothes. The child should not be made to wear warm clothing directly on its bare body. It needs to wear a vest or a tape made of soft fabrics underneath warm clothing. When the child goes out of the house, it should be clad in

apparels of simple designs made of bright fabrics. Instead of making one or two pieces of expensive designs made of bright fabrics. Instead of making one or two pieces of expensive dresses, more number of simple ones should be made for the child. The reason behind it is that the child is needed to be kept neat and clean. The child's dresses become mostly dirty during feeding, in heat, sweat and during running to and fro and playing. This requires frequent changing of child's cloth and hence, it is essential to have them more in numbers. It can, hence, be concluded that the apparel of the child needs to be easily available, should be according to taste, beautiful and hygienic, and may easily be washed and changed.

Lastly, emphasis to a great extent should be given on the cleanliness of the child's apparel. Everyday, the nappies used by the newborn baby, diapers made at home from cotton fabrics, frocks, quilts, towels etc. should be washed with soap and warm water. Care should be taken so that the alkali of the soap does not remain in the fabric. After washing with water the fabrics need to be sterilized by immersing them into water mixed with one or two drops of dettol or savlon. In case these detergents are not available, the apparel daily used by the child may frequently be boiled with water and washing soda. After washing, these may be squeezed to remove water from them and dried well in the sun. After drying, these may be folded and kept in a definite place which can easily be reached by hand. The every day apparel of the child is needed to be washed in detergents or lotions, dried regularly in the sun, folded and kept well arranged.

Bathing the child

Besides feeding, bathing is another important aspect of child care. The initial responsibility of the physician and the delivery nurse is to clean the body of the child and take special care of its eyes after it is born. Thereafter, its navel cord is cut and tied and sterilized bandage is applied on the wound of the navel. The child is bathed in such a way that the bandage on its navel wound does not get wet. In order to hold the navel cord firmly in place, the abdomen of the child is wrapped and tied with a piece of soft and thin fabric. This is known as the primary bath and care of the child. Hereafter, the mother herself needs to bathe the child till the child becomes able to bathe and take care of its body by itself.

Like the elders, the child, too, needs regular bath. Its body becomes dirty due to heat and sweat. Besides, the child starts playing around as it grows. This, too, makes its body dirty. If this dirt is not removed regularly, it begins to block the pores of the child's skin and causes various skin diseases. Regular bath keeps the child's body clean and removes the dirt from it. The child's nerves are made vitalized after bath. This makes the child happy and cheerful and it feels comfortable. In one word, it can be said that regular bath keeps the physical as well as the mental health of the child in

good conditions. The child should not be bathed all on a sudden. This may, very frequently, cause fear within the child. Prior preparation is necessary for bathing. Before bathing, the entire body of the child needs to be rubbed with pure mustard oil or olive oil. This makes the child gradually prepared for bathing physically as well as mentally. All the equipment needed during and after the process of bathing should be arranged and kept together in a place every time before one starts to bathe the child. This is known as preparation prior to bathing . Equipment necessary for child bath is as follows :

Pure mustard or olive oil;

Soap suitable for the delicate skin of the child;

One smooth towel;

A piece of water absorbent, soft and clean fabric to wipe the body and a small piece of cotton;

Two bowls of luke-warm water;

Two soft towels or quilts;

A mug of normal water;

Powder with puff;

Apparel that would be worn after bath.

It is better only to sponge the body of the child with luke warm water till its navel cord dries up and drops from its navel. The reason is that there is a possibility of the navel bandage getting wet if the child is bathed in bowl water during this period. Depending on mother's convenience, it is better to bathe the child during the morning hours of the day. Care should be taken so that the place where the child is bathed is not cool. It is better to bathe the child inside the room or on a verandah instead of bathing it in the bathroom till three or four months of its age. During winter, bathing the child in the sun on verandah makes it feel comfortable and happy. Luke-warm water is taken in two bowls for the child's bathing. In winter, water can be made warm by keeping it for some time in the sun. Temperature of water is to be ascertained before bath. It is wise to spread a towel or quilt at the bottom of the bowl under the water. Otherwise, if the child is laid into bowl, during bathing, there is a possibility of it being slipped off hands of the mother and getting hurt from the sides of the bowl. Such an accident may cause water to enter the child's nostrils and mouth and may cause various harmful consequences. A mug with water of normal temperature is taken. For an infant, a little amount of water is taken in the bowl.

Thereafter, as the age of the child increases, the amount of water to be taken in the bowl also increases. Besides, during bathing of a child, if the ear holes are covered with cotton, fear of water entering the ears is removed. At the time of taking the child into the bowl, its head is to be held up by placing a hand below its head behind the shoulders. The mother needs to be alert at this stage so that the child's head and shoulders do not slip off her hands due to the movements of the child.



Bathing the child

At the age of six to seven months, the child can be made to sit in the bowl with a little help. The child very often, likes to enjoy playing by sitting in water in this way. But it should never be allowed to sit in the bowl alone with nobody around. The child's face should be washed with water without applying soap on it. However, for a somewhat older child, sometimes soap may be applied on its face with care. As the child's head has hair on it, it should, therefore, be washed everyday and quite often, the hair can be shampooed or soap can be used to cleanse the hair. Bathing phobia is found to be common among a number of children. The child begins to cry when it finds its mother making preparation for bathing. Bath phobia has various reasons, such as –

- If water gets into the child's nostrils, mouth, ears or eyes during bathing and causes discomfort to it, the child naturally gets scared.
- The child gets afraid if the bath water is too hot or too cool during winter.
- If, at any time, the child gets slipped inside the bowl during bathing, it begins to become afraid of bathing from thereafter. In cases, such a situation arises and the child develops bath phobia. Hence the mother should consider changing the bathing procedure for sometime. It has been observed that one-year-old children forget such unpleasant happenings normally and within a short period if under such circumstances, bathing in the bowl is stopped for some days.

Method of bathing

Before starting to bathe the child, the mother needs to soak a piece of cotton in water, and squeeze water out of it. Then, she has to wipe the eyes of the child with the wet

cotton carefully. Thereafter, the penis of the male child or the vagina in case of the girl child, as well as the anus, have to be cleaned with a cotton brush. Then the nostrils, and the ear-holes are gently cleaned. After these preliminary tasks are over, the dress is removed from the child's body. A soft towel is being wet with water and soap is applied on it. The body of the child is then gently rubbed with the wet and soapy towel to remove the oil applied on it. Then, gradually, the child's head, backside of the ears, shoulder folds, armpits, hands, legs and lastly, the back and thigh-joints of the child are rubbed with the wet and soapy towel. Attention must be paid towards cleaning the dirt from the neck-folds and knee-folds of the child at the very beginning of the process. Otherwise, prolonged accumulation of dirt may cause sores in these parts. After performing these works, the child's head is to be washed with the normal cold water kept in the mug. The child is then lowered into water of the first bowl. After removing the soap and dirt from the body, it is immediately taken into the clean water of the second bowl where the body of the child is again washed clean of soap. Thereafter, its body is quickly wrapped in the fabric meant for wiping and is laid on a soft towel spread over the bed and then it is wiped dry. This entire work is to be done quickly. Otherwise, the fear will be there for the child catching cold. After this, talcum powder is applied throughout the child's body and the child is dressed in clean clothes. The process of bathing thus ends and the child feels comfortable.

Thus when the child grows up, it is found to learn participating itself in the bathing process. For example, it participates with the mother in arranging its own clothing and bathing equipment as preparation for bathing. It likes to rub its own body by itself while taking bath. It pours water on its own body with a mug. It likes to play with water while sitting in the bowl. As a child continues to take part in such types of activities, the bath phobia gets over and at five to six years of age, it acquires most of the rules of bathing by itself. Yet at this stage, too, the child should not be allowed to take bath alone by itself, because it is not yet able to clean itself properly. It cannot dry its body and hair quickly and as such, fear will be there of it catching cold. The mother should hence, be careful about this. The child, however is able to bathe by itself and becomes self dependent at eight to nine years of age.

Sleep

Rest makes the body free of fatigue, vitalizes the body and helps in physical growth. Sleep and rest are very much close to each other. Complete rest of the body and mind is provided by sleep. Sleep is one of the most essential physical needs of the child. In fine, we can say that sleep is a special aspect of child care. Sleep acts as an appropriate tonic in keeping the child's body fit and healthy. The child keeps itself engaged in playing, running and jumping or any other activities so long as it remains awake.

To make up the wear and tear of the body due to such activities of the child, sufficient rest and sleep are necessary along with food.

The time to be spent by the child in sleeping is closely related to its rate of growth. A new born baby spends 80 percent of its time sleeping. It can be said that it sleeps for almost eighteen to twenty hours a day. Growth of the child is rapid during the early several weeks after its birth.

This growth of the child decreases when it attains the age of six months after birth. During this time, its need for sleep decreases. A one-year-old child sleeps for one to two hours during day time. This quantity of sleep remains almost the same at the age of two also. Children of age-group from six months up to one year generally, sleep for one hour after breakfast and for one or two hours after lunch. Most of the children remain so much busy while they are awake that they easily get tired and fall asleep. Children do not like to sleep when they complete two years of age and begin to cry when laid on bed. In this way, if the child does not sleep in the morning for several days, it sleeps for a much longer period at noon. The place of sleep for baby should be noiseless, healthy, neat and clean, safe and sound. If there is a noisy environment, the sleep of the baby is hampered which is not good for his health. Besides, the bed of the baby is needed to be soft and comfortable. According to opinions of child specialists, the pillow is not required for baby rather it is harmful. Because, the bones of neck and head are soft. So, the shape of neck and head can be deformed by using pillows. Many conscious mothers put a piece of soft cloth after folding it under the head of the baby and change every now and then as per requirement.

Position of the child in sleep

The position of the child in sleep is an aspect of considerable importance. The soft bones of the child are subjected to pressure if the child is allowed to sleep lying for a long time on its back, or left or right side or on its chest. This may cause deformity in its bones. As such, the position of the child while asleep is needed to be changed frequently. However, at the age of four to six months, the child adjusts its sleeping position by rolling itself and sleeps in comfort. By observing the child's movement in adjusting its sleeping position, it is found that a number of children mostly prefer sleeping while lying on their chest and feel comfortable. Such a position of sleeping of the child lying on its chest has got some advantages.

The advantages are :

- Children can lie spreading their entire body length almost parallel to the bed. Such a habit helps straighten their legs and makes their lungs work properly.

- Soft and small skull bones of the child are not subjected to pressure. This prevents deformation of the backside of its head.
- Very often, while burping, some food particles may come out. It may happen even when the child is in sleep. Sleeping in this inverted position removes the fear of blockage in its breathing.
- If the child sleeps lying on its chest, it can easily raise its head and chest with the support of its palms and arms. This makes its back-muscles firm and strong.
- Children sleeping in inverted position cannot kick off the fabric covering their body.
- Due to these advantages, the mothers should help their child sleep in inverted position when the child attains two to three months of its age.



Position of the child in sleep

Physical Exercise

Practising the lesson of regular and daily movement of various parts of the body for bringing rhythm and balance among them as well as among various muscles is called physical exercise. The various nerves of body become strong and get nourished as well as the working ability of the body increases through exercise.

Enough exercise is necessary for the proper physical development of the child. The children make movements almost all the time within a few days after their birth. In this way, normally, a number of muscles of the body get exercise. Children turn their heads, move their arms, legs and fingers, throw out their fists and kick by themselves. But these actions cannot cause enough exercise for all parts of the body. There cannot be adequate exercise for shoulder muscles till the child is able to sit or stand by itself. Similarly, it can be said that heels and toes do not get exercise before the child can stand on its own feet. Hence, it is necessary to follow a daily time table of exercise for the child in order to take proper physical care of it. It is better to make the child perform exercise after three to four weeks of its birth. During this period, it gets rid of post-birth fatigue and is able to adjust itself with the environment. In the primary stages, the time table of the child's exercise should be ten to fifteen minutes. Thereafter, it can be gradually increased up to one hour. The child should be made

completely bare-bodied, even nappies or diapers, too, should not be there during the time it performs exercise. The child may be made to perform exercise in an open and clean place with the help of elder persons. As the child attains three to four months of age, it likes to exercise at its own will through rolling its body. At this stage, it is allowed to do so within a playing cage or in a safe playing space surrounded by the fences at all sides. When the child lies flat on the back on the bed, mother should allow her child to hold her fingers tight, pull the child up slowly, and make it lie down again in its previous position. Thus, the mother has to do this five times and then she has to increase it upto ten times a day. By doing this, the back muscles and the biceps of the child become strong and its efficiency of catching something is developed.

Physical exercise of the child

If the child is laid on its chest, its abdomen comes under pressure. The child, in this position, raises its head and shoulders with the help of its palms and arms. This process, too, is an excellent exercise for the child. Initially, it may be allowed to perform this act for a little period, for example, for five minutes. Thereafter, the time can be gradually increased to an extent till the child gets exhausted. This exercise makes the muscles of the child's chest and back well arranged, increases the strength of its arms and quickly makes the shoulders firm.

Even when the child grows in age, provisions should be maintained for the child's indoor exercise till it engages itself in playing outdoor. With advancement of age, children engage themselves in various outdoor sports, such as, running, going up the steps of the ladder, climbing, riding a cycle, playing with balls, etc. At this stage, no time is needed to be kept for regular indoor exercise. Besides, the child goes to nursery, kindergartens or formal schools according to its age. In such places there are arrangements for P.T., drill and other types of sports. Hence, at this stage, the need for indoor exercise does not arise.



Physical exercise of the child

Sunlight

The provision of enough sunlight for the child is one of the most important parts of child care. To bask the baby in the sun everyday or to leave the baby under the sun for some time every day is called sunbath. The sunlight acts as an energy of life for the human beings. With the sunlight the general health of human being develops. Sunlight helps to increase the natural force of resistance against various diseases of the body.

Hence sunbath, hence, is of much importance in protecting the health of the child. The child may be kept in the sun initially for two minutes a day after birth. The period may be extended upto half an hour. However, it depends upon the intensity of the sun. The body of the child is rubbed over with oil and then is kept in the sun in the early morning during summer and before bathing during winter. This is done because in summer, the intensity of sunlight may cause sun burning. Besides, the child feels comfortable when it is kept in the sun during the cold winter morning. Regular sunbathing keeps the child out of the danger of catching cold and enhances its resistance against various contagious diseases. Sunlight helps in the formation of vitamin D under the skin of the child's body which prevents rickets in children. But care should be taken while keeping the child in the sun so that no burn is caused due to exposure in sunlight. There are some aspects to be taken into consideration while sunbathing the child. The child's head and eyes should be kept away from sunlight and if the sun is of much intensity, the child should be removed after keeping it there for sometime.

For a child, sunbathing may be made by altering very often the position of its body, keeping it lie on either of the sides alternatively, on its back and reversing in various ways. Gradually, when the child grows up and learns to sit, it can be made to play in the sun with its toys. Thereafter, when the child learns to walk or run, it plays outside the four walls of the house by itself and as result, the child's body gets plenty of sunlight.

Exercise

Multiple Choice Questions

1. A six month baby needs some extra food because
 - a. milk from the breast is insufficient.
 - b. the milk from the breast is dried up.
 - c. it becomes monotonous for the baby.
 - d. the milk does not appear delicious to the baby.
2. Dress of which material should not be used for a baby in bare body?
 - a. cotton
 - b. linen
 - c. wool
 - d. nylon
3. Colostrum is beneficial for a baby because
 - i. it has more protein
 - ii. it has more density
 - iii. it has more resistance power

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer to the question no 4 to 7 from the following text:

Farida Begum used to breast feed her baby since he was born. When the baby is hungry she sometimes breast feeds him lying on the bed but the baby cries. The one month and seven days old baby is under weight. The grand ma of the baby asked Farida to follow the right ways of breast feeding. If it does not work, Farida should go for extra milk.

4. Since birth till 2 months, the weekly rate of gaining weight for a baby should be
 - a. 80 - 90 gram
 - b. 170 - 220 gram
 - c. 110 - 170 gram
 - d. 225 - 500 gram.
5. The baby's demand for milk is
 - a. 25 - 30 gm
 - b. 35 - 110 gm
 - c. 110 - 170 gm
 - d. 142 - 200 gm
6. Which of the following activities done by the mother will ensure the baby getting sufficient milk?
 - a. The mother will have some water before breast feeding to take mental preparation.
 - b. She will clean her breasts first.
 - c. She will breast feed the baby sitting in a calm and quiet atmosphere.
 - d. She will breast feed the baby lying on the bed in a calm and quiet situation.
7. Why does the baby cry even if the mother breast feed the baby lying on her bed?
 - i. The baby does not have appetite.
 - ii. The baby has difficulties in breathing due to the weight of his mother's breasts.
 - iii. Sometimes milk enters through the nose and mouth of the baby due to extra pressure.

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i & ii | b. i & iii |
| c. ii & iii | d. i, ii & iii |

Creative questions

1. Rahima Begum is a house wife of a middle class family. She has given birth to a baby boy. She feeds the baby colostrums being suggested by a doctor. The doctor suggested her to breast feed for first six months. Yesterday Rahima's sister bought a new dress for the baby but the baby started crying when the new dress was worn.
 - a. What is colostrums?
 - b. Why does the baby start crying wearing the new dress?
 - c. Describe a suitable dress for the baby.
 - d. Evaluate the decision of the child's breast feeding for first six months.

Chapter–2

Common Behavioural Problems of the Child and the Remedies

The efforts of a child to adjust itself with the environment may be termed as its behaviour. A child behaves differently in its different ages and these are made socially acceptable by guiding the child in various ways. For example, a child can't control itself from its bodily functions. Eventually, if it gets proper guidance, it can perform the bodily needs by hiding itself in a specific area. This type of behaviour is called accepted behaviour.

Behavioural Problem

If a child continues to behave abnormally while growing up it is called behavioural problem of a child. Generally, these problems :

1. continue upto a growing age.
2. are socially unaccepted.
3. hinder proper managing and adjustment.
4. hinder mental and social growth of a child.

Due to behavioural problems, a child often stammers and if its urethra is not properly shaped, it can't discharge urine properly.

Mental Anxiety

The behavioural problems arise when a child does not feel confident on itself and feel insecure. This insecurity may arise due to family pressure, strict control and lack of entertainment, etc.

To solve the behavioural problem of a child, parents and guardians should be sympathetic and should try to identify the main causes behind the problem. If the child suffers from some physical problem, they should take doctor's advice. Sometimes, this type of problems reduce automatically. For example, after taking birth, a child is habituated with bed wetting. It is natural upto a certain age. But when it continues up to 3-4 years of age, it seems that the child is not able to control itself. After this age, if a child wets its bed, it is a problem and necessary steps are needed to be taken in this respect.

Example of Behavioural Problems : Bed wetting, thumb sucking, tempers tantrums, excessive crying, stammering, and aggressiveness.

Bed Wetting

Bed wetting is a normal occurrence for a one year old child. The habit of evacuating bowels properly comes fully under its control as it attains the age of three to four years. But, if the child wets its bed even after the age of four years and continues to do so almost everyday, then it becomes a problem. The child makes the family members including its parents anxious. Very often this puts the family members in an awkward situation in front of outsiders. The parents, most of the time, fail to understand why the child behaves in this way. They become restless and cannot understand the reason of such a behaviour. Thus, they are found to rebuke and even hit the child. In practice, these measures are not only useless but, on the other hand, are rather harmful. Before taking any remedial measures against any problem, a well-defined reason behind the problem is needed to be ascertained. Only then, remedial measures will be easy for solving the problem. It has to bear in mind that behind every problem there is a reason. Here, we shall discuss the probable reasons behind bed wetting.

Probable reasons

- The child may wet the bed due to its physical illness;
- Most of the time the child wets the bed due to excessive fatigue;
- The child may wet the bed if it takes too much liquid before going to bed;
- The child may wet the bed if it does not urinate in spite of feeling the pressure at night;
- The child may do so due to cold if it does not have necessary cloth over its body during winter or rainy seasons;
- The child becomes mentally distressed if it is subjected to excessive restrictive actions. This may be one of the causes behind the child's bedwetting;
- Altercations between the parents in the family make the child feel insecured which, in turn, may cause the child to wet its bed;
- The child wets bed in order to enhance its mother's attraction towards it. Most of the time it is found that the mother becomes some what busy due to the birth of younger brother or sister in the family. This may make the elder child think that there is a lack of love towards it. Besides, in case the mother joins a service for the first time, the child wets its bed in order to have the mother with it for a longer period;

- Besides, if the child is rebuked or punished without reason, it wets the bed. If, the reason is known, remedial measures can be taken easily. Remedial measures, hence, may be considered keeping in view the probable reasons behind the problem.

Means of taking remedial measures

- If physical illness is the real cause, the parents must consult a physician for the treatment of the child.
- Necessary steps have to be taken if fatigue is the reason behind the child's bedwetting. Children are naturally active and restless when they are of three to five years of age. As such, they do not take rest during the day but remain busy in playing and running to and fro. This makes them tired in the evening and they fall asleep out of fatigue. Therefore, they do not feel the pressure of urination during the night while asleep. As a result they wet the bed. Under this circumstance, the child needs to be attracted towards rest during the day time. If the child takes rest after lunch, less fear will be there for it to wet the bed at night.
- If less water and liquid food is given to the child before it goes to sleep, less fear will be there for it to wet the bed. □
- Habit of regular urination is to be formed by the child. Specially before it sleeps at night, the child is to be made urinate and then it should be allowed to go to bed.
- The child needs to be kept mentally cheerful. If due to any reason, it falls into mental distress, the parents should help it come out of such a situation. Thereafter, as it grows in age, the child gets rid of the wetting habit.
- Relation between the parents has to be healthy in the family and the environment of the house should be kept quiet. This will generate the sense of security in the child.
- The mother must take special care of the elder child if it wets the bed due to the arrival of younger brother or sister in the family. One has to be careful so that the child, in no way, can think that there has been a lack of love towards it due to the arrival of its younger brother and sister. In all, under such circumstance, the mother has to be patient and spend more time for the child and remain close to it.
- It is not wise to rebuke or ridicule the child for bed-wetting. The child feels guilty after it wets the bed and hence it seeks shelter and sympathy. Hence, it is not justified to ridicule it.
- The mother's contribution in helping the child to develop self confidence is very great. In this respect, the mother has to praise the child for its good virtues or

habits. If, any day, the child does not wet the bed, the mother needs to be happy and should encourage the child. This will help the child attain mental fulfillment.

- The mother should never express her displeasure during changing or washing wet clothing after the child wets the bed. Rather, she may seek the help of the child in washing the clothing if it is somewhat an elder one. Most of the time as it watches the trouble its mother is taking; it gets rid of the bed-wetting habit. Favourable results can be obtained if the real cause of the problem is ascertained prior to taking any remedial measures.

Apathy towards food

Most of the mother often complains that their children do not like to take food. It is quite normal that the child will take food as it grows and develops. But during this process, too, apathy of the child toward foods is noticed. Very often the child expresses its unwillingness to take particular types of food. This however, cannot be termed as a problem. Children suffering from problems related to apathy towards food are found unwilling to take any food at all. When forced to eat, they do so slowly and bring the food out of their mouth. A number of children run away from their mothers when it is time for them to eat. Such a behaviour made each time by the child makes the parents victim of the circumstances and unusually busy. The parents become concerned about successive overall growth and development of the child. Experiments and observations showed that there are some probable reasons behind this problem. So it becomes easier to take remedial measures if one keeps these probable reasons in view.

Probable reasons

- Children, most of the time, show reluctance in taking unknown and new types of food. It expresses its apathy towards the new food if this is not according to its likings. If this food is forced to it, it develops distaste for all types of food.
- Many a time it brings out the new foods out of its mouth when foods are given to it. This is because the child is yet to be habituated in the new food.
- Besides, the child too shows its apathy towards food if it is physically ill.
- Attitude of the mother on the food given to the child too, makes the child eager or unconcerned towards taking that food. If the mother starts feeding the child with an expression of distaste at the sight of the food, the child will not be interested in taking that food.

- Sometimes in order to make the child healthy, the mother brings various types of food of a large quantity in front of the child. This too, causes apathy in the child towards food.
- If the food placed in front of the child is tasteless, stale or burnt, then too, the child will express its unwillingness in eating.

Remedial Measures

In order to take remedial measures, one has to identify the definite reasons behind the above matters and take steps accordingly. Some of the remedial measures are mentioned below :

- One has to serve the food attentively with affection and care while feeding the child. This makes the child have the taste and pleasure of the food to the full extent.
- It is not wise to place the food in front of the child in excess than what is necessary. The food should be served to the child in small quantities.
- Attitude of mothers on the food to be served to the child is of much importance. Mothers will first ascertain whether the taste of the food is alright or not. The child will easily be attracted to the food if the mother tastes the food herself during feeding and makes an expression showing that the food has been tasty.
- In case there is any physical illness in the child, one has to consult the physician.
- As the child grows up, it has to be habituated in new types of foods but not quickly. The new food may be served along with the known foods. The child needs to be habituated in new food served in little quantity each time and then the unknown food is to be included in the diet list of the child. If, still the child feels inconvenience, then that, too, should be excluded for a certain period.
- Force should not be applied to the child in case if it refuses to eat.
- Besides children are found to grasp very quickly the fact that their parents will be anxious if they do not like to eat. So the parents will make them take food affectionately. This means that children look forward to get affection from their parents. Hence, the child has to be fed in a pleasant environment with love and attentiveness. It is better not to talk to any body while feeding the child. Good results will be obtained in solving the problem if these are followed.

Getting angry

Anger is an inborn instinct. The anger or its outburst may become a problem in the life of the child. A number of children very often get angry with or without any reason and when overtaken by anger they may do anything they like. As a result the

surrounding environment becomes prone to dangers. This type of regular unwanted behaviour caused by the negligible reasons puts everybody in awkward situations. There is a fear of much harm due to such behaviour. Getting angry in this way itself is another behavioural problem of the child. Outburst of anger may be in various ways. The angry child may cause harm to others without any sense of what is right or what is wrong and may even beat or hit others. Many a time it rolls on the ground and may even cause physical damage to itself. This type of anger develops generally from the age of two years. Some probable causes of such types of anger have been found out and are listed below.

Probable causes

- Children may express excessive anger due to various physical illness and inconveniences. Specially, the parents' repeated inconsistent behaviour towards the child may be a cause of its becoming angry.
- If the child has an immediate elder or younger brother or sister it may develop malicious tendency towards him or her and as such may express its anger.
- The child may get angry if its needs are not fulfilled in the way it likes.
- Disturbance to the child by anybody while it is hungry or fatigued may cause its anger.
- Hindrance to any spontaneous act of the child may make the child angry.
- Once these probable causes are identified, it becomes easy in directing the means of remedial measures.

Remedial measures

- Firstly, one has to be ever alert, so that the causes which may make the child angry do not occur in front of it.
- It is not wise to rebuke or beat the child while it is angry. It may enhance the anger further.
- If the child suffers from any physical inconvenience, the physician needs to be consulted.
- Parents after behaving inconsistently with the child have to be careful about such occurrences. They should keep in mind that parents' behaviours with the child should be good, normal and consistent and this helps to suppress the anger of the child through reducing its obstinacy.
- The child's attention is to be focused on any other good item beforehand if it is not possible to provide it with the item it likes.

- Although one should not support the outburst of the child's anger, yet one should wait with patience till the child becomes quiet and make it understand, with affection and love, the benefits of good behavior.
- One should not pay attention to the actions of the child if it makes unfair behaviour through expressing obstinacy while it is angry.
- The parents should be quiet during the time when the child expresses excessive excitement. The parents should face the problem of the child's getting angry with great caution and extreme patience. Only then one gets remedial benefits.

Excessive crying

The child cries just after birth. It is through crying that the child announces its arrival on the earth. It seems as if this crying is an indication of making others realize the demand of establishing right of the helpless human child. This crying is not a problem. As the child continues to grow with the development of mental feeling, it tries to express itself through crying. Sometimes it can make others understand and sometimes it cannot. It cannot express what it means to say or make others understand itself. It becomes disgusted with itself and difficult to control by others. Others too; express their disgust for the child. Afterwards, this unbearable crying gets the shape of behavioural problem. A child in regular habit of excessive crying is identified as a problem child. There are several reasons behind the child's crying. These are as follows:

- The child cries if it is physically ill, but cannot express where its convenience lies.
- Very often the child may cry out of jealousy, such as when the mother takes care of another child, takes into her lap in front of it. This makes the child cry and encourages it to beat the other child and snatch others things. If it fails to do such actions, it starts crying. Uncertainty develops within it due to jealousy. This makes it cry for a long period and quite frequently.
- Some times some psychological reasons may make the child consider itself as unsuccessful if it fails to do anything according to its will. Restlessness acts in itself which has its outburst through crying. It cries more if others fail to understand the causes and do nothing for it.
- The child begins to cry in excessive anger when its parents behave with it inconsistently due to its various unwanted acts.
- Obstinacy of a restless child increases and it cries even if it is forcibly kept still in a sitting position.

Due to above reasons, the child cries and thereby expresses its obstinacy, anger and some of the rights. But, the child uses its crying as a weapon when such things continue to happen regularly. As a result, the child becomes used to crying and creates problems. Remedial measures hence are needed to be taken for solving the problem by identifying the specific reasons and keeping the above probable reasons in view.

Remedial measures

- If the child suffers from physical discomfort, it has to be ascertained and the physician should be consulted.
- Parents should understand the mental actions and reaction of the child. If the mother feels that the child does not want her to take care of or take into her lap the other child, she should refrain herself from doing it so long the child has such type of mentality. However, as the child grows up, one needs to try to build such mentality within the child that it takes sharing things with others as normal thing. Otherwise the child will not be able to become social in later life.
- Parents should be able to read the child's mind. They need to ascertain what it wants, what should be or should not be given to it. Accordingly, they should try to divert the child's attention toward other good things so that it does not get the scope of thinking about its previous likings. One has to give predominance of the mentality of the child towards what it will be allowed to do so that it does not fail in doing that particular thing. This will remove its mental restlessness and help it feel a sense of security.
- It is better not to resist the child from expressing its obstinacy or anger so long it is harmless. One needs to take care of the child as it calms down. It should be made to understand the ill effects of crying. Parents always need to behave consistently with the child.
- Children are naturally restless and unrestrained. They become annoyed if they are resisted in such behaviours. The child, hence, should be kept busy in various encouraging works instead of taken to task to suppress its restlessness. Parents, as such, should find out new procedures of work regularly and present them in front of the child. This will make the child cheerful and busy. It will not get any scope of crying.

Lastly, it can be said that one should find out the reason, as soon as possible, behind any problem and try to solve them. Otherwise these will become habits of the child and its likely further development will be hampered.

Exercise

Multiple Choice Questions

1. Children have full control over their natural calls in
 - a. 1 - 2 years
 - b. 2 - 3 years
 - c. 3 - 4 years
 - d. 4 - 5 years
2. A baby is angry when
 - i. s/he is hungry
 - ii. s/he cannot do whatever s/he likes.
 - iii. s/he does not have the toy that s/he likes

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer questions no 3 to 5 from the following text:

Zahid is only six but he is very restless. He keeps himself involved in different types of naughty activities until he goes to bed. Everyday he takes sufficient milk, fruit juice, and many cans of Fanta. He also pees on his bed every night after his younger brother was born. His parents are equally caring to Zahid as they are to their younger son. They neither scold Zahid nor do they give him any physical punishment.

3. Zahid wets his bed because
 - i. he is very tired.
 - ii. he takes huge liquid with his meal.
 - iii. he suffers from a kind of insecurity.

Which of the following is correct?

- a. i
 - b. i & ii
 - c. i & iii
 - d. ii & iii
4. To stop Zahid to pee on the bed, his parents should
 - i. ask Zahid to sleep after lunch.
 - ii. reduce the amount of liquid in his food.
 - iii. reduce their affection to Zahid.

which of the following is correct?

- | | |
|-------------|----------------|
| a. i | b. i & ii |
| c. ii & iii | d. i, ii & iii |

5. Though Zahid pees on his bed almost every night, his parents show equal affection for him as they do it for their younger child. Otherwise
- i. he will feel insecure
 - ii. he won't stop peeing on bed
 - iii. Zahid will be jealous of his younger brother.

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i | b. i & ii |
| c. ii & iii | d. i, ii & iii |

Creative questions

Mita Rahman likes to cook new food items. She also wants three years old Fahim to eat those items. Fahim does not like her tendency of feedings him too many things at a time and he does not eat them. His mum sometimes forces him to eat them. After a few days Fahim's health started deteriorating. He became ill tempered. He lost his appetite. He did not even pay any heed to anyone. Mita Rahman got anxious. She took him to a child specialist. The doctor said he has had some problems.

- a. What type of problems Fahim is suffering from?
- b. Explain the reasons of Fahim's problems.
- c. Explain what to do to stop deterioration of Fahim's health.
- d. Evaluate the statement "Fahim's mother is responsible for his problems".

Chapter–3

Adolescents of the Family

The teenage period is a period of special significance in human life. This period of life is very complex and is full of various problems. Every human being has to come across this stage while attaining full grown age. Hence, some proper knowledge, that is, when this teenage stage begins and up to what span of time it continues are needed to be known.

Age limit of teenagers and their importance in the family

According to psychologists, the age limit of a teenage boy or girl is between 10 years and 19 years. The physical change is the main characteristics of this stage. There is a slight variation in this age limit depending upon whether the child is a boy or a girl. This is so because the physical transformation of girls occur several years before the boys. Hence, it can be said that in case of girls, such physical transformation takes place from 10 years up to 16 years of age and in case of boys, from 13 years up to 19 years. Generally, the age span from 10 years up to 19 years is regarded as the age limit of teenagers. Psychologists have divided this time span into two parts, for example 10 to 13 years of age as pre-teenage or pre-adolescence and 13 to 19 years of age as late teenage or adolescence. The stage when childhood and youth stages meet together is known as the teenage stage. The growing children of this period are unable to understand at which stage of development they exist. Question arises whether they at this stage of their lives, are non-adult or adult youths. The special significance of this stage of life is the quick physical transformation among boys and girls. At this stage, girls step into full womanhood and they have their physical development like that of full grown young women. This process of transformation does not commence suddenly or does not come to an end abruptly on a single day. In girls, this transformation starts in at the age of ten to eleven years and continues till sixteen to seventeen years of age. In case of boys, too, the process of this transformation starts at the age of 13 to 14 years and continues till they attain the age of 19 to 20 years. Among the girls, the mental as well as psychological transformation, too, are observed simultaneously with their physical transformation. At times, the teenagers like to see themselves in the role of adult women or that of adult men. Again, at times, they think of themselves as non- adult boys or non-adult girls. They are at a loss whether they have anything to do and what they are to do. Due to their physical

transformation they are found to have attraction towards the opposite sexes belonging to their age group. Everything combined together, at a time, they are absorbed in unreal and imaginary thoughts. A kind of restlessness exists in them due to disturbances in their conscious and subconscious mind. They are found to quarrel or dispute with their parents over some issues. They do not like to obey the restriction imposed by their parents; they disobey their rule. Many a time, they are inclined to friend groups according to their choices defying their parents. Psychologists hence have termed this stage of human life as the one of disturbances. The parents need to know the characteristics of teenagers. They have to face much difficulties in directing their children of this age group and need to take much significant caution in this aspect. Many a time, the views of the teenagers need to be given priority over others. But yet, the parents need to be conscious about their movements and behaviour.

In each family, children belonging to this critical age group have to play an important role. Parents expect a lot from the children of this age group who are finding their places in the family as almost full grown persons. It is after this stage that the teenagers become the earning family member and shoulder many responsibilities of the family. They have to participate in some important and effective decision making of the family as well. In case any of the teenagers, if he or she is the eldest child of the family, he or she has to perform various responsibilities. Looking after younger brothers and sisters, helping them in their studies, too are included in their duties and responsibilities. This reduces the pains which the parents have to experience in the fruitful implementation of some work of the family. Moreover, if the teenager happens to be the only child of the family his or her importance in the family increases further. Because, the child has to have clear view of his/her future from this very stage. He/she has to make himself/herself prepared as he/she will have to enshoulder all the responsibilities of his/her parents during the later stage. The teenage girl prepares herself for the future in taking still greater responsibilities in helping her mother arranging daily routine work of the father, nursing the ailing persons, looking after younger brothers and sisters through assuming the position of the central personality in the family. The teenage boy helps his father in various outdoor work by remaining at his side all the time. It is the boys of this age who generally perform all outdoor work of the family. Besides, he can maintain peace in the family through meeting the small demands of the younger brothers and sisters and solving various problems concerning them. Physically and mentally, these children of such critical age group become the store house of much energy. They can also easily perform a number of complicated tasks of the family. There goes a saying that

children of this age group are the assets of the family. Teenagers appear in the family just at a time when the parents consider to retire from their respective work after some what performing their responsibilities in the family. It is this period when activities take place in the family in preparation for full-scale transfer of responsibilities. It is, hence needless to mention the extent of importance of the position of teenagers in the family. From a different angle, it can be said that the physical and mental transformation of the children during adolescence takes place in such a pace that very often they fail to cope with the change that are taking place. This may result in various problems. Many a time, they do not obey their parents. They disregard the rule of their parents. Parents have to understand the circumstances and face them with patience. They should give importance on the behaviour of these children. During adolescence, a sense of freedom is found in the behaviour of the children. Their behaviour shows irresistible and unobstructable speed. This speed cannot be allowed to go on in an uncontrolled way. Parents, hence, like to restrain their children, impose restriction on them and observe their movements. The adolescents most of the time does not like to obey this rule. This results in altercation. This types of freedom many a time, misleads the children, causes them deviate form the cherished path. They cannot reach their goals as desired by their parents. This period is very much critical during the life span of human being. But if one can come across this period with caution and success, the rest of one's life will be full of happiness. He can successfully earn competence to bear the full responsibility of the family. It is for this reason, all the members of the family should attach special importance on the teenagers.

During adolescent period, two main reasons behind the differences of opinion with the parents can be mentioned. One of these is too much sense of freedom and the other is too much child-like behaviour. Often the teenagers are found making child-like behaviour, found to quarrel with their younger brothers and sisters having less tolerance. As a consequence of expressing the sense of freedom they have difference of opinion with their parents. However, there are variations in the mode of expressing the sense of freedom. This depends completely on the prior-relationship of the teenagers which has been established with their parents. According to the psychologists, the children during their adolescence maintain intimacy with their parents if the relationship of the parents with them during their early stages is full of love and affection. The parents then do not express their over dominance on them. Then the children behave with their parents consistently instead of quarrelling or disputing over anything with them, even they absorb themselves in every sphere of

the family, become one with the members in their happiness and sorrow. But in such cases, the parents have to play supporting roles towards the good deeds of their children. The children at this stage need to be given predominance and importance. Thus, the parents unconsciously become bent upon the decisions of their teenaged children and the children gradually emerge as important personalities in the family.

Physical, social and mental needs of the teenagers

The period of adolescence makes the world of the children a new one. During this period, a quick transformation both physical as well as mental is observed among the children. New consciousness develops among them along with this transformation. New requirements in various forms are found to develop. They are faced with various forms of needs. Some of the specific needs of this age, such as those related to physical, mental and social aspects are highlighted below:

Physical needs

Teenagers attain their quick physical developments. When the childhood is over, children begin to grow in height quickly. They reach the highest limit of their tallness during this very adolescent stage. The girls attain their physical structure like that of women whereas the boys attain that of men. This becomes apparent externally in everybody. Besides, various internal parts of the body and also the sex organs become well developed and grown. During adolescence, stomach, lungs and heart too, grow significantly. Metabolic activities of the body increases proportionately along with such changes. During adolescence, need of food increases due to such transformation of the body. Normal teenagers are found to take significant quantity of food beyond their regular food habits. Their general growth increases in its rate. As a result, the nutritional needs of the teenagers increases. During this period, as the quantity of food to be taken increases, the qualitative aspect of the food, too, needs to be looked after considering the growth factor. Children, during this time, become irresistible, unsteady and restless. Extra energy is spent in sports and movements, besides, they do different work that involve still more physical labour. They need food having more calorific values. Moreover, adolescence is an important as well as the best period for accomplishing studies. Study, too requires extra vital force. Hence considering the qualitative value of food, the children, at this stage, need extra amounts of carbohydrates, oils and fats which meet the calorie need of their bodies and provide the extra vital force. Along with these, vitamin enriched foods are necessary for proper and efficient functioning of their brains. Otherwise, if the requisite needs of

food are not supplied to meet the loss due to various work, they will become physically thin and weak. To meet the needs of ongoing physical development, high quality animal protein, iron, calcium, phosphorus and other mineral salts need to be provided through their food. Therefore, provision is to be made to supply milk, eggs, fish and meat in daily food. If the children do not take balanced food daily, they will feel physically weak everyday and as a result they will not be able to concentrate in their work. It is necessary to make provision for sufficient quantity of vegetables and fruits in their food in order to meet their daily vitamin needs. It is not difficult to arrange less expensive indigenous fruits if one consider the financial aspects. Vitamins enhance the disease resistant force of the body and hence, help to keep the body free of diseases. Thereafter, above all, liquid food is necessary in order to maintain healthy workable body. Various types of beverages, like soft drinks, fruit juice and milk can be served to the teenagers. They vitalize their body with extra energy when they come back home after losing their energy to a large extent through sports and outdoor works.

Along with physical transformation of the girls, there is some normal loss of blood in every month due to monthly menstruation. This loss needs to be replenished through food. In order to meet this need, therefore, provision is to be made to supply milk, eggs and fresh vegetables in their food. Required exercise and requisite rest are needed to meet the physical needs of the adolescent during adolescence. In order to have a nice and beautiful physical development, regular and requisite exercise is necessary. As the children are engaged in sports and some physical labour during adolescence, light exercise is sufficient for efficient development of various organs of their body. Because, if excessive energy is spent in exercise, requisite rest and sleep, too, are necessary in meeting daily physical needs of the teenagers. Rest vitalizes and energizes the body and prepares it for the next work. It is through sleep that full rest is possible. Teenagers need to sleep for six to seven hours in order to keep the body fit. The parents in the family have to pay their attention towards meeting these needs of their children so that they can grow appropriately during adolescence.

Mental needs

Body and mind are closely related to each other. Physical development and mental growth are interdependent. During adolescence, as physical development takes place among the children, their mental growth also occurs. But the extent of mental transformation is more compared to physical transformation.

The various mental transformations of the teenagers cannot be quantified through numbers or measurement. The nature of mental transformation is to be felt by insight through the behaviours of the teenagers. Some sorts of mental appetite are noticed among them while they cope with their mental transformation. It is for satisfying the mental appetite, the emergence of mental needs takes place. Inspiration and liking for work are inborn tendency of human beings. Teenagers want to work as a consequence of their natural instincts. They like to create, construct, invent or discover new things. Excessive creative genius is there along with inspiration to work more among the adolescents. Opportunities for such should be created in the form of various work in the family to meet their mental appetite. Apart from this, in schools, too, such needs of the teenagers can be met through introducing co-curricula along with normal studies. Any one of them may create something while the other of the same age group may enjoy it. Hence, it is possible to meet the mental needs of teenagers through arranging various creative exhibitions, too.

During the beginning of adolescence period, teenagers become introvert due to their mental transformation. They like to have love and affections. Hence, persons associated with teenagers both within and outside the family need to provide them with love and affection through their various activities. Giving and receiving love and affection is an inborn instinct of human beings. It is the children who are grown under the loving care of their parents during adolescence can impart effective shape to their strong desire of transaction of love and affection in later stages of their lives. Hence, this depends on the way how one can meet the mental needs of children during their adolescent period.

Teenagers like to have freedom in fulfilling their mental desires. This sense of freedom often makes them self dependent. Another mental need of this age is attraction towards the opposite sex. The need of the company of boy or girl is observed among them. They feel and want the company of the opposite sex. As a consequence of this inborn desire, they become capable of playing the roles of husband and wives when they are adults. At this age, they also overcome their dependence on others and, due to influence of the sense of freedom, and the need of self dependence is also observed among them. During the later part of adolescence period, the children think much about themselves. They select their profession gradually for themselves. If they are provided with education according to their need and capabilities, they will be satisfied mentally, their self dependence will have its firm basis and they will be able to establish themselves in their lives easily.

During adolescence, children become imaginative and thoughtful. Impractical imagination and day dreams are the characteristics worth-mentioning at this age. The

needs created among them due to rapid physical and mental conditions cannot, most of the times, be possible to implement immediately. Day dream may be related to self-establishment and from this arises the questions related to the philosophy of life. What is meant by life? In what lies its success? How can one establish oneself? such mental needs, too, are noticed among the teenagers.

Besides the above, expressing the emotions of mind, gossiping to pass the leisure hours, listening to songs, going for walk or traveling, love for friends, etc., also include the mental needs during adolescence. The parents need to analyze these needs of the teenagers and should make arrangements to take timely actions to meet them.

Social needs

Human beings live in groups. Human beings by their very nature, feel the necessity of companion in order to be social. It becomes easy to know what the needs of children of this age are and to understand the importance of these needs through participation and the expression of eagerness for participation in various social activities during adolescence. It is the interest of meeting the needs of freedom during adolescence that attracts the teenagers towards groups. Their group relations extend over a long time during this period. They make their movements more freely than they used to do during the previous years. They remain almost free of the rule and supervision of elders. Teenagers exchange their ideas with those contemporary to their age in schools. They discover their existence, evaluate their own fitness through various group activities. They select their positions in the group through group activities, such as, they decide whether to become leaders of the groups they belong or to be members of the groups. As they grow in age they become conscious about their own existence. This sense of existence qualifies their personalities. Expressing eagerness to introduce themselves through their own activities in the society, too, are among the social needs of adolescent children. During this period, teenagers like to come in contact with various persons of the society in order to establish themselves in the society through uncovering their own personalities. As their own sense of existence develops, the children try to do these activities by themselves. The parents have their roles also to play in this regard. It can be said, for example, that parents should widen the way for the children to become social as the children take initiatives to make their existence. They may provide opportunities to their children to participate in various social development activities and competitive work such as volunteering. This will enable the children to introduce their own personalities in the society in order to protect themselves. Parents may help them meet their social needs through this means also. Besides, they may encourage their children towards various social activities through direct controls, too, along with giving them various directions. This will make their

children making themselves known as responsible persons of the society by expressing their presence through engaging themselves in the above activities. During this period the parents ought to suggest their children how to be social or how to come in contact with others. As an example, it can be said that too much sense of influence and too much sense of rights do not, most of the time, help anyone build social relationships. Because, if one shows supremacy through utilizing one's influence and making expression to mean this is mine, I shall have it or tendency to establish one's own rights, the friendship cannot be there rather it may result in bitter relations.

During adolescence, group feeling has much influence on the lives of children. It is the group which is given predominance by them in their activities. Some of them may be the group leader and others may be members of a single group. They bend upon the group and undertake present and future programs group-wise. They maintain same likings and same feelings in the group. Sports are also performed by the group. Sports is a social process. This enhances their power of imagination and develops their moral character. However, social needs constitute a fundamental aspect of children belonging to adolescent stage. Parents need to be sympathetically more conscious in meeting these needs efficiently.

Effects of the number of family members in meeting the needs of adolescents

In order to ensure the overall development of the adolescent children, it is absolutely necessary that the identified needs of this age are to be met. In most of the cases the teenagers are found unable to cope with the waves of changes in their physical and mental conditions if the needs of adolescents are not met in due course.

Physical development among the teenagers is hampered if their physical needs are not fulfilled. Simultaneously they become thin and weak physically. They do not find eagerness to work. As a result, there is harm to their mental health also. Unfulfilled mental needs give rise to manifold mental contradictions. In the family, their contradictions and quarrel with their parents become profoundly visible which eventually disrupt peace in the family.

Teenagers are found to involve themselves in anti-social activities if their social needs are not met. Their tendency to revolt against their parents continues to increase if the needs of their freedom and self-dependence are not fulfilled. Under such circumstances, the teenagers get themselves absorbed in impractical imaginations and day dreams which cause obstruction in the proper development of their personalities. In such cases, the teenagers are found also to have delinquent behaviours.

Hence, parents should analyze the ways through which their children can perform their activities with freedom and fulfill their needs through best possible means by paying due regards to their adolescent philosophy of life and keeping pace with their

needs concerning their self establishment. But number of family members has a considerable effect in fulfilling such needs of adolescence. Most of the families have limited income. Interests of all the members cannot be looked after if the number of children or that of family members is more in a family having limited income. It becomes impossible for parents to take care of each and every child equally if the number of children is higher. Besides this, altercations and quarrels are found to occur between the parents if there is want and failure in fulfilling other needs of the children in the family. As a result the peace in the family is hampered. Under such circumstances it becomes difficult to make provisions for meeting the physical needs of the children such as food and rest. Along with these it also becomes impossible to fulfil their mental needs. Due to many children, parents do not even get the scope to look after their needs. In such a family, the children get deprived of affections of their parents. This lack of attention and want cause the children to suffer from mental instability. Children seek mental peace elsewhere. Many a time they are identified as delinquent teenagers in the society. Hence, another responsibility of the parents is to keep the number of family members within limits and pave the way to fulfil the needs of their children efficiently.

Exercise

Multiple Choice Questions

1. One of the main characteristics of teenagers is
 - a. they help neighbors.
 - b. they imitate teachers.
 - c. they express themselves.
 - d. they like spending time with their peers.
2. Psychologists say that the age limit of teen agers is
 - a. 10 -13 years
 - b. 13 - 16 years
 - c. 10 - 19 years
 - d. 13 - 19 years
3. Too much desire for freedom sometimes
 - i. spoils teenagers
 - ii. makes them uncontrollable
 - iii. distracts them from their objectives.

Which of the following is correct?

- a. i & ii
- b. ii & iii
- c. i & iii
- d. i, ii & iii

Answer questions no 4 and 5 from the following text:

Rony successfully passed the SSC examination. Now he is admitted to a college. He is under strict discipline there. However, returning home from college Rony spends time by watching television and chatting with friends. If anybody asks him to study, he misbehaves with him.

4. Which of the following is the reason behind Rony's misbehaviour?
 - a. He has lack of liberty.
 - b. He watches television all day long.
 - c. He has too much adherence with friends.
 - d. It is natural at this age.
5. To rectify Rony the most important thing is
 - i. to control him.
 - ii. to sympathize him.
 - iii. to watch his friends.

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i | b. i & ii |
| c. ii & iii | d. i, ii & iii |

Creative questions

Mitu was very lively. Though she was restless, she was a very good student. She used to share her ideas with her parents. She has been promoted to class six recently and there is a change in her nature. She has become very calm and quiet. She, as if, always wants to hide something from her parents. Her mum becomes very anxious for this tendency of her daughter. She goes to a psychiatrist. The doctor says that Mitu is passing her adolescent period. She is changing physically and mentally. It is a very critical period of life. The doctor advised Mitu's mother to take special care of her.

- a. What is adolescent period?
- b. Explain why Mitu has more physical urge now?
- c. How can be Mitu's mental demand be fulfilled?
- d. Explain why has the doctor termed this period of life very critical?

Chapter—4

Establishing the Relationship of the Adolescents with Different Members of the Society

Human beings are social in nature. They cannot live alone. Family is a small unit of society. A person as he/she moves along the way of his life growing in age, has to depend on various persons of the family in particular and of the society in general. For such dependence, one has to exchange one's ideas and maintain contacts with others. It is this action which in a single word can be termed as social relationship. This relationship is of paramount importance in the life of human being. At the very beginning of life, it is found that survival of a child is impossible unless it gets assistance from the other members of the family. It has to depend on others in order to fulfil its various needs. The child first establishes its relationship with its mother, then gradually with father, brothers and sisters and other members of the family. During the later stages it has to establish social relationship gradually in the larger society outside the family. It is observed that not a single human being can live without such social relationship. Even the fundamental needs of the child cannot be fulfilled without the help of others. Thereafter consultation and helping one another are necessary in order to express one's own sorrows and pleasures. A human being is needed to cooperate with others in order to minimize his/her sorrows and sufferings. Without the cooperation of others, it too becomes impossible for a person to become self-dependent. So, in fine, it can be said that everyone has to cooperate with others in every stage of life facing all the disadvantages of life in order to make life meaningful. Otherwise life will become meaningless. Such an essential social relationship flows towards various directions. Sometimes due to this relationship, a person is found to depend completely on others. An infant, a child depends solely upon the elders of the family. Sometimes, this relationship exists in the form of exchanges or transactions, such as, when the children grow up, they cooperate with each other. Sometimes, the relationship is based on respect and love. It can be said that relationship with teachers, too, involves transaction or give and take and exchange of ideas and expression of respect. Likewise, there is the relationship with friends of contemporary age and with neighbours.

However, in order to make one's life meaningful, one has to live in close contact with various persons of the society. In this way the social relationship builds. But a person has to acquire certain virtue or to follow some general principles in order to establish such social relationship and maintain healthy contacts. These are as following.

The principles of good relationship

1. **The principles of transactions** : A person has to follow the principle of transaction in order to establish relationship. It is in this way that transactions, exchange of ideas and maintaining mutual contact is possible.
2. **Cooperation** : One has to have a sense of cooperation within oneself. If one has a feeling of helping only oneself, it makes one self- centered rather than social if such a feeling crosses certain limits. Most of the time, it creates jealousy and unhealthy competition among the competitors, thus removes the very possibility of good relationship.
3. **Sympathy** : Sympathy is yet another principal virtue one should possess in establishing social relationship. It is difficult to become social if sympathy cannot be shown to others during their sorrows and troubles while going along in the society.
4. **Unselfishness** : Another important aspect in establishing social relationship is getting rid of selfishness. It becomes difficult for a person to establish relations with others if he/she keeps himself/ herself busy in his/her own interests. Relation becomes normal through reaching an understanding when any complex situation arises.
5. **Human Virtues** : Besides, it becomes easy to establish good relations with various personalities of the family if the human virtues such as respect, affection, submissiveness, etiquette, etc. are exercised in time. It is necessary to mention here that every social relation in respect of place, time and person is equally important if one has to live in any society. The detailed discussion is made in this chapter on aspects related to establish relations of teenagers with teachers, friends of contemporary age and neighbours.

Relations with teachers

One who imparts education is a teacher. It is quite natural that a teacher is a person who always deserves respect. It is the desire of everyone that teachers-student relationship should be spontaneous and good. Relation with teacher is built up through various activities after coming in contact with them. Thereafter, quite normally, children in their adolescence obey the directives of the teachers to maintain the relation established earlier. This makes the relation very firm. Self dependence, sense

of self respect, sense of self-dignity and sense of own existence emerge among the children of adolescent age group. As a result, they show respect and impart dignity to the teachers more than before. Teachers, too, get charmed with such behaviours and become actively engaged in arousing consistent and acceptable behaviours in a way the parents do. Such activities of teacher are regarded as part of the process of socialization. At times, teenagers grown under adverse circumstances show dishonour and disrespect towards the teachers. They become disobedient to teachers and spoil the academic environment. In such cases, despair prevail among the teachers and distance is created between teachers and students.

Teachers reward the teenagers for good behaviours as well as arrange punishments for ill-behaviours in the process of socialization. Teachers may, at times behave strictly or with ease in class rooms. Because activities of the students in class rooms may or may not be acceptable to the teachers. This may cause variations in the behaviour of teachers. Thus it is seen that some of the children become attentive according to directives of the teachers. They obey teacher's orders, engage themselves in various activities spontaneously and complete the assigned work, too, in time. Again, there are some of them in the same class who do not become attentive and do not obey the orders of the teachers. As a result, some are found to be rewarded, others get punished. The repeated occurrence of such punishment becomes deeply rooted in the mind of the children and may create problem in future. Teachers should give inspiration and make provision for rewards for good work and this makes the children eager in good work and change the tendency of bad behaviour.

Teachers may act as ideals in socializing the teenagers. Because, idolism is a special attribute of adolescent children. The freedom loving teenagers select their ideals according to their own choice and follow them. Under such circumstances, the teacher should understand the tendencies of children of this age group and play the role of an ideal teacher before them and try his/her best to solve their problems. Such a behaviour of the teacher make the children follow the teacher very much. As an example, it can be said that during this time, students are found to have tendency to use those words more and more which the teacher uses as his or her favourite words. They exercise the views of the teachers in their own lives and refrain from such activities which the teacher does not like. Again, when teachers express acceptable views on some religious or ancient beliefs, the children do the same, too. It is in this way that the various activities and experiences of teachers influence profoundly in the process of socialization of adolescence. This is the best way through which good relations with teachers can be developed. It is the desire of all, that intimate, pure and respectful relation should be established between teenagers and their teachers. This will create an improved and cherished academic environment. Through this, the

teenagers may exercise soft and gentle behavior and etiquette and will be able to play significant role in personal, social and national life.

Relation with friends of contemporary age group

Friends of contemporary age group have considerably more influence in the lives of adolescent children. Teenagers have a number of needs in the socialization process which cannot be fulfilled all the time by the parents and teachers. In such cases, friends of contemporary age group play a very important role. Friends of contemporary age group, generally, mean children of the same age or the age immediately preceding or following it. Hence it can be said that own brothers or sisters immediately elder or younger, cousins of the same age or next to that, neighbouring children and school class mates fall in this category. During adolescence, they can influence their contemporaries very much and can quickly share their own ideas.

One of the major characteristics of adolescent children is that they form groups, move in groups and are bent upon the groups. It is through the help of groups that they get their encouragement to come out of the influence of parents and gradually make normal and free movements. Teenagers express their own existence and identity through groups of contemporaries. Very often they prepare programmes for group activities through their groups and thus opportunities are created for development of good relations among them through exchange of ideas and views. Maintenance of good relations with contemporary groups develops a sense of security among the teenagers. Friendship between boys and girls are more common. They mix with each other becoming intimate at heart. The quality of such kind of relationship is much higher in case of minimizing mental sorrows and sufferings under various adverse situations.

Children of contemporary age group influence each other so much that most of the time they become eager to enjoy their companies leaving aside necessary work. During this period they become self-dependent as they attain consciousness of their own existence. Teenagers, at this age, become identical minded and cooperative. This makes them realize their own capabilities and, as such, their sense of self-respect increases. As a result, the teenagers are found to make their love and good relations long lasting through exchanging among themselves various gifts on the eve of various festivals and celebrations such as those of birthdays, new years, etc. As a consequence of their realization of the need to become free and self dependent, they are found to be eager to participate in sports, enjoy dramas, listen to songs and music along with their friends of contemporary age group outside the four walls of their homes. Many a time

they also participate through their groups jointly in many activities. In such cases difference may be found to occur between their parents and themselves. Hence, the parents should notice the behaviours and movements of the group attentively and behave with children consistently with sympathy. It is needed to be mentioned that ill-companionship is always bad. Hence the parents should have a careful eye on the selection of group or companies and help the children with acceptable direction in selecting their companions. This may create bitterness. Yet the children should be made to understand slowly, steadily and with patience. In such a situation the success or failure of the parents will largely depend on relationship established between them and the children previously. Hence, it can be said that parents should establish relationship with their children through care, love, affection, patience and by looking after them from the very first stages of their children's lives. Relation with friends of contemporary age group is very essential for teenagers. Through this, they can learn to behave consistently keeping pace with others. Eagerness to help others increases depending on the circumstances. This makes children follow or acquire the mode of talking attractively with their contemporaries. As a result, their sense of security increases and they earn self consciousness. On the other hand, ill-companionship or a bad peer group deviates the teenagers from right path and provides bad directions. Hence, parents need to play the role of facilitating selection of and maintaining relation with good contemporaries during adolescence with consciousness and far-sight. The well-being of the family, the society and the state depends on this.

Relation with neighbours

Since the beginning of creation, human beings have an inborn tendency to become social. It is this tendency that makes a person eager to establish relation with neighbours, taking him or her across the frontiers or premises of his or her own family. Establishment of relationship by teenagers with parents and teachers, with fellow friends and with others in the society is of much importance. Along with this, if examined minutely, establishment of relationship with neighbours, too, is not of less important. Sometimes, the parents, friends, relatives may not be very close but the neighbours are always there. During such a time, the necessity of a good neighbour can be practically realized if there is any accident or danger. Many a time, it is the neighbour who plays the most important role rather than many near relatives. In practical life, establishing good relationship with neighbours is very necessary in order to make the way of life smooth and free. Such a situation will be easy if certain methods are followed during establishing relationship. First of all, it is wise to know the attitude of the neighbours on teenagers. Care should be taken so that in establishing relationship, the likes and dislikes, desires and needs of the teenagers do

not cause any embarrassment. Mental virtues, such as, cooperation and sympathy play very important roles in keeping formalities with neighbours.

Teenagers are, by nature, full of initiatives, courageous and eager to work. A cherished relationship can grow up gradually with the neighbours if cooperation and sympathy are shown toward the neighbours during their hours of need. To be pained at the sufferings of the neighbours or sharing their happiness, too, is a symbol of sympathetic behaviours. Identical views between one another makes establishment of relationships easy and long lasting. For this reason, if views are known, behaviour can be made accordingly. However, unless one becomes very intimate with the other, the help cannot be of much benefit. It only leads to the show of help. Hence, sincerity is a must if one likes to help others. If one likes to help or cooperate with the neighbours in their dangers or sorrows, one can realize those with one's own feelings. The hands of cooperation and sympathy will be extended automatically if each and every one can make such realization within herself or himself. As a result, the endangered neighbour, too, will be benefitted beyond expectation and it will continue as a memorable event in his or her life for a long time. It is in this way that the bondage of mutual relation becomes firm while moving along the way of social life.

In fact, one has to maintain friendship with neighbours as a near and dear one being intimate with them. Regular information has to be taken of those who need help, in cases when the head of the family stays most of the time out of the country or suffers from illness since long or has died. Consolation should be given depending upon circumstances. Help of this kind cannot be unilateral. Such a help should be made realizing where it is necessary. Reciprocity, mutuality are the other names of social life and social relationship. It is not wise to have a sense of competitiveness or enmity with the neighbours. Many a time enmity is expressed in various forms by the opponent party. This may so happen because identical views may not be there all the time with neighbours. In such conditions, it is wise to live a peaceful life as far as possible. Often in these cases, it is necessary to maintain good relationship even if it is for show only. Otherwise, if such type of situation is allowed to persist for a long time, jealousy and hatred may grow up resulting in ill feelings and bitterness among the neighbours. Such various tendencies spoil the surrounding environment which, thereafter, brings ill fame in personal and social lives. Children, hence, should acquire the means of establishing good relationship with neighbours during the very adolescent period and engage themselves actively in doing so. It is thus that person, society and nation will be benefitted indirectly as well as directly.

Exercise

Multiple Choice Questions

1. The main objective of keeping good relation between students and teachers is
 - a. to acquire knowledge
 - b. to create an environment
 - c. to develop behaviour
 - d. to imitate teachers
2. To establish good relation with our neighbours, we need
 - i. to feel each other's happiness and unhappiness.
 - ii. to be cordial with others.
 - iii. to show each other's faults.

Which of the following is correct:

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer questions 3 -6 from the text below:

Sumon live beside Mank's house. Once Manik saved Sumon from a danger. Sumon's father always suggests him to keep good relation with others.

3. Sumon and Manik are
 - a. relatives
 - b. neighbours
 - c. teachers
 - d. friends
4. We can look after our neighbours by
 - i. asking about their whereabouts
 - ii. sympathizing them in their woes.
 - iii. keeping good relations with them.

Which of the following is correct?

- a. i
 - b. ii
 - c. iii
 - d. i, ii & iii
5. Sumon was saved from danger the other day by
 - a. his father
 - b. his mother
 - c. his brother
 - d. his neighbours

6. Why is it necessary to keep in touch with different types of people in the society?
- a. For money making.
 - b. For good health.
 - c. For self interest.
 - d. For maintaining social relation.

Creative questions

Farida and Rafiq are brother and sister. They are adolescent. Everyday they learn many things other than their textbooks from their teachers at schools. Their teachers tell them many good stories on how to keep good relation with neighbours. Farida and Rafiq ask their teachers different kinds of questions that flush in their mind. Their teachers try their best to answer those questions. Farida and Rafiq have to keep good relation with their neighbours for their own sake and for the sake of their family.

- a. Which age is considered to be adolescence?
- b. Describe characteristics of adolescence.
- c. How do Farida and Rafiq keep good relation with their neighbours?
- d. Analyse the relation between Farida and Rafiq with their teachers

Part–III

Food & Nutrition

Chapter-I

Food, Food Nutrients and Nutrition

All kinds of animals and plants take foods for living. The plants take water, minerals and manure while the animals take food, milk, eggs, fruits, etc. for their livelihood. These types of things which are essential for living are called food. That is, the materials which help animals and plants to grow up and to live is called food. It is not possible to live taking only one kind of food. However, after taking food, some biochemical changes happen in human body. This process is called nourishment.

Food

The substance which helps to grow properly, protects the body from decay and loss, keeps body well, provides strength and energy, regulates the body and makes it healthy, active and well is called food. For example, rice, pulses, fish, meat, vegetables, fruits, water etc. are called food.

Food regulates the body processes in various ways. It helps to :

- a. protect the body from decay and enhances its growth
- b. produce heat and energy
- c. protect the body from diseases by increasing the immune system
- d. regulate the internal process to keep the body healthy and fit

Ingredients of Food

Various kinds of chemical substances exist in foods. Due to these chemical substances, food can regulate the body in various ways. These very chemical substance are called food ingredients. These ingredients do not exist equally in all food. Due to their variation of existence in food, food ingredients differ from one food to the other. In nature, we get six types of food ingredients and these are :

- a. Protein
- b. Carbohydrates
- c. Fats
- d. Minerals
- e. Vitamins
- f. Water.

After digestion, the food divides into various ingredients. After their absorption, these ingredients play different types of role in a body. For example, it helps the body formulation, protects the body from decay and provides power and energy.

Definition of Nutrition

Nutrition is a bio-chemical process. Through this process after taking food, it is digested in human body and afterwards it transforms into various substances. These digested ingredients are plain sugar, e.g glucose, amino acid, fat etc. Through a bio-chemical process, these elements help to develop tissues, protect body from decay and provide power and energy. This process is called nutrition. The scientific study of nutrition is called nutrition science.

The classification of food ingredients, sources, functions, needs and the effects of deficiency

There are six kinds of food ingredients, viz. protein, carbohydrates, fats, minerals, vitamins and water. Among those, protein, carbohydrates and fats are considered to be the most valuable food ingredients. A small quantity of minerals and vitamins are needed for the body. But to perform the internal functions of the body, the importance of water in our body is also immense.

Protein

Protein is the most important ingredient in forming muscles and tissues of animals and plants. In the year 1838 Mular first recognized the presence of protein as nitrogenous compound in animal body and plants. Protein is very much important for the body formation and growth.

Structure

The basic element of protein is amino acid. If protein is divided chemically, various amino acids will be found. The amino acid is made of ingredients like carbon, hydrogen, oxygen and nitrogen. Through various admixture, the amino acids make protein. There are nearly 25 amino acids which constitute protein.

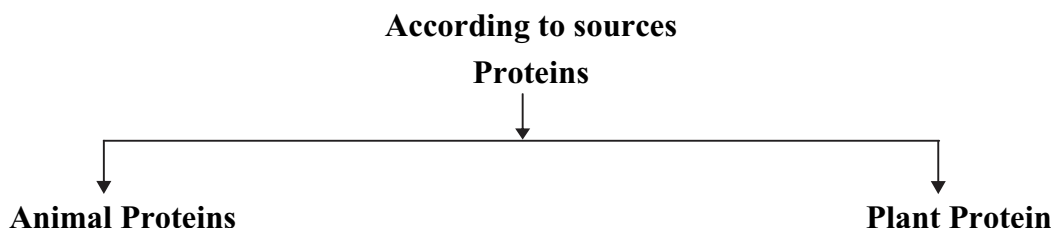
The amino acid which is not created inside the body is called essential amino acid. Without these, the protein deficiency is found in the body. So, these must be taken through food. There are eight amino acids which are essential for human body. These are -

Leucine, Lysine, Methionine, Tryptophan, Phenylalanine, Threonine, Isoleucine and valino. The other 12-13 amino acids are called unessential amino acids. This is because those can be made inside body.

Classification

Protein can be classified into three groups :

- (1) According to its source;
- (2) According to the availability of essential amino acid
- (3) According to its formation and nature

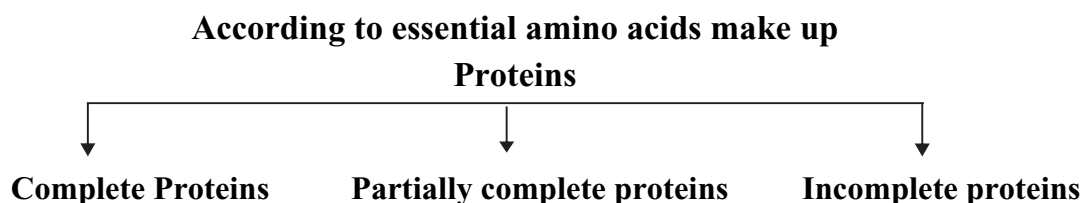


Animal Proteins

The protein which we get from animals is called animal protein. In the foods which are originated from animals, it exists abundantly and so these types of foods are called protein types of food. In animal protein, the essential amino acid exists proportionately. For example, the protein of milk is casein, the protein of egg is albumin, etc.

Plant Proteins

The protein which we get from plants is called plant protein. In it, a less amount of the essential amino acid exists. So, this protein is called secondary protein. This type of protein is found in various rice, pulses, wheat and maize.



Complete Protein

The protein which we get from animals is the best one and so it is called the complete protein. It is called the complete protein because the essential amino acid exists here abundantly. These are, milk, eggs, cheese, fish, meat, etc.

Partially Complete Protein

These proteins are getting from plant sources. It is called the partially complete protein because all the essential amino acids are not present here but the existing amino acids together act as a complete protein. It is a good source of protein for non-vegetarian. These are- pulses, ground-nut, peas, wheat, rice etc.

Incomplete Protein

There are some types of food with protein but these foods are not considered the source of protein. Because the essential amino acid does not exist here. These types of food are gelatin, vegetable and fruits.

Classification of Protein as per formation and nature

Simple proteins

Amino acid is found in these proteins after hydrolysis. for example Albumin (blood), gelatin (flesh) etc.

Attached Proteins

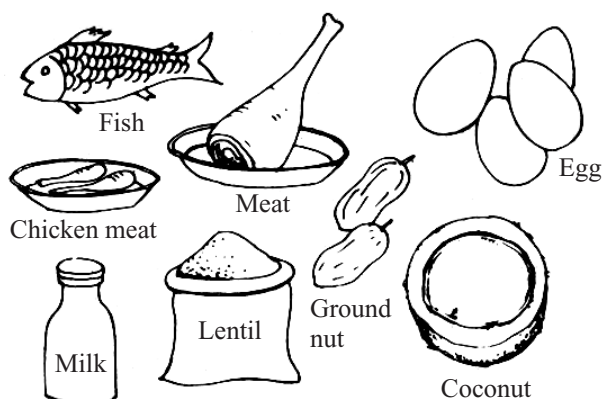
In this protein, in addition to hydro-amino acid, some non-protein substances are found. For example, Phosphoprotein (Phosphorus which consists of lipo protein where lipid or fat exists), glycoprotein where carbohydrates exist.

Derived Proteins

These proteins are a part of the molecules of natural proteins or these are a transformed stage of simple or attached proteins. These are transformed form of original protein created through digestion. For example, Proteoses and Peptones.

Sources of Protein

The best sources of protein are beef, mutton, poultry, milk, various milk products, fish of different kind. Besides, various types of pulses and beans, peas, soybean, nuts, peanuts are the other sources of protein. The sources of protein is shown in picture below :



Sources of proteins

The Functions of Protein

Protein works in various ways in the human body :

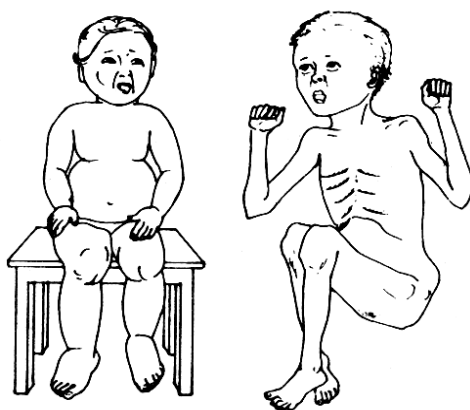
- (1) Mainly protein helps to build up human body, keep the body formation properly, nourish and protect the body.
- (2) Extra protein is stored in the body and it supplies energy and power when these are needed.
- (3) Protein helps to supply oxygen to every cell of the body and participates in building hemoglobin.
- (4) Protein helps to create enzymes which are essential for digestion .
- (5) Protein helps to build antibodies which destroy infectious bacteria. That is, protein develops the power of resistance to diseases.
- (6) Protein helps to produce mother's milk.

The necessity of protein in human body

The need of protein vary with age and sex. After birth, the growth of a child continues up to 25 years. But this rate of growth becomes slower. So during the period of rapid growth, the need of protein for the human body becomes the highest. But when, the child becomes an adult, protein is needed only for the protection of the body. During this period, the demand of protein is proportionately less than the amount he needs previously. Generally, the demands of protein is higher for the males than the females. But during pregnancy, this demand increases. After illness, to overcome the deficiency of health, the demand increases. According to the nutritionists, daily 1 gm. protein is needed for an adult. To meet up the demand of protein, it is better to take animal and plant proteins at the same time. But the animal protein should be $\frac{1}{3}$ to $\frac{1}{2}$ of the total protein. But considering the size of the body and availability of protein in this sub-continent, the requirements of protein for each kg. body weight has been fixed as 0.8 gram instead of 1gm. Based on the quality of protein, the demands of protein changes. In rice and bread, Lysine, the essential element of amino acid exists insufficiently. But in pulses, it exists sufficiently. So, the foods like mixed rice and dal or bread and dal help to increase the food value and to meet the demands of the body.

Results of Protein Deficiency

- (1) Due to protein deficiency, human body cannot be formed proportionately and if the daily loss of energy is not fulfilled, the body will lose its weight.
- (2) The normal growth of body gets hindered.
- (3) Disturbance in digestion is created and various stomach diseases like the problem of liver arise.
- (4) Due to lack of protein, the fatal disease like Kwashiorkor occurs. As a result, water stores in the body and the body becomes bloodless.
- (5) Prolonged deficiency of protein leads to mental disorder. Loss of appetite is seen. The hair and the skin lose their natural glaze.
- (6) If there is a joint deficiency of protein and carbohydrates, the children are affected by a kind of disease called Marasmas which makes the body a skeleton and hinders the usual growth of the body.



Kwashiorkor and Marasmas

Carbohydrates

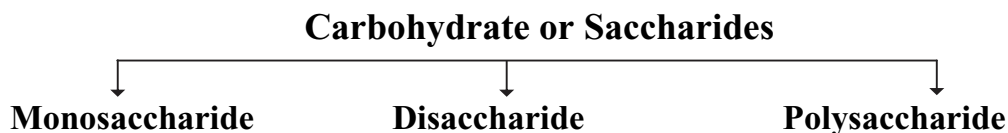
Carbohydrates are the main sources of energy in the human body. Most of the natural foods contain carbohydrates. In the plants, carbohydrates are formed using carbon, hydrogen and oxygen through the process of photosynthesis. Carbohydrates are colourless, orderless, crystalline and sweet.

Structure

When hydrogen and oxygen mixing with carbon with a proportion of 2:1 produce a compound, the compound is called carbohydrate. It is sweet in test.

Classification

The other name of carbohydrate is saccharide. Carbohydrate is divided into three groups and these are : (1) Mono- saccharide; (2) Di- saccharide & (3) Poly- saccharide.



Mono- saccharide

The carbohydrate which is constituted with only one simple molecule of carbohydrate is called mono- saccharide. For example :

Glucose - rice, wheat, grapes, the carbohydrate glucose of blood.

Fructose - The carbohydrate which is found in honey and ripe fruits is called Fructose.

Galactose - This mono- saccharide is not be found freely in nature. After being broken, the carbohydrate lactose of milk forms galactose.

Di- saccharide

The carbohydrate which is formed with the two same carbohydrate molecule is called Di- saccharide. For example-

Lactose - It is the carbohydrate of milk. It can be found in breast-milk. After breaking lactose, glucose and gelatos are found.

Sucrose- Di- saccharide is found in sugar-cane, beef and in various vegetable and fruits. After breaking sucrose glucose and fructose are found.

Maltose - It is found in the starch of rice. It is also called malt sugar.

Poly - Saccharide

The carbohydrates which are formed with various mono- saccharide is called Poly- saccharide. For example-

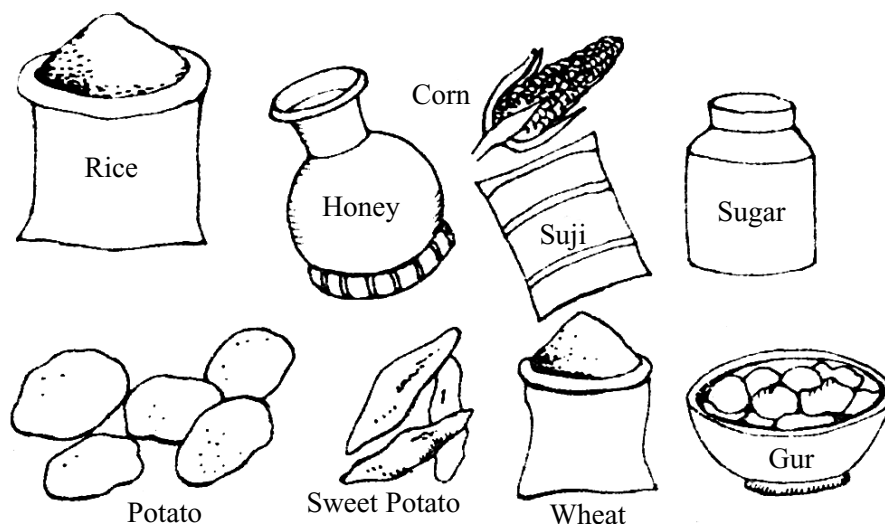
Starch - It is found in rice, wheat and the vegetables which grow beneath the soil (e.g. potatoes, sweet potatoes, carrots, turnips, tubers etc.). It is also found in the trunk of plants (in the arum) and also in the roots of plants. Apples, bananas also contain starch. After breaking starch, various glucose molecules are found.

Cellulose- It is found in the trunk and root of plants and also in the cover of fruits. It is also found in rice, wheat, maize and pulses. Cellulose is the principal element which forms the plant's body.

Glycogen- It is an animal carbohydrate. Excessive carbohydrates is stored in the human body as glycogen.

Sources of Carbohydrates

The carbohydrates are to be found in sugar, molasses, fruits, carrots, pulses, rice, wheat, honey, sugar-cane, beet etc. Besides, it can be found in fish, meat and milk. The carbohydrates which are produced are mostly found in the trunks, roots, leaves and seeds. In the world, in every year, 3 crore tons of carbohydrates are produced. The 1/3 of it is collected from sugar cane.



Sources of Carbohydrates

Functions of Carbohydrates

- (1) Carbohydrates work as the fuel for the body. They burn in the cells easily and provide us energy.
- (2) They spare protein from creating energy.
- (3) They help to burn fat.
- (4) As glycogen they are stored in various organs and after breaking provide fuel for energy.
- (5) The carbohydrates called cellulose prevent constipation.

Demand

The demand of carbohydrates in food depends on the demand of calories of a human being. The foods which contain carbohydrates are known as the energy foods. To meet the basic demands of the body, human beings need calories. Besides, they also need calories for performing any type of hard work or for working or moving. So, the demand of carbohydrate depends on the labour which a person does. Those who perform much physical labour need more calories. According to the nutritionist, 58-60% demand of calories of human beings should be met by carbohydrates. The demand of carbohydrates can be met from fat and protein. An adult person should need 300-650 grams (differs as per labour) of cereals everyday. It will provide 1200-2600 calories because 1 gm carbohydrate produces almost 4 calories of energy.

The result of the deficiency of carbohydrates

- (1) Due to the deficiency of carbohydrates in the body, energy begins to grow by breaking the reserved protein and fats of the body. As a result, the body loses the normal weight.
- (2) Less intake of carbohydrates produces ketone and due to this serious disease ketosis occurs.
- (3) The quantity of acid in blood increases. As a result human being can lose their senses.
- (4) It creates serious hazards in the metabolism of the brain.

Results of the excess intake of carbohydrates

The excess intake of carbohydrates is deposited in the body as fats. The excess glucose is transformed into glycogen and is deposited in the liver and in the body. As a result it increases the weight of the body. Excess intake of glucose causes dental caries and diabetes.

Fats and Oil

Fat and oil are very important ingredients of food. It is the most important element which creates energy. Like protein and carbohydrates, fat is also needed. The fat stored in our body as energy. It helps to formulate human cells.

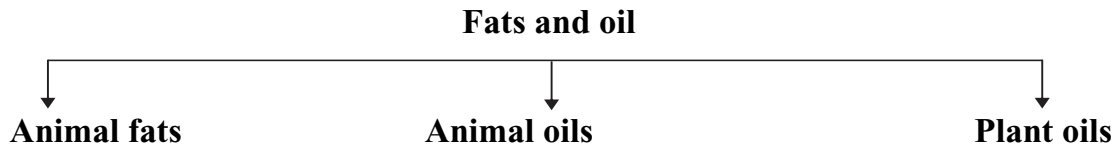
Structure

Fat is formed with the chemical admixture of glycerol and fatty acid. That is $\text{glycerol} + \text{fatty acid} \rightarrow \text{fats}$. Among the substance of fat, oil, fat, ghee, butter are important. The characteristics of fat depend on the characteristics of fatty acid. The fatty acid which has saturated carbon, is called fats. For example, fish, fat of meats,

dalda etc. The fats which has unsaturated fatty acid is called oil. For example- soyabean oil.

Classification of fats

Due to the structural characteristics of fat, some fats are found in liquid form and the others are found in hard form. As per the origin, the fats are of three types, such as; (1) animal fats, (2) animal oils & (3) plant oils.



Animal fats

It includes foods like ghee, butter, fat, the yolk of an egg, meat with fat, cheese etc.

Animal oil

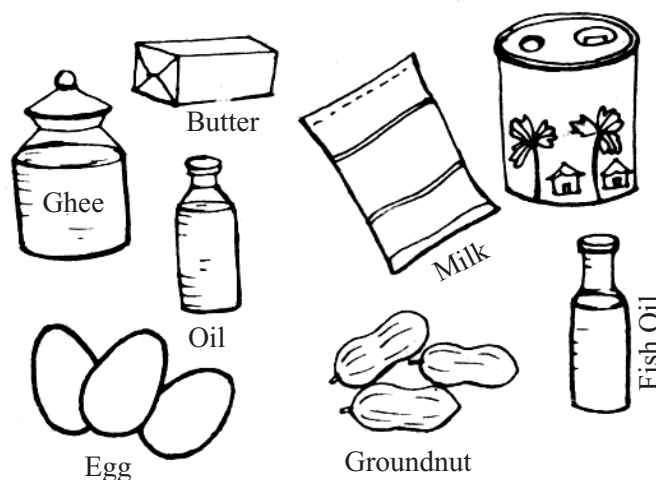
It is found in animals oil and in the livers of fish.

Plant oils

It is found in oil seeds like mustard, soyabean, sesame seeds, linseed, maize, coconut, olive , sunflower oil . It is also found in different types of nuts.

Sources of fats and oil

Ghee, butter, fat, oil of fish, fatty meat, yolk of eggs, milk, margarine, vegetables, oil of oil-seeds, mustard, sesame oil, linseed, maize, soybean, nut, coconut are the best examples of fatty food and oil.



Sources of oils

Functions of Fat and oils

- (1) Fat and oil create more energy than carbohydrates
- (2) They prevent the loss of energy
- (3) They help to keep the skin shiny and protect the skin from skin diseases
- (4) Some vitamins help in absorption.

Requirements of fats and oils

In every day meal, there should be 15 grams of animal fats and 5-10 gram oil. About 20-30 % of the total calories of a human being should come from fat and oil. To meet the requirements of the calories of a human being, it is recommended to take 30-60 gram fat every day.

Deficiency of fats and oils

- (1) If there is a continuous deficiency of fat and oil in food, the deficiency of some vitamins occurs in the body. These are fat soluble vitamins like A, D, E, K.
- (2) Deficiency of fat and oil for a long time makes the wastage of the reserved protein and creates weight loss.
- (3) The body becomes dry and loses its beauty.
- (4) Lack of essential fatty acid creates eczema in the children and the aged people lose the resistance power of the body.

Effects of excess fat

Excessive intake of fat is harmful for the human body. Overweight is the result of excessive fat intake which destroys the natural beauty of the body. Excess fat leads to high blood pressure and heart diseases.

Minerals

Besides protein, fat and carbohydrates, the body needs for its structure and functions, certain basic inorganic elements. These are the minerals. They regulate the body process in many ways. Since they are excreted daily by faeces, urine and sweat, they need to be replenished daily. Some minerals are required in small amounts; they are called trace elements. Their requirement must be met daily, otherwise abnormality in body's metabolism is seen.

Minerals may be classified into two groups:

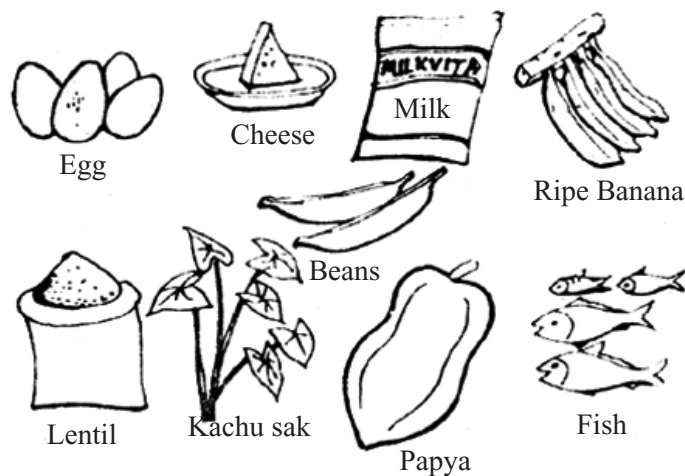
- (a) **Macro minerals** : These are required in large amounts, e.g. calcium, phosphorus, sodium, potassium, chlorine, magnesium and sulphur.
- (b) **Trace minerals** : These are required in small quantities, e.g., iron, bromine, zinc, manganese, copper, cobalt.

Calcium and phosphorus

The human body contains about 2.3-3.4 percent of calcium and phosphorus of its total body weight. Among the different minerals, calcium and phosphorus are found in the highest amount in the body.

Sources

Milk, meat, liver, fish, small fish, cheese, pulses, curds, eggs, nuts, cauliflower, dark green leaves, cereals, dates, fruits, etc.



Sources of minerals

Functions

1. Calcium and phosphorus are necessary for the formation of bone and teeth.
2. Calcium helps in the function of blood clotting.
3. Calcium is necessary for contraction and expansion of cardiac muscles.
4. They maintain the normal activity of nervous system.
5. They regulate the muscular excitability and tone.
6. Carbohydrate and fat need phosphorus for their intermediate metabolism.

Requirements

Calcium and phosphorus are found in foods that are rich in protein. It is needed to form the body structure of the growing child as well as for keeping a sound health of the grown up person. The daily requirement of calcium is about 800mg. Additional calcium in the diet is required during pregnancy and lactation. In this stage, the daily requirement of calcium phosphorus is about 1.2-1.8gm.

Effects of deficiency are:

1. Poor teeth and bone formation.
2. Retarded growth.
3. Osteomalacia in women.

Iron

The quantity of iron in human body is much less than calcium and phosphorous. But, this small quantity of iron is an essential nutrient. The total iron content of the normal adult is estimated to be about 3-4 gm. Two third of the iron in the body is present in blood and the rest is present in the cell, bone-marrow, liver and spleen.

Sources

Egg yolk, fish, meat, liver, dark green leaves, molasses, rice, wheat, legumes, dried fruits, etc.

Functions

1. The body uses iron to make hemoglobin for red blood cells.
2. It is essential for carrying oxygen to different tissues. About 0.3 percent of iron in hemoglobin is essential for respiration.
3. Iron plays an important role in metabolism.

Requirements

About 10mg. of iron is required daily by an adult person. Iron requirements are influenced by some factors, such as-requirements of body, type of diet, rate of absorption, loss of iron, etc.

Deficiency

Iron deficiency or anemia is the most common cause of ill health in women. This anemia is probably the result of many factors, such as-loss of iron during menstruation, repeated pregnancies, etc.

Iron deficiency also occurs in adult male and children. It is the result of many factors, such as-poor intake and absorption, hook worm infection, excessive bleeding from injury, piles or ulcer. This anemia is produced by prolonged deficiency of iron.

Iodine

Iodine is the most essential and important micro element for human body. Body stores iodine in the thyroid gland. Iodine is the essential constituent of the hormone thyroxin produced by the thyroid gland. About 65% of thyroxin is iodine. Small amount of iodine also occurs in various cells and blood. Thyroxin hormone is essential for metabolism and regulation of the body temperature.

Sources

Important sources of iodine include food from the sea, such as sea fish and iodized salt. Besides, it exists in plants grown in soil that contains enough iodine, such as the sea coast area.

Requirements

- a. Iodine is necessary for the synthesis of thyroxine.
- b. It is essential for metabolism.
- c. It is essential for the development of hair, skin and bone.
- d. It helps in the normal development of brain.
- e. Iodine is necessary for the foetal development in pregnancy and essential for production of breast milk.

Deficiency

1. The common effect of iodine deficiency is goitre. If sufficient iodine is not taken, the enlargement of the thyroid gland takes place resulting in the disease called goiter.
2. Mental deficiency is caused by iodine deficiency.
3. The child's physical growth is retarded.
4. Abortions and congenital abnormalities are seen in iodine deficiency.

Sodium and potassium

Sodium and potassium are essential minerals for life. The adult body contains about 90gm. of sodium and 200gm. of potassium. The bones contain about 30 gm. of sodium. The cells of the body contain potassium and body fluids contain sodium. Sodium and potassium are also found in bones and teeth.

Sources

Salted fish, cheese, canned meat, butter, eggs, milk, fish, meat, legumes, wheat, molasses, puffed rice, nuts, vegetables and fruits, e.g. Spinach, beets, potatoes, tomatoes, carrots, bananas, oranges, grapes, and coffee etc. contain sodium and potassium.

Functions

1. It regulates acid-base balance of the body.
2. It regulates osmotic pressure of plasma and tissue fluid and thus protects the body against excessive fluid loss.
3. Potassium maintains normal transmission of nerve impulses.
4. Sodium plays an important role in the absorption of carbohydrate and fats from the small intestines.
5. It regulates water deficiency.

Requirements

The requirement of sodium is 2-4gm a day which can be easily supplied in a normal diet. A normal adult requires only 2-4gm of potassium daily.

Deficiency

1. Muscle weakness, dizziness, difficulty in breathing.
2. Anorexia, nausea, cold extremities and low blood pressure.
3. Mental weakness and confusion.
4. Hazards in digestive system, etc.

Vitamins

Vitamin is vital to life. A very small quantity of vitamin is needed for maintaining good health. However, if vitamins are not present in sufficient quantities in the diet, vitamin deficiency diseases occur. Only a hundred years ago, scientists found the vitamins in fresh food.

Plants synthesize various vitamins in their body. Green leaves of plants are the main sources of vitamins. It is also found in trunks, flowers, fruits and roots of trees. Man and other animals are directly dependent on plants. The herbivorous animals are also good source of vitamins for man. Animals store vitamins in liver, muscles, and other parts of the body. Cows store vitamins in milk and ducks store in eggs for meeting their need for future off springs.

Classification of vitamin

So far about fifteen different vitamins have been isolated in a pure state from natural foods. Almost all of them are essential for human beings.

Vitamins may be classified broadly into two groups.

- a. Fat soluble vitamins i.e., vitamins that are soluble in fats and fat solvents but insoluble in water.

Fat soluble vitamins are

1. Vitamin-A and carotenes,
 2. Vitamin-D
 3. Vitamin-E
 4. Vitamin-K
- b. Water soluble vitamins i.e., vitamins that are soluble in water but insoluble in fats and fat solvents.

Water soluble vitamins are

1. Thiamine (Vitamin-B₁)
2. Riboflavin (Vitamin-B₂)
3. Niacin and Niacin amide
4. Pyridoxine (Vitamin-B₆)

5. Pantothenic acid
6. Folic acid
7. Vitamin-B₁₂
8. Ascorbic acid or civitamic acid.

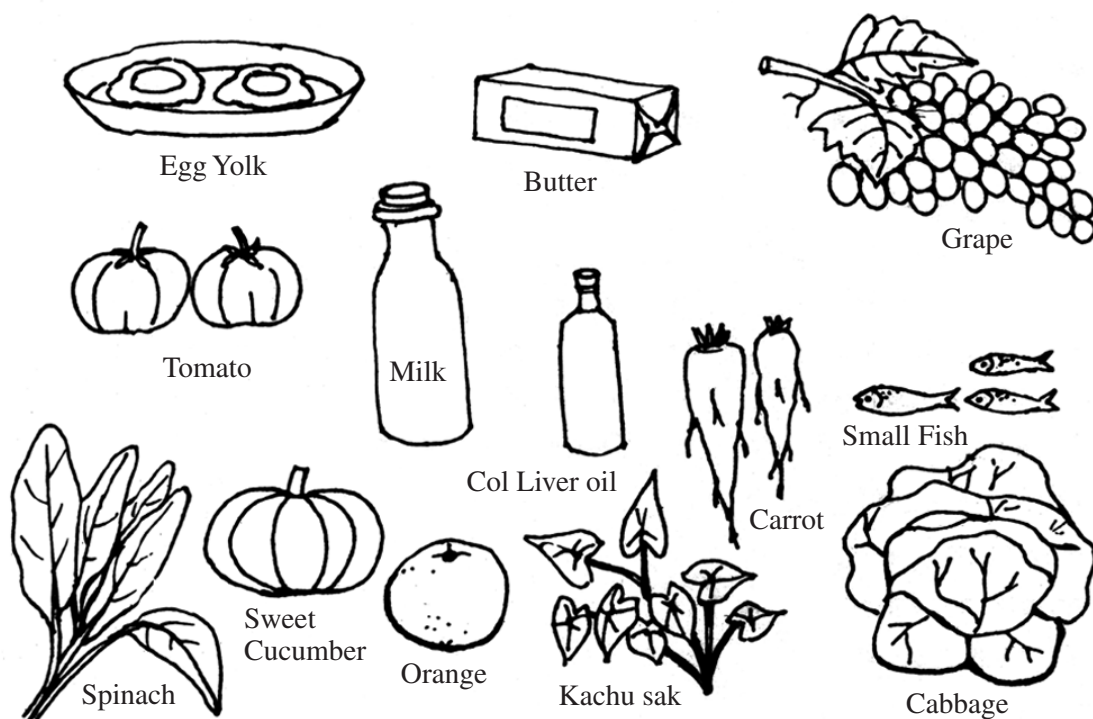
General functions of vitamin

Vitamins play very important role in animal body. Vitamins are associated with various functions of the body. The functions vary widely but may be generalized as follows-

1. They are essential for growth.
2. They help to maintain good health and vigour during growing stage.
3. They help in keeping normal digestion.
4. They help in utilization of minerals in the body.
5. They help in metabolism of every produced nutrient
6. They are essential for strengthening the nervous system.
7. They protect the body against infections.
8. They are essential for normal and healthy productive system.

Vitamin-A

In 1913 Mccollum and Davis discovered Vitamin-A. Vitamin-A is insoluble in water but soluble in fat. Ordinary cooking does not destroy Vitamin A but over cooking does, because it is easily destroyed by air and light during cooking.



Sources of Vitamin -A

Sources

Vitamin A is found in both animal and plant sources. Animal sources such as-milk, eggs, butter etc. contain Vitamin A, but plant sources contain pro-vitamin A which is converted into vitamin A in the human body. Carotene, a precursor of vitamin A is found in all yellow, orange and chlorophyll containing compounds. Carotene is converted into Vitamin A in the body. Cod liver oil, liver, ghee, egg, cheese etc. contain large amounts of Vitamin A and carrots, pumpkins, ripe mangoes, dark green leaves, maize, ripe tomatoes, ripe papayas etc. contain large amounts of pro-vitamin-A.

Functions of vitamin-A

1. The retina of the eyes contain photosensitive cells of rhodopsin and iodopsin, which help vision in both dim and bright light, Vitamin A is an integral part of such cells and helps in normal vision.
2. Vitamin A is essential for the health of the epithelial tissues of skin, and kidney.
3. It helps to prevent dental decay.
4. It helps to form strong bones and teeth.
5. It helps in normal reproduction.
6. Vitamin A also helps in the digestion of carbohydrates.

Requirements

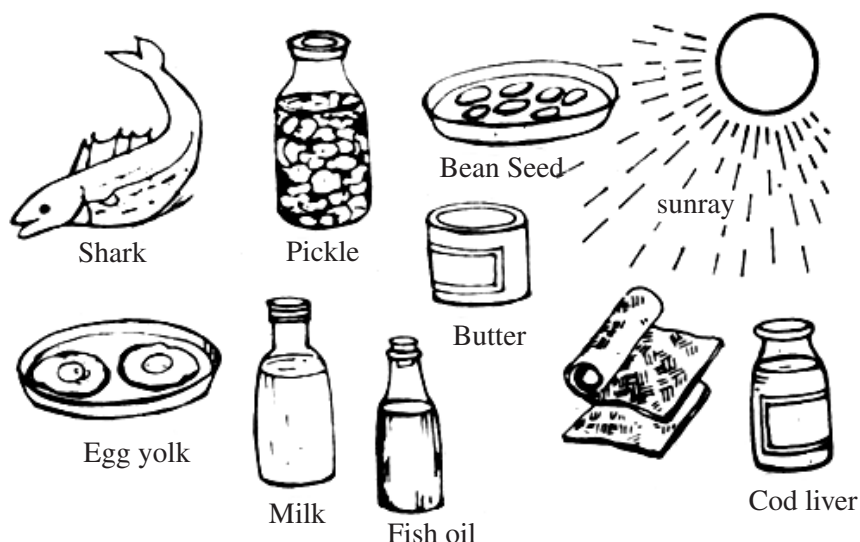
750µg retinol of vitamin A and 4500µg of carotene are required for boys, adult males and females and pregnant mothers. Requirement for lactating mother is 1200µg retinol of vitamin A and 7200µg of carotene.

Vitamin-D

Fat soluble vitamin D is sometimes called the anti-rachitic vitamin. The term rachitic denotes the condition of a person affected with vitamin D deficiency disease called rickets. It is also called the disease of poor children. The scientists demonstrated that cod liver oil contains vitamin D. The other name of this vitamin is cholecalciferol.

Sources :

Liver oil of seafish such as, Cod, Halibut, Shark etc, animal fat, liver, milk butter, ghee, egg yolk are good sources of this vitamin. Vitamin D is not present in foods of vegetable origin. Ultra violet ray of sunlight converts the cholesterol in the skin into vitamin D.



Sources of vitamin D

Functions :

- (1) Vitamin D helps in the absorption and utilization of calcium and phosphorus in the body.
- (2) It promotes strong bones and teeth formation by properly utilizing calcium and phosphorus.

Deficiency :

- (1) Delayed dentition and ability to walk is seen.
- (2) Calcium and phosphorus of food are not properly utilized
- (3) In vitamin D deficiency, calcification of bone does not take place. This results in the disease called rickets in vitamin D deficient infants and children. In this disease the head is usually enlarged, elongated and box like. Skeletal malformations occur because of the inability of soft bones to withstand the stress of body weight.

Recommended allowance of vitamin D (Daily allowances in International Unit)

New born child and pre-school child	= 10 μ g or 400 IU
Adolescents and adults	= 5 μ g or 200 IU
Pregnancy and Lactation	= 10 μ g or 400 IU

In tropical countries a lower quantity than the above recommended intake can be taken because the skin is exposed to sunlight for a considerable period of the day.

Vitamin-E

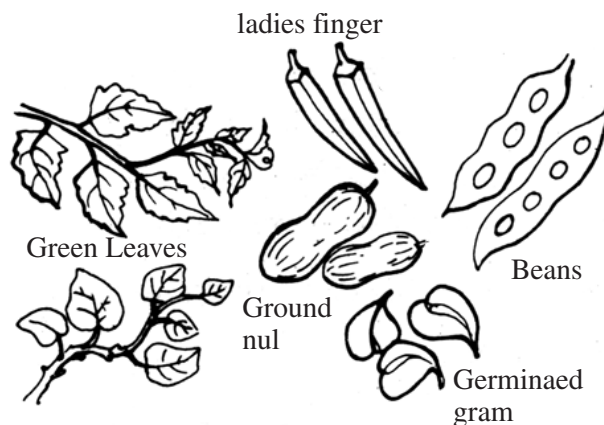
Vitamin E is a fat soluble vitamin. The biochemical name of vitamin-E is Tocopherol.

Sources

Cod liver oil, ground nut, wheat, oat, sunflower seed oil, soyabean oil, palm oil, germinated gram, wheat germ, eggs etc. are sources of vitamin E.

Functions

1. It is an active antioxidant, preventing oxidation of carotene, vitamin A and unsaturated fatty acids.
2. It is required for normal reproductive function in animals and it prevents sterility in them.



Sources of vitamin E

Requirements

An average adult diet contains enough vitamin-E. The daily allowance is 5-10mg.

Deficiency

Vitamin E deficiency in animals causes reproductive failure.

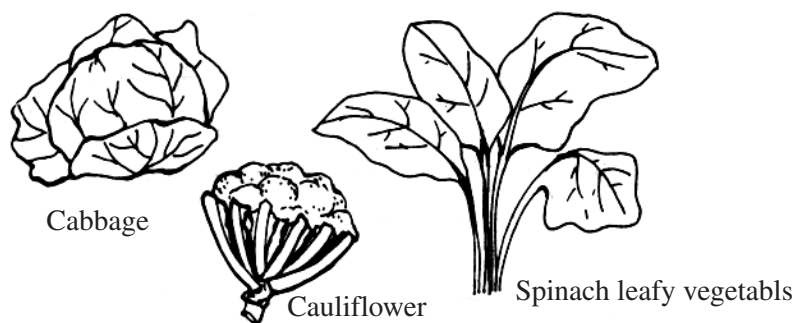
Vitamin-K

The scientist Dam discovered this vitamin between the years 1910 and 1935. Vitamin K. is another important vitamin which is soluble in fat. It is also known as anti bleeding or coagulation substance.

More than half of the human requirement of vitamin K is met from the synthesis by bacteria in the lower intestinal tract of the human body. So a deficiency of vitamin K is not normally seen.

Sources

Green leaves cauliflower, cabbage, lettuce, spinach, egg yolk, beef liver etc. are good sources of vitamin K.



Sources of vitamin K

Functions

1. Promotes proper blood clotting after cuts or surgery and thus prevents bleeding.
2. It helps in energy producing reactions of the body.

Deficiency

1. Vitamin K deficiency leads to lowering of prothrombin (a protein that helps to form blood clot) level and increased clotting time of blood. This helps the hemorrhagic condition.
2. Lack of bile secretion occurs due to deficiency of vitamin K.

Requirement

The requirement of vitamin K for adult is 40 micrograms per day and for pregnant woman is 1mg per day.

Vitamin-B

Vitamin B is not a single vitamin. Vitamin B complex comprises of 15 chemical substances. It has been established that eight of these are required by human body. These are- Thiamine (B_1), Riboflavin (B_2), Nicotinic acid, folic acid, pyridoxine (B_6), Cyarcobalamine (B_{12}), biotin and pantothenic acid. These all B Vitamins are water soluble and can be destroyed by heat.

Thiamine or B_1

Thiamine or B_1 prevents beriberi; and so it is called antiberiberi vitamin.

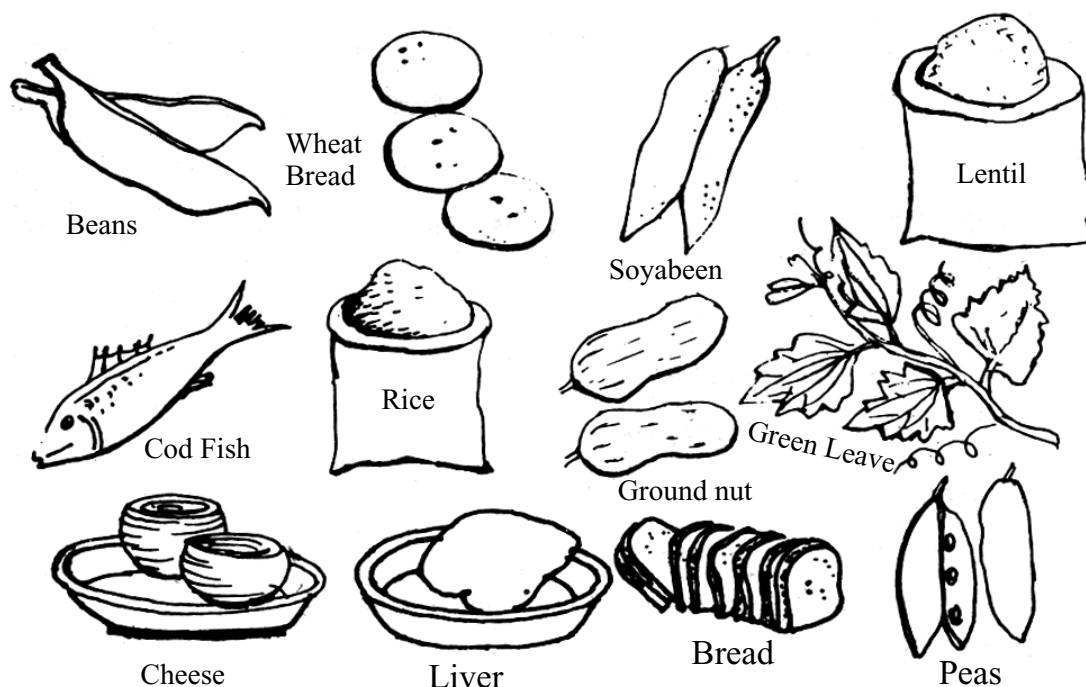
Sources

Rice polishing (parboiled), wheat, oats, liver, egg, yeast, fish, milk, green pea, soybean, peanut, pulses, wheat germ, germinated gram, etc. are good sources of thiamine.

Functions

1. It plays an important role in energy production from the metabolism of carbohydrate.

2. It is necessary for energy production from fat and protein metabolism.
3. It helps in normal growth of human body.



Sources of Vitamin B-complex

Requirement

The daily requirement of thiamine is 0.5 mg per 1000 calorie demand.

Deficiency :

1. The symptoms of thiamine deficiency include weakness, loss of appetite, nausea and mental instability. These defects happen because of diminished utilization of carbohydrate and production of energy.
2. Severe deficiency of thiamine produce causes beriberi.

Riboflavin (B₂)

This water soluble vitamin is stable to heat; so it is not destroyed by heat. However, it is sensitive to light.

Sources

Good sources of riboflavin include dark green leafy vegetables, fruits, whole grains and cereals, liver, dried yeast, egg yolk, milk, fish, meat, pulses, nuts etc.

Functions

1. It functions with other substances to metabolize carbohydrates, fats and proteins for the release of energy from food.
2. It is necessary for growth and good health.

Requirements

Riboflavin requirement is 0.6mg per 1000 cal.

Deficiency

A deficiency of riboflavin does not cause any disease, but the symptoms include cracking at lip corners, sore tongue, loss of hair, eye problems etc.

Folic Acid

The other name of this vitamin is Folacin.

Sources

Liver, yeast, peanuts, pulses, gram, rice, wheat, green leafy vegetables, kidney, etc. are good sources of folic acid.

Functions

1. It helps in the metabolism of protein.
2. It is vital for the formation of red blood cells.

Requirements

Infant	= 100mg	Pregnant mother	= 400mg
Adult (female)	= 200mg	Lactating mother	= 300mg.

Deficiency

The most important deficiency symptom in girls and in pregnant women is the development of a kind of anemia, which is called megaloblastic anemia.

Niacin

Niacin which includes two other substances called nicotinic acid and nicotinamide, is a water soluble vitamin. Niacin is not destroyed by heat, acid, alkali, light and oxidation.

Sources

Niacin is found in meat, liver, wheat, pulses, nuts, oil seeds, gram and green leafy vegetables. It is also formed by the conversion of amino acid tryptophan. Tryptophan present in the dietary protein is converted into niacin in the human body. It has been estimated that 60mg of tryptophan yield 1 mg niacin.

Functions

1. It helps in carbohydrate metabolism and in fat synthesis from carbohydrate and protein.
2. It prevents the disease pellagra.

Deficiency

Pellagra, is the deficiency disease caused by the lack of sufficient niacin in the diet. The symptoms of this condition is generally known as the disease of three D's i.e. dermatitis,

diarrhoea, and dementia. Deficiency of niacin is weakness, headache, loss of weight, loss of appetite, indigestion and eczema like skin disease on exposed surfaces.

Requirements

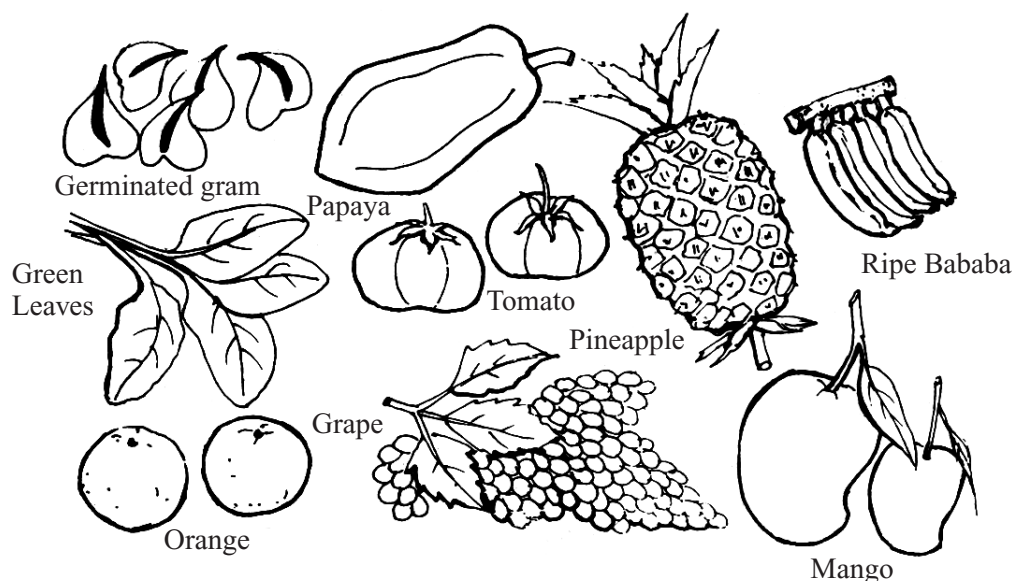
Adult male	- 18.2 mg
Adult female	- 13.2 mg
Pregnant woman	- 15.1 mg and
Lactating woman	- 18.1 mg

Vitamin-C

Vitamin C is a water soluble substance with a sour (acid) taste. It is easily destroyed by oxygen and heat. Vitamin C is not stored in the human body. So it is essential to take Vitamin C daily. It prevents scurvy. So it is also called antiscorbutic vitamin.

Sources

Citrus fruits and fresh vegetables contain large amounts of vitamin C. Amlakis, guavas, oranges, lemons, starfruits, pineapples, black berries, tomatoes, green peppers, etc. contain large amount of vitamin C. Germinated seeds, lettuce and other green leaves also contain Vitamin-C.



Sources of vitamin-C

Functions

1. It helps in keeping normal and healthy gums and teeth.
2. It speeds up healing of wounds after surgery or injury.
3. It helps in the metabolism of carbohydrate, protein and fat.
4. It helps the body to build and maintain a protein-collagen necessary for strengthening connective tissues.

5. It helps the body to maintain normal and healthy skin.
6. It helps in preventing many types of infectious diseases.

Requirements

Children	- 20 mg
Adult	- 30 mg
Pregnant and lactating mother	- 50 mg

Deficiency

The disease scurvy is produced by prolonged deficiency of Vitamin-C.

Water

Water is a vital element for all animals. About 70 percent of the total body weight consists of water. Almost every part of body like blood, tissues, nerves, teeth, bones contain large amounts of water.

Sources

Almost all foods contain some water. Liquid diet or different types of drinks such as - milk, lassi, sherbet, tea, coffee, fruit juice, soup, sugar cane juice, coconut water, etc. contain large amount of water. Other soft or solid diets also contain water.

Functions

1. It helps to regulate and integrate different types of functions of the body.
2. It works as an essential medium for excreting waste products through urine, faeces and sweat.
3. Water takes part in all metabolic processes and is essential for digestion. It prevents constipation.
4. It maintains the normal concentration of blood and works as a transport medium for transporting the essential elements. It also helps in the regulation of body temperature and keeps the body healthy.

Requirements

The amount of water lost through urine, sweat and faeces should be replaced to maintain a water balance. The total water requirement of an adult under ordinary condition is about 2 litres.

Deficiency

Deficiency of water increases concentration of blood. As a result, muscle weakness and nerve weakness, problems in digestion of food occur. Water deficiency leads to thirst and low blood pressure and increase body temperature.

ANIMAL AND PLANT SOURCES OF ALL NUTRIENTS.

NAME OF NUTRIENT	ANIMAL SOURCE	PLANT SOURCE
PROTEIN	Milk, milk products, fish, hen, duck, bird's meat, eggs, beef and mutton	Pulses, nuts, peas, seeds, soyabean, etc.
FAT	Ghee, butter, fats, fish oil	Marzarine, Vanaspati, oilseeds, oil (mustard, soyabean, corn, coconut, palm, almond)
CARBOHYDRATE	Honey, meat, milk	Rice, wheat flour, flour, flattened rice, puffed rice, pop corn, sugar, molasses, fruits, potatoes, carrots, beet sugar cane.
MINERALS:		
Calcium	Milk, curd, cheese, eggs, fish, meat.	cereals, nuts, dates, green leafy vegetables and fruits.
Phosphorus	Milk, meat, liver, fish, egg	Nuts, cauliflower, vegetables.
Iodine	Seafish, milk and meat of animals of coastal areas.	Vegetables and fruits which grow in sea coast area.
Iron	Liver, egg yolk, fish, meat.	Dark green and leafy vegetables, molasses, whole grain, legumes, dried fruits.
Sodium	Salted fish, cheese, canned meat, butter, milk.	Puffed rice, fruits, pulses, vegetables etc.
Potassium	Egg, meat, poultry, fish, cheese.	Coffee, coca, whole grain, cereals, leafy vegetables, legumes, orange, bananas etc.
Thiamine (B₁)	Liver, meat, milk, dairy foods, eggs.	whole grain, nuts, legumes, soyabeans, yeast, peas, etc.
Riboflavin (B₂)	Milk, dairy foods, meat, eggs, liver.	Whole grain cereals, green, leafy vegetables, yeast grams, nuts, pumpkin, etc.
Pyridoxine and folic acids	Liver, egg yolk	wheat, corn, yeast

NAME OF NUTRIENT	ANIMAL SOURCE	PLANT SOURCE
Niacin and nicotinamide	Fish, meat, liver	Pulses, nuts, yeast
Pantothenic acids	Egg yolk, liver, milk (skimmed)	Molasses, red potatoes, yeast
Vitamin A and carotene	Cod-liver oil, liver, egg, butter, ghee, milk, cheese	Carrots, pumpkin, mangoes, dark green vegetables, tomatoes, ripe papaya etc.
Ascorbic acid or vitamin C	Milk and meat contain small amount but they are destroyed by heat during cooking.	lemons, oranges, tomatoes, lettuce, pine apples, green pepper, citrus, fruits, guavas.
Vitamin D	Fish oil and liver, animal liver, oily fish, cod-liver oil, egg yolk.	Olive-oil
Vitamin K	Egg yolk, fish, liver	Lettuce, green leafy vegetables, cauliflower, cabbage, tomatoes, soyabeans.

Exercise

Multiple Choice Questions

- What is the source of higher protein?
 - Cheese
 - Dal
 - Beans
 - Nuts
- The main function of carbohydrate is to
 - develop body
 - produce energy
 - heal up loss
 - protect disease
- Which of the following is good for eye?
 - Red leaf vegetables, arum leaves
 - carrot, pumpkin
 - guava, papaya

Which of the following is correct?

- a. i
- b. ii & iii
- b. i & ii
- d. i, ii & iii

4. A baby of only one year cannot walk and does not have teeth. Which of the following is the most helpful for this baby?

- a. arum leaves
- b. cow milk
- c. cod leaver oil
- d. small bonny fish.

Answer questions no 4-7 following the text bellow:

Mariya is 25 years old. Her weight is 45 kg. She does not like egg and milk but everyday she takes insufficint of rice, fish or meat and sufficient vegetables and lemon. Yet she is reducing weight everyday. Her mother told her to take sufficient food. Otherwise she has to be taken to a doctor.

5. How much protein does Mariya need everyday?

- a. 11.25 gm
- b. 22.50 gm
- c. 45.0 gm
- d. 90 gm

6. How much Calorie does Mariya take everyday?

- a. 2500
- b. 2300
- c. 2000
- d. 1700

7. What should Mariya include in her everyday menu?

- i. egg and milk
- ii. more of fish and meat
- iii. more vegetable and fruits

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

8. Mariya is losing her weight due to her

- i. necessary protein need
- ii. need of balanced diet
- iii. extremely low intake of food

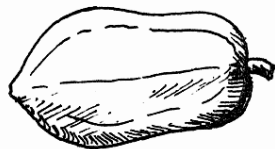
Which of the following is correct?

- a. i
- b. i and ii
- c. ii and iii
- d. i, ii and iii

Creative Questions

1. Goni Mia is a poor farmer. He has four children. He tries his best to ensure nutritious food for them. Yet he thinks that there is lack of protein in their daily food menu. Every year many babies die from malnutrition in Bangladesh. Goni Mia is very much anxious for this.
 - a. What is nutrition?
 - b. Describe the need of protein in human body.
 - c. Make a list for Goni Miah to fulfill the protein need of his family.
 - d. In Bangladesh a large number of children suffer from malnutrition- analyse this expression.

2.



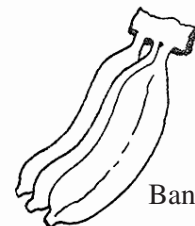
Papaw



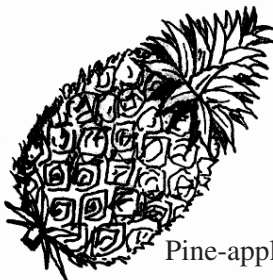
Orange



Mango



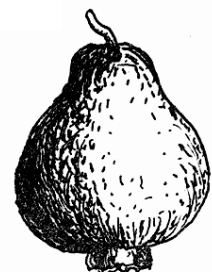
Banana



Pine-apple



Grape

emblic
anayrobaban

Guava

Picture

- a. In the picture which fruit is rich in vitamin 'A'.
- b. In the picture which is the most available vitamin 'C' rich fruit?
- c. Which of the fruits in the picture are most beneficial for the cure of sore at the corner of lips? Why?
- d. In Spite of having vitamin 'C' rich fruits in Bangladesh why do the people of this country suffer from vitamin 'C' deficiency?.

Chapter–11

Calories

Calorie is the measuring unit of energy. Energy is necessary to meet the needs of the body's basic and latent metabolism, to build and replace body tissues, to compensate for the excretory losses and for various physical activities. Heat is the chief end product of the foods we eat and it provides energy. Our body uses energy from the moment of conception until we die, just to keep ourselves alive. Even when people are asleep they use energy.

We cannot measure energy but we can measure heat. By measuring heat we can measure energy. Heat energy is measured in calories. In physics, energy is defined as the capacity to work. Energy may be in the form of heat chemical, mechanical, electrical or solar energy. Energy can be converted from one to another. Most of the energy supplied in the body is in the form of chemical energy.

Definition of calorie

One calorie is the quantity of heat required to raise the temperature of 1gm of water to 1°C. In Nutritional science, the unit used is the kilocalorie or kcal in short. On kilocalorie is due quantity of heat required to raise the temperature of 1kg. of water to 1°C.

Calories of food

The human body utilizes the energy contained in food for maintaining life and doing work. The energy yielding nutrients are carbohydrates, proteins and fats within the body, these nutrients are oxidized in the cells. The process is one of continuous utilization of oxygen and production of CO₂, water and heat. The energy or calorie value of foods depends on the quantity of carbohydrates, fats and proteins present in them. The energy value of foods can be expressed in terms of kilocalories.

1gm carbohydrate	4.1	Kilocalories
1gm protein	5.65	Kilocalories
1gm fat	9.45	Kilocalories

When the food is used in the body, all the food energy may be available to the body. Small amount of energy is lost after digestion and absorption. A portion is lost in

undigested food which is excreted. Food energy available after loss in digestion is given below.

1gm Carbohydrates	4	Kilocalories
1gm Proteins	4	Kilocalories
1gm Fats	9	Kilocalories

Foods are broadly divided into various groups depending on their nutritive value. Foods differ widely in their contents of various nutrients. They may be rich in one nutrient but may contain other nutrients in small amounts. The average calorie values of pure carbohydrates, fats and proteins in our daily food are given below:

Example		
(a) Calorie value of an egg		
	Nutrients	Calorie value
	Protein 6gm	$6 \times 4 = 24$
	Fat 4gm	$4 \times 9 = 36$
	Total calorie	$= 60$
(b) One serving milk (8 ounce) or 240 ML or 1 cup		
	Nutrients	Calorie value
	Protein 8gm	$8 \times 4 = 32$
	Carbohydrate 10gm	$10 \times 4 = 40$
	Fat 10gm	$10 \times 9 = 90$
	Total calorie	$= 162$
(c) Calorie value of 100gm wheat flour		
	Carbohydrate 69.4gm	$= 277.6 \text{ kcal}$
	Protein 12.1gm	$= 48.4 \text{ kcal}$
	Fat 1.7gm	$= 15.3 \text{ kcal}$
	Total	$= 341.3 \text{ kcal}$

Calorie rich and low calorie value foods

Generally fibre and water rich foods contain less calorie. Carbohydrates and rich fat food provide high calorie. Calorie is also found in protein rich food. But according to the food specialists, the needs of calorie should be fulfilled from the foods which contain carbohydrates. The calorie value of different categories of foods is given below:

Cereals-Cereals are the rich sources of calorie because they contain large amount of starch. Calorie values per 100gm of cereals are given below:

Food	Kilocalorie	Food	Kilocalorie
Wheat flour	341	Rice, raw	345
Boiled potato	346	Flour	348
Puffed rice	325	Semolina	348
Boiled rice	344		

Fish-Calorie value of the fish depends upon its fat contents. Calorie values of per 100gm of different type of fish are given below:

Food	Kilocalorie	Food	Kilocalorie
Pabda	114	Chital	108
Pangas	161	Katla	106
Puti	106	Hilsa	273
Tengra (fresh)	144	Chela (fresh)	103
Tengra (dried)	255	Chela (dried)	413
Prawn (dried)	292	Churi (dried)	383

Fruits-Fruits are good sources of sugar which provides energy. Calorie of fruits depends on its sugar content. Calorie values of per 100gm of different fruits are given below:

Food	Kilocalorie	Food	Kilocalorie
Blackberry	21	Guava	76
Bangi	26	Mango (ripe)	90
Pineapple	30-42	Bael fruit	96
Pomelo	38	Sapota	87

Rose apple	39	Sharifa	98
Water melon	49	Banana (ripe)	104
Apple	59	Borai	109
Grape	58	Dates	144
Orange Juice	09	Dates (Dried)	317
Green coconut water	23	Raisin	308
Kernel of palm	29	Coconut	376
Sugarcane Juice	33	Pamegranate	74
Ripe Papaw	42	Myrobalan	96

Milk, egg and meat-Milk, egg and meat are rich sources of calorie but the calorie values depends mostly on the types of food taken by the animals. Skimmed milk contains low calorie. Meat is rich in protein. However, it contains fat source of energy too. Egg contains sufficient amount of protein and provides sufficient calories. Calorie value 100gms of these foods are given below.

Food	Kcal	Food	Kcal
Cow's Milk	67	Egg, hen's	174
Buffalo's Milk	117	Egg, duck's	181
Curd	60	Mutton	124
Powder Milk	496	Beef	114
Skimmed milk	29	Duck, muscle	130
Cheese	348	Liver, goat's	107
Cottage cheese	265	Liver, cow's	200
Butter	729		
Ghee	900		

Pulses - Pulses is a second class protein. But the protein content of pulses is sufficient. It is a good source of carbohydrate. A large quantity of calorie is found in pulses. The calorie value of per 100 gms pulses is given below:

Food	Kcal
Green gram dal	358
Lentil	343
Peas	330
Beans seed	347
Bengal gram	372
Black gram	347
Arohor	335
Khesari	345

Vegetables- Roots and tubers are the storage parts of the plants and are the good sources of starch. So they provide more calorie than other parts of vegetables. Other green vegetables and fruits contain moderate amount of calorie. Nuts and oilseed plants are good sources of energy. Calorie values of per 100gms of vegetables are given below:

Food	Kcal	Food	Kcal
Lalsag	43	Cauliflower	41
Green Colocasia	56	Green papaya	36
Leaves Spinach	30	Snake gourd	18
Data sag	22	Chal Kumra	10
Onion	50-59	Lausag (Bottle gourd Leaves)	39
Carrot	57	Mayala (Poi)	27
Beans	48	Cabbage	27
Bottle gourd	66	Bindweed sag	28
Tomato	23	Potato	89
Bringal	42	pumpkin	30
Cucumber	12	Cowpea	53
Ridge Gourd (Jhinga)	30	Tomato ripe	20
Dauta	20	Ladies finger	53

Calorie requirements

The body requires energy for the maintenance of body temperature and for carrying out its normal functions. The energy required for work must come from the food. Food is the major source of fuel used in the body. When we consume food in the form of proteins, carbohydrates or fats, we derive heat as a chief end product of their metabolism.

Calorie value of different foods and nutrients has been discussed earlier in this chapter. Now we need to know the energy requirement or the calorie requirement of an individual.

Calorie requirements are likely to be similar for individuals of the same age, sex, weight and state of health. However, they vary with factors such as age, physical activity, sex and other variables.

Calorie requirement in different ages.

Difference in calorie requirement are found between various age groups. The calorie requirement is higher in infants and young children than in adults. In children energy requirement is more because of their growth. So adequate calorie intake is essential for promoting optimal growth of infants and children. The calorie requirement becomes higher upto 2 years but it is reduced after 3 years. Its demand increases in the period of adolescent and youth and again there after it decreases gradually after 25 years. In pregnancy, lactation and convalescence calorie requirement is increased.

Calorie requirement in different kinds of physical works

For the calorie requirement of a person, it is important to know the level of his or her daily physical activity. Physical activity affects energy expenditure. Whenever muscular work is done, energy is used up. In our daily activities such as washing clothes, mopping floors, ironing, grinding involve moderate amount of energy expenditure. Besides a heavy person will spend more energy for any activity than a lean person and the amount required is proportional to the work done. Smaller quantity of energy are needed when work done in sitting position, reading and slow walking. Whereas active works, such as pushing or lifting objects, running involves a great deal of energy expenditure.

The energy requirement of various types of physical activities in adult men and women have been determined by scientist and this is given below :

Energy cost for different activities are given below :

Activity	Kilocalorie/hr/kg.body wt.
1. Sitting, at rest	1.7
2. Personal work/dressing, washing face & hand, bathing etc.	3.0
3. Walking (3 mile/hr)	4.0
4. Playing	4.0
5. General light work	1.7
6. Moderate work	2.5
7. Heavy work	5.0

Nutritive value of different foods

Knowledge of food value is essential for the correct selection and utilization of food and is essential in the dietary treatment and management of disease. The nutritive value of some common foods are discussed below :

Rice

It is the staple food of our country. Rice is rich in carbohydrates. It is rich in starch, has moderate proteins but less fat and iron. During cooking, rice absorbs a considerable amount of water. The pericarp and the embryo are rich in Vitamin B-complex. Parboiled rice contains 79% carbohydrate and parboiled hand pounding contains 77.4% carbohydrate. They also contain 6% fat and 6.4-8.5% protein and small amount of minerals. The important processed rice products are rice flakes or beaten rice (chira), puffed rice (muri) parched paddy (khoi) etc.

Wheat

It is a staple food in certain parts of the world. It is the most widely used cereal in the world. It is a rich source of carbohydrate. It contains glucose, starch and cellulose. It also contains protein, small amounts of fat and minerals. The outer layer pericarp is made of cellulose and minerals and forms about 13% of the grain. Some amount of Vitamin B-Complex are found in the outer layer. Whole wheat flour provides 72% carbohydrate. The important processed wheat products are bread, biscuits, breakfast cereals (wheat flakes), semolina, noodles, etc.

Pulses

Pulses is an important source of calorie and proteins. In our country we get lentils, Bengal gram, green gram, black gram, cowpeas, peas and khesari. The pulses contain 20-25% protein, 1-2% fat, 57-60% carbohydrate. The B vitamins like thiamine, riboflavin and niacin are also found in it Soaking pulses for 3-4 days improves its nutritive value. Germinated pulses contain Vitamin C. Pulses contain fair amount of minerals like calcium and iron.

Egg

Egg is an ideal food because it is rich in essential nutrients. One egg can provide one tenth of the daily need of protein for an adult because it is rich in essential nutrients. An egg contains two parts-the white part and the yellow part or yolk. The white part contains high protein such as albumin and the yellow part contains fat, iron and phosphorus.

Milk

Milk is almost a complete and ideal food and contains most of the proximate principles of a well-balanced diet. It is important in infant diet. It contains first class

protein. It also contains carbohydrate, fat, vitamin A, D, calcium, phosphorus, sodium, potassium and other minerals and 87% water. Important milk products are cottage cheese, curd, butter, shandesh, sweets, phirny, payesh., khoa, ice-cream etc.

Meat and poultry

Meat consists of muscle fibre of different domestic animals, such as cows, goats, buffaloes, hens, ducks, etc. It is a good source of protein. The protein contents of meat from cattle, calf, sheep, goat, chicken and duck vary from 15-20 percent. It is a good source of iron and phosphorus. Some meat is rich in fat which raises the calorie value. Calcium is found in meat bone.

Fish

Fish is an important source of good quality protein. Fish contains 14-22% protein. Some fish are rich in fat which raises the calorie value and some contain about 2% of fat. Moderate fat rich fish contains 2-5% fat. Fish with more than 5% fat are considered fatty fish. Hilsa, a common fish in our country contains 19.4 % fat most of which is unsaturated. Fish contains minerals. It also contains phosphorus and iron. Sea fish is particularly rich in iodine. Vitamins are also present in raw fish but they are largely destroyed by cooking. Fish has 70-78% water.

Vegetables

Vegetables provide incomplete protein. They are rich in vitamins and minerals.

Roots

It is the storage organ of plant. They are rich in starch. Sweet Potatoes, beets, carrots, turnip etc., are root vegetables.

Stems

Vitamins, minerals and cellulose are found in stems. Dauta, pui sag, etc. are stem vegetables.

Leafy vegetables

Glucose is synthesized in leaves by the photosynthesis processes. Green vegetables are rich sources of provitamin A (carotenes), riboflavin, iron and calcium. Pui sag, lau sag, kolmi sag etc, are leafy vegetables.

Flower vegetables

Cauliflower and broccoli (green cauli flower) are flower vegetable. They contain glucose, iron, thiamine, riboflavin and vitamin C.

Fruit vegetables

Papaya, beans, kakrols, tomatoes, parwars, cucumber, etc. are fruit vegetables. They contain vitamin C, carbohydrates and minerals. They also contain incomplete protein.

Sour Fruits

The sour fruits like oranges, pineapple, mangoes, lemons, amlas, pummelos, kamranga etc. contain large amount of vitamin C. They also contain fructose.

Seasonal Fruits

These types of fruits are the good sources of vitamin C. Ripe fruits are rich sources of sugar. Fresh fruits contain phosphorus, iron, calcium and vitamin B. They also contain some protein and fat.

Exercise**Multiple Choice Questions**

1. Which one of the following has high calorie?
 - a. Carrot
 - b. Potato
 - c. Cucumber
 - d. Tomato
2. A child needs more calories in comparison to an elder person. For each kg of the child this calorie is higher
 - a. 1-2 times
 - b. 2-3 times
 - c. 3-4 times
 - d. 4-5 times
3. The excess calorie helps
 - i. doing more works.
 - ii. increasing fat in body.
 - iii. developing thinking power

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer questions no 4 to 6 following the text above.

Rahim Mia is a farmer. He is 40 years old. Besides his own land he cultivates others land. Thus he narrowly keeps his body and soul together. Sometimes he goes for fishing to nearby ditches and canals and sells them. A few days ago, he was feeling weak and went to health worker to have suggestions. She suggested him to take food with high calories.

4. Rahim Mia's everyday need is
 - a. 2760 calorie
 - b. 2620 calorie
 - c. 2480 calorie
 - d. 2420 calorie

5. Rahim Mia should have the following items in his everyday menu:
- rice, dal, vegetable, and fish
 - rice, meat, egg, and milk
 - rice, leafy vegetable, vegetable and milk
 - rice, fish, egg, and milk
6. To have instant energy Rahim Mia should have a glass of
- green coconut water
 - sugar-sherbet
 - cow milk
 - fruit juice

Creative questions

1. Following is a list of some food with their calorie:

	per 100 gm
rice/ata	340 - 350 kilo calorie
fish	110 - 150 kilo calorie
meat	110 - 130 kilo calorie
egg	170 -180 kilo calorie
dal	330 - 370 kilo calorie
vegetable	10 - 50 kilo calorie

Usually a full grown up person needs 2500 kilo calorie food everyday on average.

- What is calorie?
- Explain why vegetable have low calorie.
- Explain what type of food an obese person should take and what type give up?
- Rationalise why a rickshaw puller eats too much rice?

Chapter–III

Food Requirements and Menu Planning

We have discussed about nutrition ingredients in the previous chapter. Now we will discuss the required quantity of nutrition. It is very important to know the items of food and its required quantity for better health. Nutritionist make various research and recommend the required quantities of food necessary for health of people from all age group. For this reason menu should be planned according to the demands for food as per age group.

Requirements of food according to age

Food is necessary for keeping good health and nutrition of human being from birth to death. The human body consists of different elements. So, for keeping health in good condition, all types of nutrition elements with required quantities are needed. But food requirement varies in different age groups. There is a variation for requirements of food for infants, adolescent boys and girls, men and women, persons who give more labour and who give less labour and aged people. Thus we should have proper knowledge on the selection of food according to age. Demand for food, quantity of food and elements of food vary according to age.

Requirements of food for children

More importance is needed to be given on demands and selection of food for children of all age group, such as infants, children below 2 years of age, pre school children and school going children. Sufficient food is necessary for growth and development of the body of the children. The growth speed of the body of small kids is very fast. They should be given required food up to age 5; otherwise their growth will be hampered. Particularly for the children, aged up to 2 years, more attention is needed for their required food and nutrition. The demand for nutrient elements for children based on per kg weight is much higher than that of the adults, particularly the demand of protein and carbohydrates.

The quality and quantity of protein contained in child's food should be ascertained. Demand for calorie required for the children based on per kg weight is about 2/3 times more than the adults. Children aged 6 months should not be dependent only on milk. Because only milk cannot provide required demand for nutrition which is needed to fulfil its extra needs. Foods that contain sufficient protein, carbohydrates, fat, calcium, iron, vitamin-A, D and C should be served to children.

Requirements of food for adolescent boys and girls

The necessity of food intakes like protein, vitamin and mineral salt is essential for the grown up boys and girls. This group of boys and girls feel the difference in taste of different in food. Demand for iron increases for adolescent girls. Importance of nutrient demand increases due to the physical change during adolescent period especially for physical construction and for giving labour while playing games and other activities. At this stage boys and girls need more nutrients like animal protein, calorie, iron, calcium, phosphorus, vitamin B, C, etc.

Requirement of food for adults

Demand for food should be given more importance for the development of health up to the age of 20-25 years. Food demand varies from person to person according to the physical structure and type of labour given at adult age. Food demand for a man is more than a woman. Food requirement for fat person is more than a thin person. Calorie demand is more for those who give more labour than persons who give less labour. Demand for nutrient elements in food is more for pregnant and lactating mothers than women in general.

Requirements of food for old men and women

Physical growth does not occur in old age but covering up the decays and protecting the body from different diseases are the processes which continue till death. Old people give less labor and demand for nutrient is also reduced for them. The nervous system gradually becomes weaker for old people. Production of blood, resistance from diseases and digestion capacity decline gradually. So, at this age, although the demand for protein, fat and carbohydrate reduces, the demand for vitamins and mineral salt is greater.

So, by considering the physical condition of different age, type and quantity of food should be determined. Demand for nutrient elements vary at different ages and these are mentioned below:

1. Demand for protein is needed more for infants than adults to develop and construct their body properly.
2. Human body loses energy during illness. Due to that the body needs more protein in food after illness to restore the loss of health.
3. Demand for protein and other necessary foods is needed for pregnant and lactating mothers, especially to protect and to develop the growth of the baby inside womb.

4. Demand for nutrient like fat and carbohydrates is more for a hard working person than less working person.
5. In general fat food is not harmful for children. But with increasing age it is wise to reduce the quantity of fat in food.
6. In old age physical labour is reduced, as a result need for calorie also decreases.
7. Requirements for vitamin D remain very high from birth to twenty years of age because during this period bone structure and development occur.
8. Thiamine is necessary for metabolism of carbohydrate types of food. So a person who takes more carbohydrate needs more thiamine.
9. Requirements of riboflavin depend on protein metabolism. Therefore if quantity of protein in food increases, the demand for riboflavin also increases. The requirement increases at childhood, young age and during pregnancy.
10. Requirement of niacin increases during illness and pregnancy.
11. Calcium is more needed for grown up children.
12. For grown up children, adolescent girls and pregnant women, more iron is required.
13. Requirement of iodine increases during childhood, pregnancy and lactating periods.
14. During diarrhoea and heavy sweating and excessive physical exercise, sodium requirement increases. A food chart has been shown on the next page on the requirements of food according to different ages.

Recommended daily requirements of nutrients

Age (year)	Kilo Calorie	Protein (gm)	Calcium (mg)	Iron (mg)	Vitamin 'A' (micro gm)	Vitamin B1 (mg)	Vitamin B2 (mg)	Niacin (mg)	Vitamin 'C' (mg)	Vitamin 'D' (mg)	Folic acid (mg)	Vitamin B2 (micro gm)
0-1	820	22	500-600	10	300	0.4	0.4	5.4	20	10	50	0.3
1-3	1360	25	500-600	10	250	0.7	0.4	9.0	20	10	100	0.9
4-6	1820	31	450	10	300	0.9	1.0	12.1	20	10	100	1.5
7-9	2190	38	450	10	400	1.1	1.2	14.5	20	25	100	1.5
	Male	Female		Male	Female	Male	Female	Male	Female			
10-12	2600	2350	46	45	650	10	10	10	10	25	100	2.0
13-15	2680	2260	57	47	650	18	24	17.7	14.9	30	200	2.0
16-19	2820	2100	58	46	550	9	24	18.6	13.7	30	200	2.0
20-39	2760	2000	52	40	450	9	28	18.2	13.2	30	200	2.0
40-49	2620	1900	52	40	450	9	28	17.3	12.5	30	200	2.0
50-59	2480	1800	52	40	450	9	9	16.4	19.9	30	200	2.0
60-69	2210	1600	52	40	450	9	9	11.6	10.6	30	200	2.0
70-79	1930	1400	52	40	450	9	9	12.7	9.2	30	200	2.0
Pregnant mother:	+150	+14	+650	+5		+1.2	+1.2	+19	+20	+75	200	-1.0
1 st 3 mon.	+350	+25	+650	-----			+0.4	+0.4	+20	+75	+100	+0.5
2 nd & 3 rd 3 months for lactating months	+750					-0.4						

N.B. Body wt. for adult male: 60 kg.
 Body wt. for adult female: 50 kg
 (1 kg=1.07 seer)

Source: Integrated Applied Nutrition Training Manual – BIRTAN (May 1994).

Menu and menu planning

Men feel hungry when the stomach becomes empty. Hunger stops as soon as men take food. When we feel hungry we eat at least some food. The main aim of taking food is not only to keep off hunger. The main aim of taking food is that the types of food we take, should contain appropriate nutrients by which the human body can be nourished. Before doing any work there should be a proper planning on that particular work. So it is necessary to prepare an appropriate food menu planning for proper management of food.

Menu

It is better to give preference on what types of food will be served and what food items should be bought and prepared. Instead of preparing meals required three times a day, it is also necessary to make a planning of preparing meals before any occasion such as marriage, birthday, inviting guests and for patient's diet and balanced food for the children. Menu is a written list on food plan that shows what types of food with required food value will be served at different times of the day.

To prepare any balanced diet, it is necessary to select at least one food item from "basic food groups". At least one kind of fruit and sufficient quantity of water must be taken every day. The following three classes of food are called foods in basic food groups.

- A. Food that provides heat and energy- these are cereals and oil seeds, for example, rice, wheat, oats, corn, mustard, soyabean, etc.
- B. Food that forms, develops and protects gradual loss of body-
These are protein such as fish, meat, eggs, milk, pulses, peas, etc.
- C. Food that protect the body from diseases-
These are vegetables, all types of fruits including sour fruits.

Advantages for using menu

- 1. Balanced food is selected by preparing menu where the basic food groups are included. In addition, menu gives assurance in serving food.
- 2. Food can be managed at reasonable cost.
- 3. Attractive and varieties of food can be served.
- 4. Menu can fulfil the requirements of food of different age group.
- 5. With the help of menu planning, it becomes very easy to prepare and serve food within a short time.
- 6. Wastage of food is also less if a menu is followed.

Purpose of menu planning

1. The main purpose of preparing menu is that it can ensure balanced or nutritious diet for a person who wants to take food in a proper way.
2. Decision can be taken easily at purchasing food.
3. During preparation or cooking proper measurement of food items can be taken and it saves time.
4. While serving food, appropriate quantity can be determined which prevents wastage.
5. Available food stuffs can be used properly.
6. Leftover food is used properly.

Policy for menu planning according to age, labour, income, occasion and season

During planning for menu, an appropriate decision should be taken whether it will be for one time, one day or for one week. Before preparing an appropriate menu, an assessment should be done in respect of requirements of person or group of persons. The menu to be followed for food management should be easy to understand. The characteristic of well-planned menu is that it fulfills the nutrient demand of a person or a group of persons. It also helps in many respects during food purchase, preparation and serving. The following points should be kept in mind when a menu will be analyzed-

1. Menu has to be planned according to age. To what extent the menu can fulfil the need of children or the adults should be considered.
2. Whether sufficient foods of required calorie are provided in menu.
3. Whether foodstuffs are easily accessible or attractive.
4. How much money will be spent to purchase or prepare the foods.
5. Whether menu is appropriate according to occasion.
6. Whether the food included in menu is seasonal.
7. Whether foods are well-balanced and carry sufficient nutrients.

So, in order to prepare an appropriate menu, the subjects that should be taken into consideration are discussed below:

Age

In one family, members of all ages from children to old person lives. Food requirements also may vary from age to age. So this should be considered while preparing a menu, such as-

1. Milk is absolutely necessary for the proper development of children. Milk with cream is better.

2. For keeping good health of aged persons, food with vitamins is needed. It is better to avoid milk with cream for aged people. Oil without fat should be served to them.
3. Pregnant and lactating mothers require high calories and protein.
4. Food should be kept in food menu according to taste and as per choice of various age groups.

Labour

Physical energy is consumed by labour. To fill up the lost energy, sufficient quantity of calorie rich food items should be included in the menu. Those who give hard labour should take food which contain more carbohydrates and fat. On the other hand, those who give less physical labour and do more mental work as well as old people should take less quantity of carbohydrate and fat types of food.

Income

Income is limited in each family. So more or less every family has a limited budget for food. Within this limited income every family has to provide sufficient nutritious food throughout the entire month. Nutritious food is not always expensive. With the limited money, nutritious food can be managed. In our country we have the rich, middle and poor classes. Rich people can afford any type of expensive food. But taking excessive food is also considered to be a wastage. On the other, it is not only desirable for a middle class family to prepare menu comparatively at a cheaper rate but also to include nutritious food along with costly foods. All kinds of required ingredients are also available in cheaper foods as in the costly food items. Poor families generally take some kind of ordinary food to satisfy their hunger. The main reason for this is the limited income of poor families. But if they do systematic planning, they can get cheaper and nutritious foodstuff and by producing vegetables in their own gardens extra money can be earned. This will solve the problem in buying nutritious food.

The experts have opinion that every family should have pre experience in preparing menu.

Weather and season

Food requirement varies according to the weather of places. For example, in cold regions, it is essential take more energy producing food to maintain physical temperature. On the other hand, in warm regions, people can take comparatively less energy producing food. For this reason, in cold countries people are habituated to take butter, oil, eggs, cream, coffee, cocoas, etc.

Food requirement varies as per season also. Besides some special foodstuffs are

produced in each season. For example, water melons, papayas, pineapples, jackfruits, bungis and wood apples are available in different seasons.

In summer, varieties of fruit juices like pineapple, juice, green coconut water, curd, curd water (matha) are taken as drinks.

In rainy season, for taste, people usually like to eat fried shingaras, somuchas, piajis, chanachur and puffed rice etc.

In winter season, usually fatty types of food such as eggs, cheese, butter, jam, oily fish, meat, milk, chotpoti are included in the menu.

In our country, the menu is sometimes changed due to the impact of season.

Occasion

Occasion plays an important role in the preparation of menu. Besides daily food, there are special types of food prepared on different occasion. In case of any small and big occasion, the menu has a special attraction because on this occasion different varieties of food are served that are not usually taken. There are different types of occasions held in our country such as wedding, reception of the bride, birthday, wedding anniversary, milad, death anniversary, chelum, kulkhani etc. Besides these occasions, we have also other traditional and religious occasion when we serve special types of food. These occasions include re-union, Ramzan, Eid, picnic, traditional and local festivals, family programmes, etc.

Occasion can be pleasant or sad. Based on the types of occasion, menu planning should be done. For example, the menu for birthday is not applicable for the menu of milad. On the occasion of re-union, food arrangement can be done outside the home, where any types of food can be arranged.

Now a- days, people feel more interest to take foreign food in stead of local food. specially, some food like snacks, seafood, chinese are very popular in our country.

Menu planning for pregnant and lactating mothers

Due to lack of proper nutritious food, pregnant mothers can be weak and ill. Mothers should take necessary and appropriate food for getting a healthy and normal baby. There might be danger or risk if the mother does not have normal weight (as per doctor's advice) during pregnancy. After birth, the baby is fully dependent on breast-feeding up to the age of 6 months. Due to that, food requirements for lactating mother also increases. A lactating mother has to take sufficient amount of nutritious food to below supplying milk to the baby and also for the recovery of her own health. Instructions are given in the lists below on balanced diet for pregnant and lactating mothers.

Balanced food chart for a pregnant woman		Balanced food chart for a lactating woman	
Food item	Quantity	Food Item	Quantity
Rice	232 gm	Rice	290 gm
Wheat	116 gm	Wheat	116 gm
Pulse	87 gm	Pulse	58 gm
Green leaves	145 gm	Green leaves	116 gm
Other vegetables	87 gm	Other vegetables	87 gm
Potato/arum	87 gm	Potato/arum	101.5 gm
Seasonal fruits	87 gm	Seasonal fruits	58 gm
Milk	232 gm	Milk	290 gm
Oil	43.5 gm	Oil	43.5 gm
Sugar /molasses	29 gm	Sugar /molasses	58 gm
Fish/meat	58 gm	Fish/meat	87 gm
Egg	1	Egg	1

Food chart for one pregnant mother-one day menu	Food chart for one lactating mother-one day menu
Breakfast Egg (boiled) / pudding Parata Cauliflower, potato bhaji Banana/ orange	Breakfast Egg (Omelette) Chapati Beans, potato bhaji Banana/papaya
Lunch Koi fish curry Spinach bhaji Beans, mashed potatoes Pulses Rice Tomato salad	Lunch Rui fish curry Vegetables Pulse Rice Lemon or salad
Evening snacks Bread, butter, Jam Tea/Coffee	Evening snacks Sandwich Tea
Dinner Chicken curry Cabbage bhaji Pulses, Rice Cucumber and radish salad Sweet	Dinner Kima (chopped meat) with cabbage bhaji Parata Tomato salad Pudding/Firni

Exercise

Multiple Choice Questions

1. Which is less important in planing a menu?
 - a. age
 - b. season
 - c. occasion
 - d. place
2. The objective of planning a menu is to
 - i. make the best use of food stuff
 - ii. ensure balanced diet
 - iii. serve in the right quantity

Which of the following is correct?

- a. i & ii
- b. i & iii
- c. ii & iii
- d. i, ii & iii

Answer questions no 3 and 4 from the following text:

Rimi is ten years old. She is suffering from constipation. She has no appetite. Everyday she eats rice, potato, meat and dal.

3. Rimi's food menu lacks
 - a. vitamin
 - b. mineral
 - c. fat
 - d. water
4. Which of the following does Rimi need to add in her menu?
 - a. fish
 - b. leafy vegetable
 - c. banana
 - d. apple

Creative questions

1. Halima Begum likes preparing food menu at different occasions. She has fascination for seasonal fruits and vegetables. Recently she has got pregnant and went to see a doctor. The doctor has suggested her to follow an ideal food menu for a pregnant mother.
 - a. What is a menu?
 - b. Describe planning menus for different occasions.
 - c. Plan/prepare an ideal menu for Halima Begum.
 - d. Discuss the importance of planning menus for a healthy life.

Chapter IV

A Patient's Diet

A man can suffer from diseases at any stage of his/her life. There are many types of diseases such as fever, upset stomach, cold, cough, jaundice, influenza, etc. Sometimes, the duration of a disease is shorter and sometimes it continues for a longer period. Patients need appropriate care considering the seriousness of his/her disease. According to nutritional science, it is very important to select proper diets along with taking care of the patient. To take proper care of the patient, every body should be well informed about appropriate diets of the patient. For this reason, in this chapter the discussion is focused on the necessity of diet, description of diets for common diseases and soft, liquid diets for patients, etc.

Necessity of diet

By the term diet, we understand the preparing of proper or suitable food considering the nature of diseases and patients physical condition. For the recovery of patients, besides medicine and nursing, appropriate diet is also very necessary. Diet helps to recover the weakness of patients. It is necessary to take nutritious food as diet during illness to regain one's energy from weakness. Naturally a continuous internal metabolic process is working inside human body. Food is also needed to give support for this process. For internal metabolic process the same amount of energy is needed for both sick and healthy person. During illness, the patient not only has to fight with germs of the disease but has to maintain energy for internal metabolic process. So, during illness a person needs more energy than healthy situation.

In stomach disorder, when indigestion occurs, it is necessary to give the patient liquid and light food (diet). The digestive system gets some rest due to that. It is to be remembered that during illness, energy is needed to keep the body active and mobile. In this period if proper nutritious diet is not given to the patient, then the body automatically takes its necessary energy from fat and glycogen.

A patient needs at least 1,850 calories or equivalent energy from food or diet. If a patient lacks the required nutrient diet, the body collects energy from its own body's accumulated calorie, protein and fat. So, patients suffered for long a period, should take proper diet immediately. Otherwise, the patient will be weaker soon. According to modern medical science, patients should have the ability for fighting with the disease and it will be possible only when patients will take sufficient and appropriate amount of nutritious diet. For this reason diet is very necessary for the patients.

Description of diet

It is very important to know the type of diet or how to select that diet for patient. The digestive power of patient becomes weak when he/she is attacked by the disease. For this reason, the patient's diet should be enriched with nutrition and vitamin. On the other hand, the food items should be fresh, pure and easily digestible. During illness if the patient does not get food that contain sufficient amount of the proteins and nutrition, the patient's body will collect accumulated protein of his/her own body and after that the patient will be weaker. The patient's recovery will be easier if protein is included in diet.

Like protein, sufficient amount of mineral salt is necessary in the diet of a patient. But sometimes, mineral salts are excluded or reduced based on the types of disease. Vitamin A, B and C are essentially needed for patient suffering from fever. It has been observed that due to lack of vitamin C, the symptom of cough and cold is seen. The human body cannot store or preserve sufficient amount of these vitamins. So during diet planning, care should be taken whether the diet is enriched with necessary vitamins.

Patient's diet planning should be done according to the types of disease and its nature. Because, the diet of a patient suffering from fever is not similar to that of a patient suffering from stomach upset. In general, it can be said that diet should be easily digestible, nutritious and enriched with ingredients. For example, milk is the best diet for patients. But it cannot be served to the patient suffering from stomach upset; rather they can take curd or ghole, whey or chana water rather than taking milk directly.

Patient's diet in different types of fever

The body temperature rises or becomes high when a person suffers from fever like influenza, pneumonia, typhoid, and malaria. He/she sweats when the temperature rises. Sufficient amount of water and salt comes out from body with sweating. Due to that the patient feels weak. So, to recover from this weakness, there should be appropriate diet for patients. In the general, this type of patient needs liquid, light diet and sufficient water. During illness, glycogen decreases rapidly. So, carbohydrate should be included in the patient's diet. But if the patients have digestive problems then fibre types carbohydrate (cellulose) should not be included in their diet. In that case, the patient can be given milk, sugar with barley and sagu as liquid. Even then if the patient cannot digest barley, sagu, they can be given glucose water, lemon sorbot or green coconut water.

Diet for stomach diseases

There are many types of stomach diseases. In diarrhoea, plenty of fluids and salt is lost from the body. So, diet for this type of patients should contain sufficient amount of water. Due to diarrhoea, patients suffer from dehydration. This type of patients can even die. So, patients can take saline water frequently to replace the loss of body fluid and salt. Besides, this patient can take easily digestible liquid diet. Dysentery is also one kind of stomach disease. The patient's diet for this type of disease should be fish and vegetable curry with less spices, soft rice, chira water and also other liquid food.

Diet for jaundice patient

Jaundice occurs due to disorder of liver functions. Symptom of this disease is fever with vomiting and loss of appetite. For a jaundice patient less fat and easily digestible diet included with vitamins is required. The appropriate diets for patients are plenty of water, light, less oily, less spicy and less fibre types of diet. Among drinks sugarcane juice, different types of fruit juice, green coconut water, glucose, lemon juice with water, shorbot and vegetable soup are better. Besides these soft rice, suji (without oil), papaya, boiled pumpkin, fish curry without oil, soft wheat bread are also proper diet for the patient.

Preparation of soft and liquid diet for patients

After selection of suitable diet, the type of preparation of diet should be considered. Diet should be prepared very carefully considering the patient's condition and digestive power. Liquid diets are usually given to patients after surgery when patient's metabolic system need rest. This type of diet contains plenty of water. Among liquid diet that contains glucose, dissolved protein, mineral and vitamin for example, green coconut water, orsaline, boiled water, juice from dried fruits, chicken soup etc should be given to patient.

Liquid diet can be given to patients during recovery from disease. The diets are light milk, suji, soft rice, vegetable, boiled meat, boiled soft egg etc. This type of digestive food can be served to patients as per requirements.

Exercise

Multiple Choice Questions

1. Which of the following is the most ideal in case of stomach problem?
 - a. Pishpash
 - b. Khichuri
 - c. rice and fish
 - d. Rice and meat

2. The qualities of diet for patients are
- They should be spicy, oily and full of fibers.
 - They should be nutritious and liquid.
 - They should be of high protein.

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i & ii | b. i & iii |
| c. ii & iii | d. i, ii & iii |

Answer questions no 3 and 4 from the following text;

Rina is a student of class seven. She has no urge for taking food. Her vision is opaque. Besides she has skin disease, feverish tendency, and constipation.

3. The suitable foods for Rina are
- Khichuri with carrot and pumpkin,
 - Chicken soup
 - Food produced from milk

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i | b. i & ii |
| c. ii & iii | d. i, ii & iii |

4. Rina has no appetite because
- She has been suffering from constipation
 - She feels feverish
 - She has been suffering from skin diseases

Which of the following is correct?

- | | |
|-------------|----------------|
| a. i & ii | b. i & iii |
| c. ii & iii | d. i, ii & iii |

Creative questions

1. Rabi has been suffering from jaundice. A Kaviraj has asked him to take sugarcane-juice and green coconut water. She is taking these in addition to sufficient Kebab and paratha regularly. His condition is deteriorating.
- What is called diet?
 - Explain how far Kebab and Paratha are suitable for Rabi?
 - Prepare an ideal diet for Rabi.
 - Explain Kaviraj's suggestion for Rabi.

Chapter V

Preparation and Serving of Food

Cooking Recipe-Definition, Necessity and Writing Process

Apparently, cooking seems to be easy but very often it is seen that there might remain some shortcomings in cooking. The same food prepared at different times may give a different taste. But if food is prepared according to proper guideline by maintaining required quantity of ingredients and the same system of cooking, the taste will be the same at each time. For this reason recipe is prepared. Recipe gives a correct guideline to the person who cooks.

Recipe is a written guideline for preparation of food or it can be said that recipe is a list for cooking following which one can prepare tasty and nutritious food very easily.

Definition of recipe

Recipe is a written instruction or guideline where a list of necessary ingredients and a particular or appropriate proportion of ingredients for cooking are mentioned. Recipe is a list that one can follow during preparation of food. For example, recipe for potato chop, Chotpoti and Shami Kabab. There are many things that are mentioned clearly in the recipe, such as the name of the food, ingredients, quantity of different ingredients, types of vegetables, chopping system of fish and meat, temperature of oven, cooking time, quantity and the number of persons for whom it will be served. Even decoration of serving meals is also mentioned in the guideline.

Necessity of recipe

1. Wastage can be prevented if ingredients of food are measured as per recipe.
2. In an ideal recipe, the number of servings are mentioned. It makes easier for a person to know how many people can take the food.
3. Special method and temperature required for cooking are mentioned in recipe. So, during cooking one does not need to change decisions frequently. So, it saves time.
4. A new dimension of cooking can be brought by following the recipe and one can learn many new items for cooking from recipe.

Writing process of recipe

Every recipe has three main parts.

- a. List of ingredients
- b. Fixed quantity of each ingredient for cooking

c. Description of specific system of cooking specially of temperature and time.

In an ideal recipe number of servings or how many persons can be served is also mentioned.

An example of recipe is given below:

Firni		
Ingredient	Quantity	No. of persons (to be served)
Milk	2 litres	10
Polao rice	125 grams	
Sugar	125 grams	
Rose water	Small quantity	
Almond / Chopped pistachios and raisins	As per choice	

Procedure

1. Wash rice and let it soak in water for half an hour. Discard water and crush the rice slightly.
2. Boil milk. Put rice in milk and boil rice and milk at a low temperature. Put some flavoured spices. If necessary, put one cup of boiled water in it.
3. When boiled rice becomes soft, put small quantity of sugar in it and stir it. When milk will become thicker, stir it often and quickly.
4. Then put the remaining quantity of sugar and stir. When it becomes thicker put chopped almond- pistachios and raisins.
5. When the flavour comes out, sprinkle small amount of rose water on it and remove it from oven.
6. Put the prepared firni on serving dish while hot.

Light and heavy equipment for kitchen

To accomplish any work, man use materials that are called equipment. It is never possible to do any daily activity only by hand without the use of necessary equipment. During food preparation we also depend on varieties of equipment.

From purchasing food at different stages, such as during food storage, preparation, cooking, serving up meals and cleaning etc. we do need to use the equipment. Particularly we need to know about equipment that is used for cooking. This is because different types of materials are made by different types of metals. As quality of these pieces of equipment vary, use and care for these also have to be done in different ways. It will be easier to work or buy equipment if it is listed properly as per size and structure according to the necessity of its uses.

Cooking utensils used in kitchens may be light or heavy. It may be useful if a list is made according to their weight or size. A list of heavy and light utensils is given below.

Heavy equipment:

Furnace, oven, cooking pot made of copper that have weighs about one mound (40 seers) or half mound, heavy fry pan made of iron, big baking pan made of iron, pitchers made of brass, pitchers made of aluminum, heavy cooking pot made of aluminum, pressure- cooker, stone slab for grinding, weighing machines, ranger (2 burners) etc.

Light equipment:

A list is given below :

Electric equipment:

Blender, mixing machine, beater, meat grinder, juicer, coffee maker, electric pressure pan, fry pan, kettle, sandwich maker, toaster etc.

Cutting equipment:

Knives (of small and big size), knives used for cutting meat, chopper, doughnut cutter, grater, rasher, slicer, puller, etc.

Measuring equipment:

Measuring spoon, cup, weight, weighing machine etc.

Equipments used during cooking:

Clock, measuring cup, spoon, meat grinding machine, weighing machine, cutting equipment, can opener, roller and pin for making chapatti, bowls, beater, sieve, strainer, juice extractor, tray, spices pan, vegetables basket, doughnut cutter, dice, salad tray, different types of dishes for serving, pastry brush, piping pan etc.

Equipment for use on oven:

Kettle, baking pan, sauce pan, fry pan, cooking pan of different sizes, roasting pan, roasting stick, tea and coffee maker, muffin pan, baking sheet, pyrex dish, cash roll, stirring spoon, khunti, gridles, pot holder, fry- pan, etc.

Cleaning equipment:

Water bucket, bowl, soap case, brush, broom, still fibre, foam, utensil, rack, water tap etc.

Serving utensils:

Full plate, half plate, quarter plate, polao dish, curry dish, different types of bowl, tray, fork, soup bowl and spoon, juice glass, jug, tea cup, tea pot, sugar pot, milk pot, salt sacker, table cloth, table mat, napkin etc.

All these equipment and utensils should be arranged before hand. Otherwise cooking preparation and serving work will not be done properly. If everything is prepared then it will save time and avoid irritation. So, according to a list of menu or recipe all equipment should be arranged before starting work.

Utensils:

We also use some equipment besides cooking materials that are used in kitchen. These are refrigerator, freezer, table, basin, cupboard and rack. These are necessary but these are not actually utensils. These are heavy and not easily moveable. So, these are placed in a certain places permanently. Freezer is needed to preserve perishable food. Refrigerator can be kept near kitchen and dining room. Table is needed at each working place. Basin is also needed for the preparation of food, cooking, serving and washing.

Cooking ingredients

We like to eat varieties of food, for example, sour, hot, sweet and salty foods. Food of a particular taste is served at a particular situation. For example, food like crispy, hard, half-hard, thick, soft, liquid, tender etc. Besides that, some food flavour is also used in different foods when cooking. For example, vanilla, banana or orange essence etc.

Therefore, we use different types of materials or foodstuff for making special attraction in it. These types of materials should be kept in home before cooking. Because during the time of cooking if the proper material is not used, taste of food and serving decoration can take a different shape. Some materials are listed below which can be used according to necessity.

Ingredients for snack:

Bread crumb, eggs (beaten), cheese sliced, bread, spearmint leave, mayonnaise, and black pepper powder.

Ingredients for soup:

Meat stock, corn flour, white sauce, soya sauce, tasting salt, eggs, melabi, lemon grass etc.

Fragrance:

Different types of essences as rose water, keora, nutmeg (jaifal), mace (jaitry), hot spices etc. are used in food for flavour.

Ingredients for preservation:

A. In preparation of jam-jelly, squash-egaro-egaro (china glass), gelatine, sodium banjoiet, sodium bisulphate, potasium-permanganate etc.

B. In preparation of achar or pickles-vinegar, mustard oil, pickles spices, powder from local spices, panch-foron, etc.

Ingredients for sweets:

Syrup, maowa chana, curd (white sweet), milk (skimmed/powder/condensed), custard powder etc.

Ingredients for baking:

Yeast, baking powder, baking soda, merung, cream of tartar, eggs (beaten/light/thickly set).

Ingredients for Chinese cooking:

Cornstarch, oyester sauce, tomato ketchup, soya sauce, white sauce, tasting salt etc.

Ingredients for local food:

Ararat, flour, rice flour, ground nut, tamarind, vinegar, plumbs (alobokhara), coconut milk, rice, boiled potatoes , molasses etc.

Ingredients for decoration:

Lemon rind, icing-sugar, coconut sliced, cheese sliced, lemon, chips, salad leaves, food colour, tomato sauce, nuts, almond, pasta, raisin etc.

Spices:

Curry powder, fried cumin powder, dry spices powder etc.

Technical method for Cooking:

The purpose of cooking is to prepare food as tasteful, easily digestible and free from bacteria, so that it can maintain good health. It is observed that due to faulty system, food value and standard of nutrition are sometimes lost after cooking. For example, there is a general tendency among people to use more spices and boil more in order to make food more tasty.

Fire and water are naturally used during cooking. Food values are lost when it is cut into small pieces, washed in water and cooked for a long time. But if it is done carefully, the wastage of nutrients value of food can be saved. On the other hand, people are now interested to eat local as well as foreign food. For each item a particular system is followed during cooking. Only boiled or fried food is not always liked by people. Naturally, men want varieties in food. In ancient times, men used to eat fire burnt food, but at present time in this civilized world, men learnt many techniques for cooking. Now men have learned many techniques or processes of cooking and know how to make it simple, quick and attractive. The current methods of cooking are discussed below.

Food boiled in high temperature:

In this method foodstuff is boiled in 100° centigrade or 212°F with water. In this case if water is drained then food nutrients are lost. Rice, pulses, soup, meat, halim and chotpoti are cooked in this method.

Food boiled in low temperature:

In this method food is cooked in small quantity of water in low temperature for a longer period, so that food can be well cooked. Fish, meat, milk, eggs, green leaves, vegetables, custard, firni etc are cooked following this method. To cook this type of food the temperature ranging from 82° to 100° celsius is needed. This method keeps food value and nutrients as much as possible.

Food cooked in steam:

In this method food is boiled directly by steam instead of water. Pudding, steamed pithas (cake), steamed hilsha (fish), meat etc. are boiled in a pressure cooker. Smoked fish etc. are cooked by following this method. In this method temperature ranging from 100°-112° celsius is needed and it keeps food nutrients intact.

Frying using a lot amount of oil:

Chips, cutlet, chops, luchi, dough nuts, somuchas, singaras, malpoas, pakan pithas, parata, fish etc are generally fried with deep oil. These types of food are cooked at a temperature of 300° Celsius. At this temperature the foodstuff is cooked quickly. When smoke comes out from oil due to high temperature, the oil becomes useless. Repeated use of burnt oil is harmful for health.

Fried with small amount of oil:

Vegetables, fish fry, eggs etc are fried with small amount of oil, In this case, food stuff is covered on the fry-pan and fried slowly. Oil also is not burnt in this process. Food value is also preserved to some extent. If food is cooked without cover, the vitamins that are dissolvable in fats dissolved in oil and are blown away in the form of vapour. Due to that food value is lost.

Burnt or scalded:

Potatoes, brinjals, sweet potatoes, corn etc are prepared by burning. Shik kabab, boti kabab are also prepared by scalding. In this process vitamins of foodstuff are lost totally.

Roast or burnt in hot pan:

Pop corn, puffed rice, ground nuts are fried by hot sand in this process. Prawns and small dry fish are fried in dry pans and then are mashed. Cumin, coriander, dry fish are fried in hot pans. Bread is baked in hot pans. No oil or water is used in this process.

Baking:

Bread, biscuits, pies, cakes, etc. are baked in oven. In this process the foodstuff is prepared under direct heat from all directions.

Adopting carefulness at cooking and health system in kitchen:

All raw foods are not suitable for eating. It is necessary to cook raw food in a proper way. The purposes of cooking raw foods are as follows:

1. By cooking, hard food becomes soft and digestible.
2. During cooking heat destroys most of the harmful bacteria that exists in the raw foodstuff.
3. When food is cooked with oil, spices and other ingredients, according to recipe, the prepared food becomes palatable and tasty in colour and flavour.
4. Raw food like meat, fish, pulses, eggs, vegetables, can be eaten easily when boiled.

It is necessary to know how to cook different types of foods by keeping its food value intact. Air, heat, fire and light etc have harmful effects on food ingredients. For this reason if careful attention is given during cooking, such type of wastage can be avoided.

During cooking the following steps should be carefully made:

1. Vegetables should not be cut into small pieces.
2. Vegetables should be washed before cutting.
3. Foodstuff should be boiled in low heat and in small quantity of water under cover.
4. Boiled water or liquid portion of vegetables after boiling should not be drained.
5. Eggs should be boiled in low heat. It should not be boiled for long a time. If boiled for a long time then the protein may harden like rubber.
6. It is better to boil milk for a longer period in low temperature.
7. Meat, fish are cooked well when they are boiled in low temperature for a longer period in a covered pan.
8. Do not throw away rice starch. This results in wastage. Vitamin B and mineral salt contained in rice are thrown with rice starch. Especially about 70% iron is lost.
9. It is better to cook vegetables in container that has small opening/mouth. Due to that oxygen from air cannot destroy the vitamins of vegetables. When water is slightly warm, put the vegetables in it. This will help to preserve vitamins of the vegetables.
10. For quick boiling of meat and pulses, if alkali likes soda is used, vitamin C and B are spoiled.

11. It is better to cook in earthen or aluminum pot instead of iron or copper utensils. This will prevent the wastage of vitamin C and also acid reaction from sour taste of food when cooked.
12. It is harmful to heat oil or ghee in high temperature and use it repeatedly. It creates toxic element that may cause stomach problem.
13. Potatoes should be washed with its skin and then cut into pieces. This protects nutrient of potatoes. But if potatoes are cut into pieces and kept in water, vitamin B and C are spoiled.
14. If pulses are boiled for longer period in low temperature, its protein becomes easily digestible.
15. If milk is kept in sun light, vitamin B is lost.

Food nutrients are lost due to wrong process in preparation and cooking of food. Similarly food becomes useless if it is preserved in dirty environment and with mismanagement. For this reason, special and careful attention should be given for the environment of kitchen. Kitchen should be clean and well managed.

Healthy environment in kitchen is meant to keep or protect safe and healthy environment at kitchen. There is very close relation between food and health. A person's satisfaction in food and good health are closely linked with good nutrient food that are taken by him. Good food means safe, attractive and tasty food.

It is necessary to give attention on keeping good and proper environment at kitchen to prepare acceptable food for people. Because if food is cooked in unclean or unhygienic environment, the prepared food can be harmful for health.

Many types of diseases can spread through food. Men fall sick after taking contaminated food. Even men can die having such kind of food. To avoid this situation the following instructions should be followed carefully:

Cook fresh food:

It is necessary to select fresh and pure food when purchasing. It is better to purchase sealed meat and foodstuff from recognized and reputed shops. One should be assured on purchasing of pasteurized milk and pure oil etc.

Keep away from people suffering from contaminated diseases:

Different types of bacteria can cause suffering to people. These can spread through foodstuff also. It is better to keep away from the persons who are suffering from cough, cold, fever etc from foodstuff. The person who is cooking and serving food in the kitchen, he/she should maintain neat and clean environment. It is better to cut one's fingernails regularly. One should not use one's hand for scratching pimples and if one does one must wash one's hands before touching any food. Every body should be aware of these matters.

To keep food under cover:

Food can be contaminated by dust from air. Even light and air have negative effect on food. Flies can contaminate food by spreading bacteria on open food. Those who are engaged in food preparation, cooking and serving, should be aware of it. Foodstuff should be kept always under cover.

To preserve on time:

When large amount of food is purchased it needs proper preservation. It is better to preserve extra food as soon as possible leaving the amount needed for cooking. There should be good preservation system for example, dry food should be kept in good storage and perishable food should be preserved in a refrigerator. If perishable food is kept for longer period in an unprotected place, its food value will be spoiled and so there is a need to preserve it in a proper place as soon as possible. For example, milk can not be kept for a longer period outside and it can be contaminated by bacteria. Meat and fish also should not be kept in an unprotected place for longer period.

Food should not be kept in a scattered way:

Foodstuff should not remain scattered in a storeroom or a kitchen. This will attract insects and will pollute the environment. This matter needs careful attention.

To be aware of insects:

Kitchen should be kept clean on regular basis. Insects cannot spread bacteria if it is kept clean.

Be cautious to use insecticide:

Insecticide is used to protect environment but it should be used very carefully. It is very much harmful if insecticide is mixed with foodstuff. Even men can die if he/she takes food mixed with insecticide.

Control the right temperature:

Foodstuff should be kept in desired temperature. Otherwise it can get rotten easily.

Neat and cleanliness:

Persons who are working in kitchen should maintain cleanliness. They should tie hair tightly, wear apron, and cut fingernails regularly during work in the kitchen.

Arrangement for water:

There should be an arrangement for sufficient water supply in the kitchen. Proper arrangement should be made for storage of water and for drainage.

Disposal of solid waste:

Waste should be cleaned on regular basis. Proper precautions against accident must be taken:

- a. It is necessary to be cautious against using fire. The oven must be turned off as soon as the cooking is over.
- b. Wide space should be kept in the kitchen for free movement to avoid accidents. If the floor of the kitchen is broken, it should be repaired as soon as possible to prevent accidents from falling. Floor should not be kept in mud and wet condition. Kitchen equipment should not be kept at an elevated place.
- c. Electrical equipment should be used carefully in one hand. It is better to keep open the electrical wire connections after use. If electrical wire is cut off, it should be repaired or changed as soon as possible. Electrical wire or switch should not be touched with wet hand. It can cause serious accidents and people can even die.

Lighting arrangement:

It is necessary to arrange sufficient lighting in work place (kitchen) and in the passage.

Lifting and bringing down things:

Proper arrangement should be made for lifting and bringing down heavy things.

Keeping equipment:

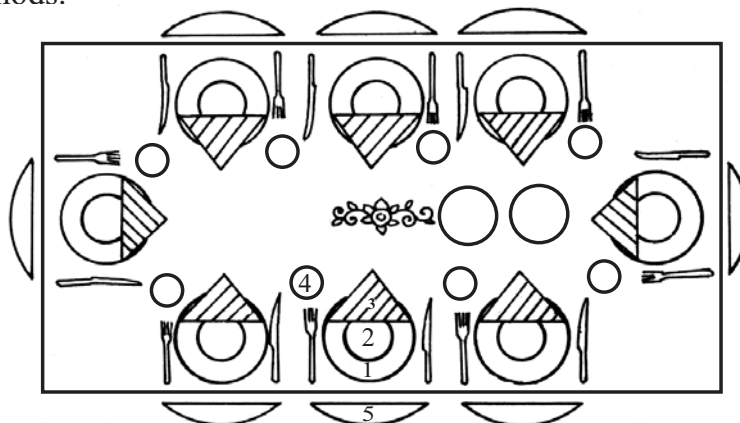
Equipments or utensils should not be heaped up at one place. It can cause problem during the use of equipments. The environment of the kitchen should be maintained in such a way that at the time of work no wastage, extra energy and accidents can happen. In this way healthy system can protect the kitchen.

Food serving, food decoration & preservation of informal, formal and buffet:**Food decoration**

The purpose of arranging the dinning table before having food is to make the process of taking food easier and comfortable. If plates, spoons, forks, glasses and other necessary things are properly arranged on table, it gives pleasure and satisfaction for eating. Steps for arrangements of table are shown below:

1. A table cloth with table mats should be placed on the dining table.
2. The table should be attractive with decorative flowers.

3. When food is distributed after preparation and placed before the diners, that system is called food service. Satisfaction of having meal depends on the mode of serving of food. In modern civilized society, men are accustomed to enjoy life collectively. It is necessary to create a well-balanced, calm and pleasant environment during meal. The table should be well arranged so that utensils are placed systematically as per menu. Food is also served in different methods as per occasion. Some occasions are informal, some are formal and some are in between the two methods.



Sample of decorating dining table

A. Food service in informal occasion

It is not necessary to arrange dining table for informal or ordinary occasion. It is not always possible for all members in the family to eat together. On the other hand, in picnic, travel etc, food is served informally.

B. Food service in formal occasion

Formal occasion means state feast, social function, annual entertainment, family programmes like marriage ceremony, birthday, reunion etc. Besides, food arrangement in a hotel or a restaurant is also formal occasion. For each occasion, the table is arranged or decorated accordingly. On birthday, milad, office party, puja etc. food is served as per customs or also by the mixed method in between informal and formal occasions. There are different types of food service systems also. For example, food service in working place for workers, for patients in hospital, tiffin for educational institutions, food service system for residential students, in transport during travel etc. In these cases, it is not necessary to arrange a table but the type of food service or distribution method is more important. Hence distribution or service means-

Self service

In this case, food is served in different bowls. Food is also kept warm in this system. Meal receivers will take their food items on their dish as per choice. On many

occasions foods are also served on tables. Each person takes food on a plate according to his or her wish. This system is also called self-service.

Tray service

Trays are kept in the corner of a canteen and a cafeteria of different organization, hospital, offices, and educational institutions. Each person goes to a particular place with a tray and takes food according to his choice and then eats. Sometimes food is decorated also in each tray. A meal receiver just picks the tray and then sits for eating.

Packet service

In different occasions like milad, social functions, seminars, programs in schools, colleges food is served in packets. Snacks, lunch boxes can easily be served for many people.

In general, every body should have proper knowledge on food service on different occasions like family programmes and formal programmes. At present, the system of formal feast among urban families is gradually disappearing due to workload and busy life. There is also a lack of domestic help or cook help. So, now -a-days any formal food or entertainment is arranged in hotels and restaurants. This is not our usual custom. Rather it bears the identity of mixed culture. Women should have an idea on different food management and distribution of food on different occasions. Method of distribution of food in different occasions may bring change in environment of meal or entertainment. Such as,

Firstly

Food distribution process differs among people of different religion and sects.

Secondly

As per variation of food distributor, food environment may be different, such as-

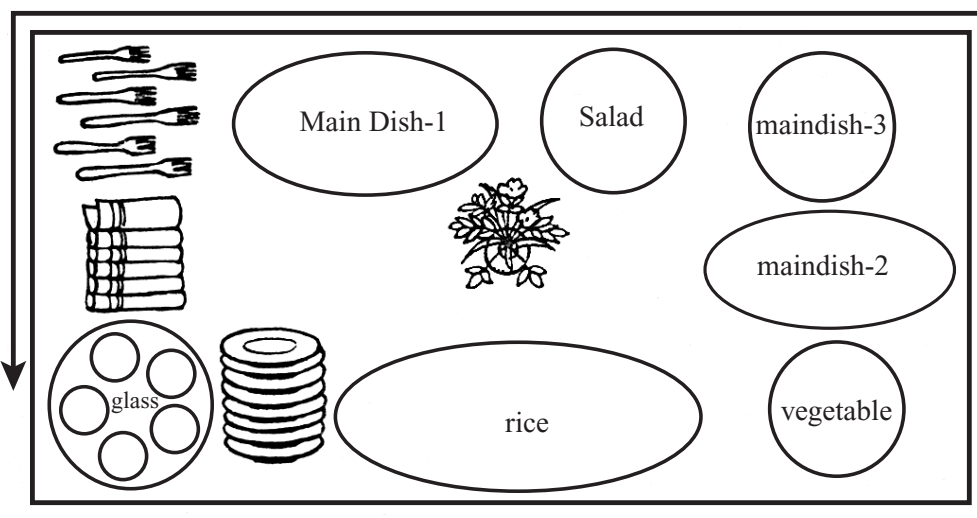
- a. When a host or hostess serves food to the guests, there will be a very congenial or friendly atmosphere among guests and hosts.
- b. Guests and hosts can enjoy food together if others like a maid or an employee of the host serve food. In this case, the size of dining table should be bigger or need enough space should be there for having meal all together.

Buffet service:

If the number of guests is more and accommodation is not enough, the buffet service may be introduced. In this case, all types of utensils such as plates, spoons, napkins, glasses etc are kept in one corner of the dining table as per number of guest. Food are placed also in the side of the table. There should be some space in between food dishes so that food can be taken easily with comfort. Then guests can stand in a

queue, pick up the plates and food of their own choice. Flowers, branches of flower trees and leaves can be decorated on the middle of the dining table. Guests can eat their food either by standing or by sitting on the table.

If the number of guests is more, then water glass, spoon for desert should be kept on separate table. So guests can easily identify it and use it conveniently. There is an advantage of the buffet method when the number of guests is more. This method is now well accepted in our country. Method for food arrangement and decoration is shown in the picture.



Decorating of dining table according to buffet system.

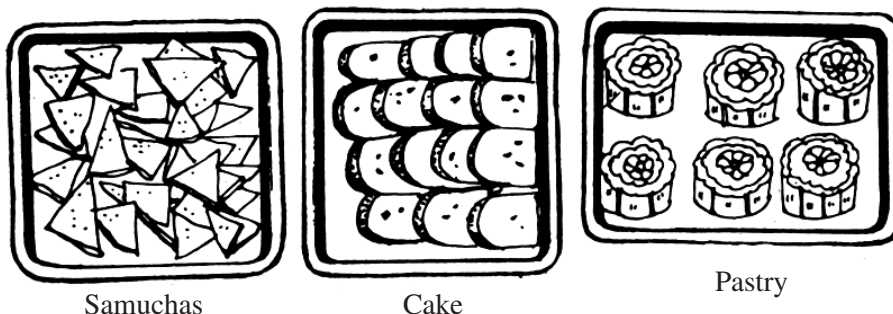
Snacks- list of snacks type food and price list of prepared food and its distribution

Generally we take three main meals in a day. These are breakfast, lunch and dinner. Our daily requirements for food calorie and nutrition are fulfilled through these meals. But we also take food in between meals. For example, we arrange for light tiffin or snacks if the period between breakfast and lunch is bit longer. Again we arrange evening snacks or tea when the time between lunch and dinner is a bit longer. This type of light food that is taken in intermediary period is called snacks.

Generally people have a tendency of having snacks as drinks, fruits, fried food, salty or baked foods etc. In fact, snacks should not be taken too much as it destroys hunger or appetite for the next main meal i.e. lunch or dinner. Snacks usually is chosen to pass time or to entertain friends and to talk to them or entertain casual guests or while on a journey. Snacks such as drinks, fruits, and light food can be included on this occasion.

In our country most of the snacks are foreign foods. In our country, ordinary families take muri makha, jhal muri, murki, chira bhaja, moa, naru, khoi, murki, tiler khaja, pitha puli, chanachur, puri, dhupi, etc in intermediate periods. On the other hand, rich

families take cake, biscuit, chotpoti, fuchka, faluda, nimki, pizzas, samuchas, shingaras, fruit juice, chips crackers, toasts, cheese etc. Besides, rich families, also serve sandwiches, french toasts, egg rolls, vegetable rolls, jam rolls, patties, pastries, chop cutlets, burgers, ice cream etc. to the guest. Most of the snacks that are sold in shops are fried foods



Foods of snacks

This type of food is easily available at shops. Distribution and service of this food are also easy. These are also nutritious and tasteful. People want to get different types of taste in intermediary snacks. Snacks can be bought in small quantity and can easily be carried. Special expertise is needed to cook such types of tasteful and standard food. These types of food should be packed in airtight packets so that they can be preserved for marketing. Some foods need to be served in cold and some in warm condition. Generally sweet foods are served as cold. Fried and salty food should be kept in crispy and hot type of food should serve warm or it might need to get warmed again.

Fixation of price for prepared foods

Any type of food can be prepared at home or can be purchased. Purchased food is a bit expensive. Again the same food when prepared at home in large quantity and sold, it can financially benefit that family. Food should be distributed for marketing at competitive price. The price should be fixed and reasonable so that the customers might not think it is high and at the same time the producer also should get some profit. Food is also sold in shops and restaurants. In all cases, question of earning profit is important. It is irrational to sell food at high cost. It is impractical to get the same type of food at tk.10 at one shop and tk.50 in another shop. There should be a reasonable margin between the cost of preparation and the sell price. So, there should be a proper planning before the food is sold. For each serving of food, the desired quantity and its reasonable price should be fixed very carefully, so that customers have a positive feeling to purchase that product. But it has been observed that every seller has a different idea. So the same food is sold at different prices at different shops. Hence the price varies mainly on the process of its fixation. Two methods are mentioned below.

Conventional method:

In this method, sell price of food is fixed generally up to 2.5 times greater than the total cost of raw materials. This is because the preparation of food, bears many incidental costs. This cost remains hidden. So, for some food item the profit takes as about 40% and for some food 70% of costs.

Principal cost method:

In this method, in addition to the cost of ingredients, the labour cost for production is also considered as cost. The result of both costs is known as principal cost method. The sell price for food can be fixed at up to 1.5 times than the principal cost. In this case, more adjustment is maintained between production costs and sell price.

For some food, profit is fixed on total quantity of food production and in other cases profit is counted on quantity served. For each serving of food if profit is taken at minimum rate, it is better accepted by the customers. Otherwise, if profit is taken more in quantity it may create pressure on the customers. In luxury hotels or restaurants the cost of food is charged at a high rate. Two methods of fixing food price are shown below:

Conventional method	Tk.	Principal cost method	Tk.
Chotpoti:		Chotpoti:	
Total cost of ingredients	32.00	Total cost of ingredients	32.00
Safety margin or mark up	x 2.5	Labour charge	8.00
So, sale price	80.00	Production expense	40.00
		Safety margin or mark up	x 1.5
		Sale price	60.00
Shingara		Shingara	
Total cost of ingredients	10.00	Total cost of ingredients (14 pieces)	10.00
14 shingara)		Labour cost	4.00
Production cost for each	0.70	Total production cost	14.00
Safety margin or mark up	x 2.5	production cost for each	1.00
		Safety margin or mark up	x1.5
Sale price for each	1.75	Sale price for each	1.50
Total sale price	24.50	Total sale price	21.00

Marketing system:

As food is taken at different times, similarly based on different types of food that are supplied, a difference is also observed in the distribution system. For example:

Soft drinks:

Soft drinks are distributed in bottles, glasses, paper glasses, porcelain containers, plastic glasses, wax-paper containers, aluminum sheets etc.

Dry crispy Food

These are packed in wax paper bags, plastic bags, plastic film packets etc.

Cold snacks

Cold snacks as sandwich etc are packed with plastic, freezer box and paper, cellophane paper, napkin tissue paper, wrapping paper, foil etc.

Ice cream

This is generally packed and distributed in wide soft plastic pot, light plastic sheet, small plastic cup, and biscuit cone and in paper etc.

Thick food

Thick food like curd, halim, chotpoti, roshmalai etc are packed and served in earthen bowl, plastic box, cellophane packet etc.

Sweets

Sweets are packed in thick paper box, soft plastic box, earthen pot etc.

Cake

It is packed with paper packet.

Fried hot food

It is generally served in paper box or paper sack and in light plastic box.

Pitha

Pithas are kept on trays and in paper boxes or paper sacks.

Any type of food can be packed and airtight by light cellophane. But warm food cannot be packed by it. It may spoil food and bad odour may come out.

If food is covered by foil, it helps in airtight. It also can be warmed again by heat.

But food is not burnt in this way.

Paper packet is not airtight. Food cannot be kept for a longer period in it. Oil is soaked by paper; food gets cool and may be attacked by ants.

In earthen pots, thick food can be kept warm for sometime. But earthen pots are heavy and can easily be broken.

Food covered with cellophane and wrapping paper can be seen from outside. They usually remain fresh and are protected from dust and flies.

Exercise

Multiple Choice Questions

1. Which one of the following is used for food preserving
 - a. Soya Sauce
 - b. Orange rind
 - c. Mayonnaise
 - d. Circa
2. Starch of boiled rice should not be strained out because it is waste of
 - i. fuel
 - ii. nutrition
 - iii. time

Which of the following is correct?

- a. i
- b. ii
- c. i & ii
- d. ii & iii

Answer questions 3 to 5 from the following list:

Moglai Paratha, for 4 persons

Ingredients

flower
egg
minced meat
oil
salt
turmeric, chilly, cumin, gorom masala
onion, garlic, water
green chilly
aniseed

Measurement

1 cup
2 pcs
1 cup
1/2 cup
proportionately
proportionately
proportionately
2 pcs
2 pcs

3. To make an incomplete recipe complete, the issues that should be taken care of are
 - i. cooking procedure
 - ii. adding new ingredients
 - iii. time and temperature

Which of the following is correct:

- a. i
- b. i & ii
- c. i & iii
- d. ii & iii

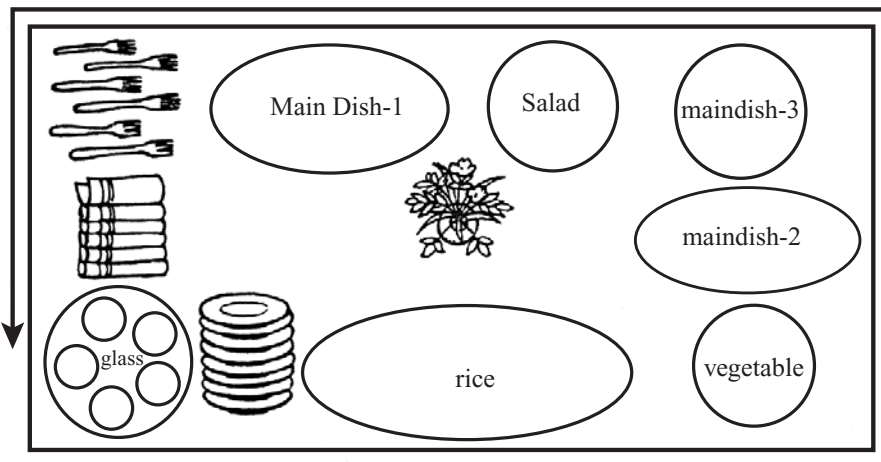
4. Using the ingredients mentioned above, what else can be prepared other than Moglai Poratha?

- a. Samusha
- b. Paratha
- c. Kebab
- d. Tempura

5. Why is Moglai Paratha so popular?

- a. It is delicious
- b. It is full of calories
- c. It is crispy
- d. It is easily digestible

Creative Questions



- a. What is served in the picture?
- b. Describe the serving style in the picture.
- c. Explain how you will apply this serving style in a birthday party.
- d. Evaluate the statement that the style shown in the picture minimises waste.

2. Following is the recipe of preparing a food:

Ingredients

Milk
Sugar
Rice
Rose water
Cashew nut, pea nut

Measurement

1 litre
1 cup
1/4 cup
1 table spoon
as you like

- a. What is a recipe?
- b. How many people the recipe is for?
- c. Describe the process of making pudding by adding to and deleting from the recipe.
- d. Evaluate the statement that "the technique of cooking helps keeping the nutritive value intact."

Part–IV

Clothing and Textiles

Chapter 1

Weaving Fibre

Introduction

At the dawn of civilization human beings did not feel it necessary to wear clothes to cover themselves. But later on, the cavemen felt it necessary to wear clothes in order to protect themselves from cold, heat and attack of wild animals and insects. At that time they used the bark and leaves of tree and skins of animals to cover their bodies. As civilization flourished humans became intelligent and felt it necessary to cover themselves. Subsequently, clothes became necessary to guard against sickness and germs and a means to beautify oneself and show one's personality. In this way, clothes became man's basic necessity. Through the years men developed a variety of textile materials and brought new ideas in clothing. It may be observed that different textiles are used for different dresses. Different textiles are obtained from different thread that is obtained from yarn/fibre. So, we should all learn about yarn.

Definitions of Yarn

The smallest unit of thread is called yarn or fibres. Such as jute, cotton and animal yarn. This yarn is necessary to make textiles or cloth. Thread is comprised of a network of the fibres or yarn. Weaving fibres or yarn together textile or cloth is formed. Textile is used for making different kinds of clothing.

Useful yarn for making textile

Men have found many types of yarn in nature. But every yarn does not make good textile. Yarn can vary according to source, size and quality. There are a number of special characteristics of yarn that make good textile. The following are some useful characteristics:

1. The length of the yarn should be more than its breath. Long fibre or yarn is useful for making thread. Good quality textile or cloth is obtained from strong threads. The fibres are joined together to make thread. So, if the fibres are longer the joints are also strong.
2. Yarn must be smooth and soft. Cotton yarn is rougher and thicker than jute yarn. Asbestos is a rough mineral yarn. So, clothing made out of cotton yarn is more useful than jute or asbestos yarn.

3. The two qualities that a yarn should have which make textile are durability and flexibility. If the yarn breaks on pressure by it or twisting it is not useful for making textile or clothing.
4. Yarn must have two other qualities. These are power of absorption and power to retain colour. The yarns that has the power to retain colour is useful as weaving yarn. Because with colour, different designs can be created in making textile or cloth.
5. The yarn to be used for making clothing should have a brightness effect. Silk has a natural brightness, but cotton yarn has to be made bright by adding chemicals.
6. At the primary stage all yarn contains dirt, glue, gaste etc. The best yarn is the one from which dirt can be cleaned easily.
7. The best yarn is the one that can withstand heat, pressure and acid application.

Classification of Yarn

In ancient times cotton, wool, silk and linen fibres were used in the textile industry. But later on nylon, rayon and other synthetic fibres are used. These fibres are very tiny but when put under the microscope, the difference in formation and length can be distinguished. So, we can classify yarn in two different sections:-

- a. Natural fibre - i.e, Cotton, linen, wool and silk
- b. Artificial fibre - i.e, Rayon, acetate, nylon, orlon, polyester etc.

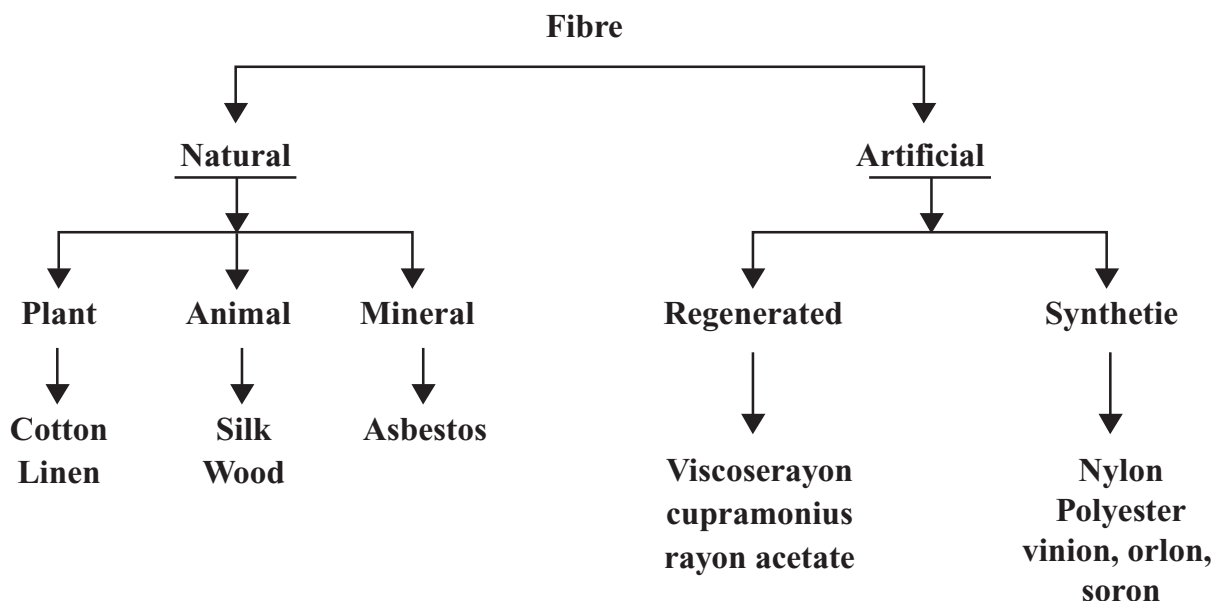
Natural yarns may be further classified as follows:-

1. Plants – as these are obtained from plants, these are called plant yarn. For example, cotton linen and jute.
2. Animals – as these are obtained from animals and are called animal yarn. For example, silk and wool.
3. Mineral– these are obtained from minerals. For example, asbestos and basalt.

Artificial fibres can be divided into two groups

- a. Regenerated fibre - discouse rayon, acetate etc.
- b. Synthetic fibre - nylon, polyester, orlon etc.

Classification of fibre



There is slight difference in all the fibres mentioned above. Some are longer than the other. As such fibres are also classified according to their length-

1. Staple fibre -those are fibres that are shorter in length are called staple fibres.

Example cotton 2cm-6.5cm

Wool-4cm-36cm

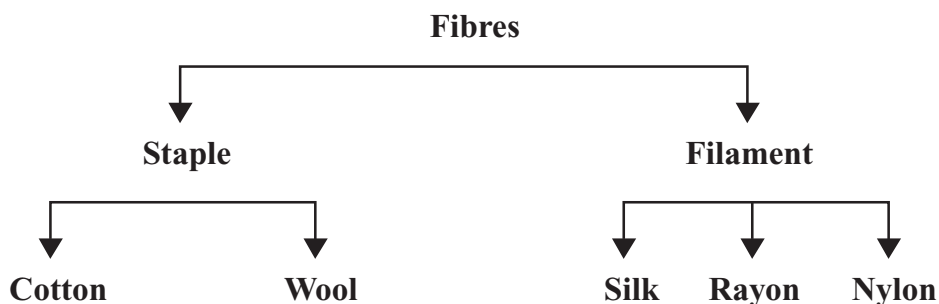
2. Filament fibre- those fibres are longer in length are called filament fibres.

Example, linen-3-3.5 meter

Silk-400-1300 meter

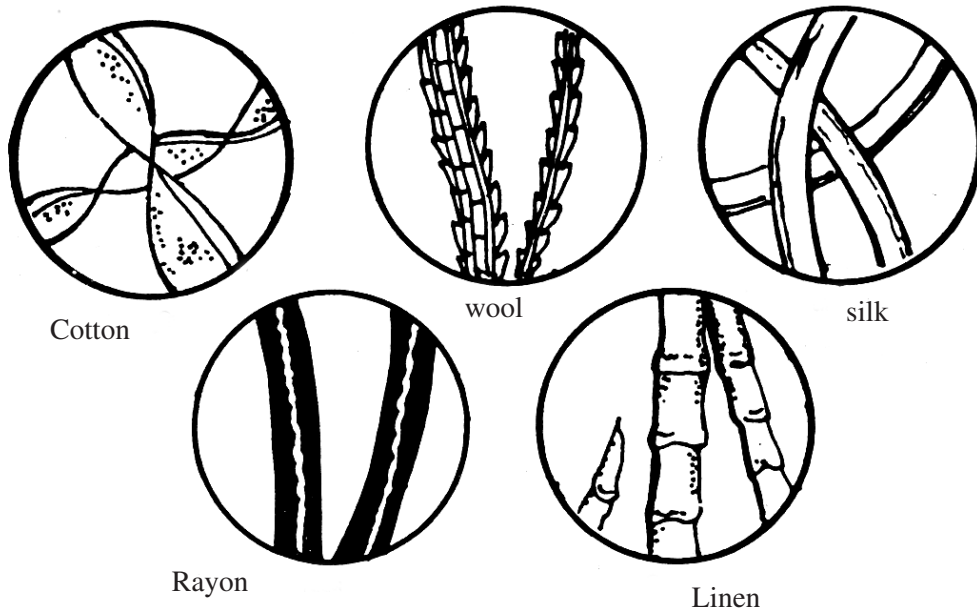
Nylon and rayon are artificial fibres so these can be extended as per requirement.

Classification of fibres as per length



Characteristics of Fibres

According to its origin and structure every fiber has its own characteristics. Due to their characteristics each fiber is used differently. So we should have a clear understanding of these characteristics.



Organization of fibers

According to its origin chemicals called cellulose form plant fibres. Animal fibres such as silk is produced by the following substances, i.e. fibroen, sericin, glue. On the other hand, a substance called keratin sulphur produces woollen fibres. There are certain types of fibres that have both plant and animal fibres. Yet others may be produced using chemical compounds.

Structure of various fibers

The characteristic of fibres can be divided into three groups:-

Elemental characteristics

Here we see the external properties of a fibre, how it looks, what is its length and breadth, how smooth, rough, dull or bright it is, what is its texture, strength, heat conductivity, water absorbance power, and elasticity etc.

Chemical characteristics

With chemical application the natural properties of a fibre changes. Various reactions occur with the application of acid and base to fibre. Heat and light also affect.

Functional characteristics

These include the advantages and disadvantages of the use of a fibre in its natural form. The details are given below-

Cotton fibre

Cotton thread is obtained from cotton fibres or yarn. Most countries of the world produce cotton. The cotton supplying countries are USA, India, Russia, Egypt, Pakistan, Peru etc. The soil and climate of Bangladesh is not very helpful for the

cultivation of cotton. So not much cotton is produced here. The best cotton is produced in Egypt.

From cotton flowers the seed pod produce cotton when ripe. This cotton is collected and the help of machine the seeds are separated. After processing the cotton is made into bundles and sent off to produce yarn and fabrics.

a. Elemental characteristic of cotton

1. The length of cotton yarn may vary from 2cm-6.5cm. Generally most yarns vary from 2cm-38cm in length. Thin and long yarns make good quality fabric.
2. Cotton yarn is not very bright. This yarn is treated with chemicals called mercerization to make it bright. So the mercerized yarn looks very shiny.
3. Cotton fibre is not as flexible as animal fibre. As cotton, fibre is not so flexible, any folds/wrinkles on cotton fabric do not disappear easily. But cotton yarn is more flexible than linen yarn.
4. The power of heat conductivity and connection is greater in cotton fibre. Being a good conductor of heat cotton fabric is very comfortable for use in summer.
5. Single fibre is not so strong. To make it more durable cotton fibre is braided and plaited. When dipped in water its strength increases by 25%. So it is not damaged when washed roughly.
6. If kept in a humid condition, mildew may form on cotton fabrics.
7. It is resistant to insect attacks.

b. Chemical characteristics of cotton

1. No damage is caused to cotton fabrics by normal heat. As such it can be dried under the sun or ironed.
2. Strong light affects cotton fibre. So excessive exposure to the ultra-violet ray of the sun damages the fabric.
3. Hot water does not affect cotton fabric. As such it can be dipped into boiling water mixed with soda.
4. Base does not affect cotton fabric.
5. Strong and thick acids destroy cotton yarn. If necessary, cold acid may be used on the cotton yarn and it must be immediately washed with water or base, so that effect of acid is lessened. Sometimes, hydrochloric or oxylic acid is used on cotton fabric to remove stains.
6. Cotton fabric is not much affected by bleaching.
7. The power to retain colour in cotton fabric is not greater than animal fiber. But cotton fabric can retain colour better than linen.

c. Usefulness of cotton fabric

1. As cotton fabric is durable and comfortable, all countries favour it.
2. Cotton fabric is used in many ways.
3. A variety of clothing are made by the fashion industry.
4. Cotton fabric can be taken care of easily.
5. Cotton fabric can be bought easily. So people from all income group can buy it easily.
6. One disadvantage of cotton fabric is its shrinkage affect.
7. Cotton fabric can be easily dyed.

Linen fiber

Linen is a material made from the fibres of the stems of the flax plant. This plant is about 1m in height. This fibre grows from the top of the plant to its roots. The plant is cut and put into water and after a few days the fibre can be obtained. The best linen is obtained in Belgium, Russia, Germany, France, UK, Holland. Switzerland also produces linen.

a. Elemental characteristics of Linen

1. Linen fibre is longer than cotton fibre. Short fibres are joined together to make 5-6m lengths of yarn.
2. Linen can be found in different colours. But most linen is irony, tan or gray in colour.
3. As the exterior of the yarn is smooth, it has a high natural luster.
4. Linen yarn is stronger than cotton yarn. When put in water it becomes stronger.
5. It has very low elasticity.
6. Linen fabric is cooler than cotton fabric because it has heat conductivity property.
7. It is resistant to moths and insect attacks.

b. Chemical characteristics of linen

1. In natural heat the colour of linen is not affected.
2. Comparatively light does not affect it much. But if kept for long time its yarn may be affected.
3. Thick acid has a bad affect on linen.
4. Soda, soap, bases do not affect linen.
5. Colour retention of linen is less than cotton.
6. All kinds of bleaching powder may be used.
7. It has the ability to absorb water. It can retain more moisture (20%) than cotton.
8. Because it has heat conductivity property, it tends to dry out quickly.

c. Usefulness of linen

1. As it easily shrinks it cannot be worn without ironing.
2. Linen fabric is durable, so it is very economical.
3. As linen fabric has a high luster, it has great appeal.
4. Linen fabric is heat conductive and comfortable. It feels cool on touch. This can be used in summer. In foreign countries, many sports clothing are made of linen.

Silk fibre

Silk is a natural filament fibre. The length of silk fibre may be up to 400-600 metres. Silk is obtained from the cocoon of the silk worm by removing sericin, a kind of gelatine.

Japan produces most of the silk. But the Chinese first developed the production of silk. Silk is also produced in Italy, India & England. In Bangladesh the best place for the production of silk is Rajshahi. Silk yarn is collected in the following way:

1. Silk obtained from the silk worm that is found in jungles and hedges and in the wild is called natural silk.
2. Silk that is obtained from the silk worm raised in a special place under strict planning and control is called sericulture.

a. Elemental characteristics of silk

1. The length of silk fibre is quite long, i.e. 400-600m
2. Silk fibre is smooth and bright.
3. The fibre is very strong. After nylon, silk is the strongest fibre.
4. The elasticity of this fiber is greater than the elasticity of cotton or linen fibre.
5. Silk fibre is more durable than cotton fabric. But in water silk becomes less durable.
6. Moth does not damage their fibre. But other insects may destroy/damage this fibre.
7. Mildew may form on silk.

b. Chemical characteristics of silk

1. Light has a bad effect on silk.
2. Silk turns yellowish if kept under excessive heat.
3. Silk is a bad conductor of heat. So, we feel hot when we wear silk clothes.
4. Silk can retain colour easily. So, silk does not get discoloured easily.
5. Strong acids may damage silk, but weak acids do not cause any harm.

6. Weak bases cannot damage silk, but strong bases may cause damage.
7. Weak bleaching may be used on silk, but chlorine bleaching will damage it.
8. It shrinks when it comes in contact with heat, pressure and moisture.
9. It shines when it is washed in hot water.

Usefulness of silk

1. Silk is a prestigious fabric. Due to its beautiful texture it is known to be a luxury item.
2. Silk comes in a variety of colours and designs.
3. Due to the length of the fibre, silk clothing is durable. If kept in good condition it has a long life.
4. Silk clothing is more comfortable than cotton clothing and remains warmer.
5. Silk is used for inside lining of a coat.
6. Silk clothing is lightweight and takes less space for storing.
7. Silk is very expensive. But if silk is mixed with rayon and nylon the price falls.

Wool

Wool is an animal staple fibre (short in length). It is obtained from the hair or fur of various animals. It is collected from the hair or fur of live and dead animals such as sheep, goat (Angora, Alpaca, Mohair, Kashmir) etc. It is then processed in the factory to form wool.

The best wool is produced in Australia. Other countries where wool is produced are Spain, France, Germany, UK, Argentina, NZ, USA, (western countries where the temperature is low).

a. Elemental characteristics of wool

1. The length of wool fibre may vary from 1.5"-14" (4-36cm) and its design is like fish scales.
2. Natural wool may be white, reddish, brown or yellowish in color.
3. Wool is not very bright in its natural form.
4. Wool is soft and highly elastic. When pulled it becomes longer and when released it comes back to its original form.
5. Moth destroys wool. Mildew also has a bad affect on wool.

b. Chemical characteristics of wool

1. It shrinks with heat, pressure and moisture.
2. It being a bad conductor of heat, it is very useful as winter clothing.

3. It retains colour very easily.
4. Small quantity of bleaching may be applied.
5. Due to space between fibre it can retain air. It is a good conductor of heat. So when we wear woollen clothes we feel warm.
6. When put in water it loses its strength.
7. It retains moisture very slowly. But it can retain lots of moisture. So it does not dry very easily.
8. Light acid does not affect wool.
9. Light base does not affect wool.

c. Usefulness of wool

1. Wool is a favourite clothing for winter all over the world.
2. Quilt, shawl and sweater etc are essential for all of us.
3. The slight brightness of good wool attracts us.
4. Different colours can be used.
5. It cannot be folded easily, but if folded once it can retain the fold for a very long time. As such wool is very useful for making suits.
6. It does not have wrinkles easily. So it is a good material for making trousers.
7. Generally, wool does not retain water. So if water falls on it, it will slide down.
8. Wool may be used for different purposes.

Rayon fibre

Artificial wool used in the 19th century is known as rayon now a days. This fibre is obtained from nature and chemically processed to make rayon fibre. Scientists who discovered rayon are Count Hilary and Lois Henry of France and British chemists Cross, Beval and Bedle.

The cellulose obtained from pulp of trees and cotton biters is chemically processed to produce rayon. There are three ways to process rayon

1. Nitro cellulose process.
2. Cuprammonium process
3. Viscose process

Rayon is produced in many countries of the world. In Bangladesh there is a rayon factory in Chandraghona of Ctg. Hill Tracts district. At first the raw material is boiled into a semi liquid form. After this the fibre forming liquid is forced through tiny holes in a nozzle. Finally these cool down to form fibre.

a. Elemental characteristics of rayon

1. Rayon is a man-made fibre. So the length of the fibre can be determined during production.
2. Viscose rayon is yellowish in colour, acetate rayon is colourless and cuprammonium rayon is white in colour.
3. This fibre is beautiful, smooth and tiny. It has a brightness of its own.
4. If it is wet it loses its strength. But if it is dried it becomes strong again. Its strength is less than silk.
5. It is less elastic than silk.

Chemical characteristics of rayon

1. Acetate rayon can resist light. Natural light does not affect viscose or cuprammonium rayon.
2. Acetate rayon dissolves with excessive heat. As such, rayon fabric cannot be ironed using hot iron, if it dissolves, it attaches itself into other material. The other two types of rayons also dissolve in excessive heat.
3. Weak acid does not affect rayon, but if heat is also applied to rayon it becomes weak.
4. Weak base reduces the brightness of acetate rayon. But the other two types of rayon are not affected.
5. It reacts to mineral salts. As such mineral salts are added to diminish the excessive brightness of rayon.
6. Viscose and cuprammonium rayon can retain colour. But special process has to be applied to add colour to acetate rayon.
7. Sometimes mould is formed but insects cannot destroy it.

c. Usefulness of rayon

1. It is a popular fabric because it can be used in different circumstance, time and activities.
2. It can be mixed with other yarn to make fabric.
3. Rayon is comparatively long lasting and cheap and can be bought at a variety of prices.
4. It can be made attractive by adding various degrees of brightness.

Nylon fibre

Nylon is a filament fibre. Among the artificial fibres, nylon is the most important. Its basic elements are carbon, hydrogen, oxygen and nitrogen.

Nylon is produced from coal, water and air by a process called polymerization.

Elemental characteristics of nylon

1. Under the microscope nylon looks like cuprammonium rayon.
2. Nylon is a very strong fibre. When put in water it loses 15% of its strength.
3. Its weight is very less.
4. Nylon is highly elastic.
5. It does not retain moisture.
6. Mildew and mould do not affect it.

Chemical characteristics of nylon

1. It melts when it comes into contact of sulfuric acid.
2. Base does not affect nylon.
3. Different colours can be added to it, just like rayon.
4. Normal light does not affect nylon, but excessive exposure in sunlight will damage it.
5. It becomes soft when heat is applied. Iron should be moderately warm in case of ironing.

Usefulness of nylon

1. Nylon is long lasting and durable.
2. Since nylon is strong and light, under garments and socks are made of nylon.
3. It can be taken care of very easily and washed and dried for regular use.

Exercise

Multiple Choice Questions

1. Which of the following is the source of silk?
 - a. Karpas cotton
 - b. Silk moth
 - c. Lamb fur
 - d. cellulose
2. Which of the following plant fiber has seeds?
 - a. Jute
 - b. Cotton
 - c. Mosina
 - d. Coconut fiber
3. The similarity between silk fiber and rayon fiber is
 - i. They both look alike
 - ii. They both belong to filament fiber group.
 - iii. They are collected from the same source.

Which of the following is correct?

- a. i
- b. ii
- c. i & ii
- d. i & iii

Answer questions number 4 and 5 from the following text:

Momtaz has made a dress to be used during rainy season. One day while ironing cloths, she ironed a cotton dress and then started ironing the new one. As a result, the lower part of the long sleeve got burnt.

4. The dress of Momtaz was made of
- a. Linen
 - b. Nylon
 - c. Rayon
 - d. Silk
5. If she wants to use the dress, she needs to
- i. mend it.
 - ii. use something on it as applique.
 - iii. cut short her long sleeve.

Which of the following is correct?

- a. i
- b. ii
- c. i & ii
- d. i, ii & iii

Creative questions

Kanak Chanpa is an owner of a boutique house. She sells dress made of natural fiber. She is very conscious about the quality of the dresses. This is why, when she buys dresses from her suppliers, she tries to be sure about the quality of the dresses. She believes that synthetic dresses are not comfortable to wear.

- a. What is fiber?
- b. What is meant by 'natural fiber'?
- c. Narrate the process that Kanak Chanpa applies to be sure that the dresses are made of natural fibers.
- d. Evaluate the statement "Synthetic dresses are not comfortable".

Chapter II

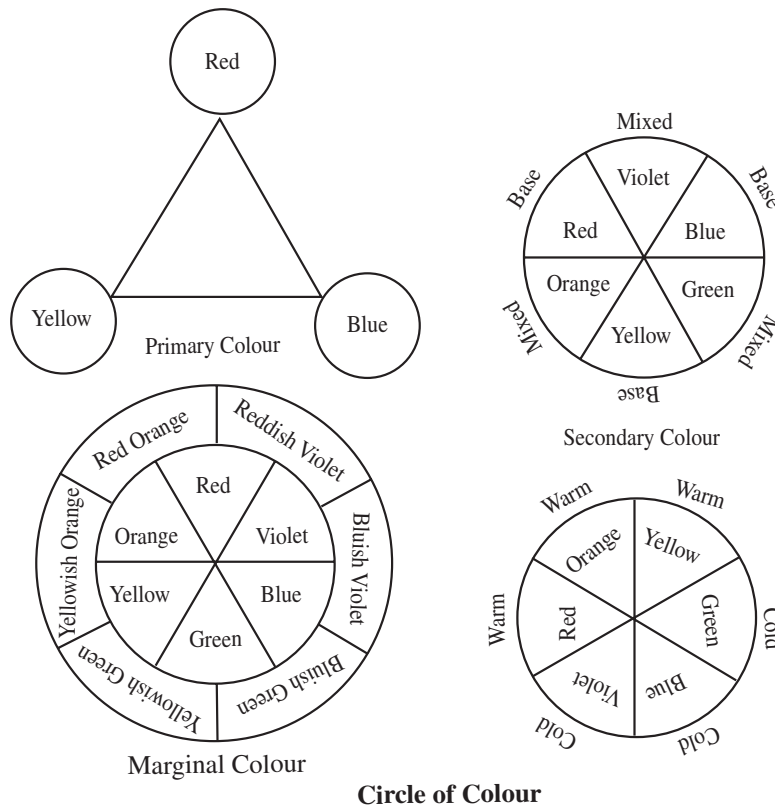
Importance of Colour, Line, Design and Texture in the Selection of Dress

Dresses are needed to increase the beauty of human body by covering the body with it. It is desirable to pay attention to the artistic aspects of wearing dresses according to the demand of time. The artistic elements like colour, line, design and texture etc. can greatly contribute in the beautification of dresses. Utility of these elements varies from person to person in the dresses they wear. Colour, line, design and texture that are used in dresses have impacts on the person's physical structure, appearance and complexion. The main purpose of wearing a dress is to make a person attractive by selecting the dress according to taste in a befitting way by adjusting physical appearance and complexion. For this reason, how art can be created by using artistic elements in case of dress and how colour, line, design and texture of dress can make impact on a person's physical structure, appearance, size and colour complexion etc. are mainly discussed in this chapter.

Colour Cycle

Colour has an important role in selecting dresses for different persons. If proper colour is not selected, the colour of a person's dress diminishes one's beauty. Again, selection of appropriate colour can make one attractive even if one wears a simple dress with appropriate colour. It is necessary to have sufficient knowledge on the characteristics and impacts of different colours for correct selection of colours depending on place, time and person. Correct concept of identity, classification and sources of colours can be attained by colour cycle. Then it can be said that the cycle through which one can have detailed concept of identification and classification of colours, is called colour cycle.

The source of colour is light. There are seven colours in the ray of sun; these are violet, blue, indigo, green, yellow, orange and red. In short, these, seven colours are called VIBGYOR. There are three primary or main colours, three secondary or mixed colours and six marginal colours in the colour cycle. Primary colours are red, yellow and blue. Mixing of this main colours subsequently makes other colour. It can simply



be said that by mixing two main or primary colours, the secondary colours are made and by the mixture or combination of one primary and one secondary colours, the marginal or fringe colours are made.

The things to be noticed in a colour cycle

1. Red, yellow and blue- primary or main colours.
2. Orange, green and violet - secondary or mixed colours.
3. Reddish orange, yellowish orange, yellowish green, bluish green, bluish violet and reddish violet - marginal or fringe colours.

Secondary colour is made by the mixture or combination of two primary colours. For example, orange colour is made by the combination of equal quantity of red and yellow colours. The mixture of red and blue colour makes violet colour. Green is made by the combination of blue and yellow. Therefore, it is observed that orange, violet, and green are secondary colours. Marginal or fringe colours are made by the equal proportion of combination of one primary and one secondary colours. For example, if the primary colour-red is being mixed with one secondary colour such as violet, then the reddish violet colour is made or produced. Thus -

Blue	+	Violet	=	Bluish violet
Blue	+	Green	=	Bluish Green
Yellow	+	Green	=	Yellowish Green

Yellow	+ Orange	= Yellowish Orange
Red	+ Orange	= Reddish Orange

Again, according to the strength of colour, two classes of colours are obtained from this cycle. For example;

- a) Hot colors - Red, orange and yellow class of colours
- b) Cold colors - Green, blue and violet class of colours.

The quality and depth of colour can also be mentioned during the description of colours. The quality of colour means whether the colour is deep or light. In a specific colour, light and deep both conditions are present. When blue colour becomes navy blue, its quality possesses deep colour. Again sky blue or indigo has the quality of light colour of blue. Pink and dark brown colours are respectively light and deep states of red colour. Similarly brightness and dimness of colour are mean the colour's depth. Bright colours are red, orange and yellow. On the other hand, dim colors are within the class of gray and ash.

Impact of colours on skin and physical structure

Clothes are needed to cover the body and to make a person attractive to others. Skin colour and physical structure are not similar for every person. Moreover, it has been observed that diversified impacts of colours through clothing that are worn has a special significance. Due to the impact of colours, sometimes a large object appears small. Again a small object appears large. A person can be made attractive by selecting appropriate colours of clothing. Deep colour clothing should be selected for those whose physical structure is short. Because apparently, deep colour appears large.

Again for fat and tall structured person, light coloured clothes are suitable. Because apparently light colour appears small. The light and dull colours make an object farther than its actual existence. Again bright lustrous colors, when used, bring distant objects nearer to our vision. Hence, the colour of clothing should be selected considering the physical structure. Girls, who are tall, well shaped; healthy and bulky should put on clothing of light colours so that they appear slim and smaller. On the other, for thin and short structured girls bright colours are suitable. This makes them appear larger than what actually they are. Again when a short structured girl puts on a saree and blouse of the same colour, she looks relatively taller.

If she puts on a saree and a blouse of contrast colour, she will look shorter. The appropriate selection of clothing also has great impact on a person's personality. A girl of quiet nature will look dull and feeble if she wears light and dull coloured clothing. She should wear bright and dark colours.

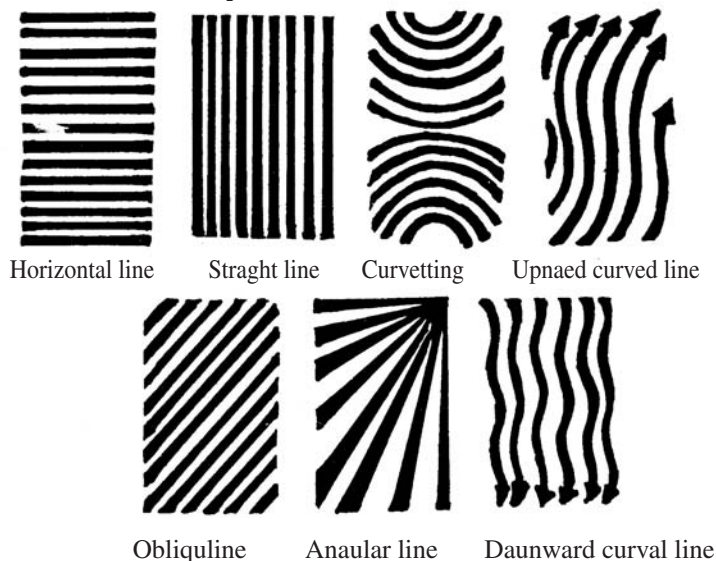
A girl of bright complexion can wear clothing of any colour. However too bright colours will make the normal colour of her skin dull. Girls of dark complexion should use clothes of light but bright colours.

Impact of lines on physical structure

There is an assembling of various lines in clothing. Many types of lines are used in structural and ornamental designs of clothing. For example, long, round, bent rod like, circles, oblique etc. Clothing is made by the application of various types of lines as per the necessity of the body. If someone likes to know the impact of lines, he/she has to learn first the various types of lines and their characteristics.

Characteristics of various types of lines are given below:

1. Straight line- it indicates honesty, courage, intensity, objective endeavours.
2. Curved line- indicates softness and promptness.
3. Upward curved line- indicates joy and delight.
4. Downward curved line- indicates distress and discouragement.
5. Horizontal line- indicates rest and comfort.
6. Oblique line- indicates restrain
7. Angular line- indicates vitality of life.



By using different types of lines, varieties in clothing can also be made. The use of lines are seen in the texture of clothing like along the ends, neck-cuts, length and breadth or arms, waist, chest, length and breadth of body, long cut-ends in front and back, shoulder lines etc. Again in designed lines, small plates, piping, bows, creases, frills, fabric joint of brocks, neck bow, collars of frocks, pocket, borders of sarees, collars of coats etc are seen. Besides, stripes, check and repetition of lines in fabrics make the design more beautiful.

The line-rods are joined the base longitudinally. Hence several line-rods or long lines in adjacent arrangement bring about a tall look in the design of the clothing and the person with this clothing looks tall. On the other hand, horizontal lines always are

parallel to the base. If horizontal lines are placed one after another, it brings about a wide-look in the design of clothing and the person wearing such clothing looks apparently short.

Curved lines reduce the length of the person who wears such type of clothes but it brings rhythm and creates elegance in clothing. Rhythm can also be brought about along the neck through the use of lines. Repeated use of lines also creates rhythms in design. The person who maintains consistency in the arrangement of contrast lines in clothing, he/she can be imparted with spontaneity. Use of lines in clothing can cause apparent changes in the physical structure of the person who wears it. For example, for bulky and short size girls, use of vertical long lines is appropriate in clothing. Use of horizontal lines in clothing makes the person bulky and short.



Use of lines



Impact of lines

Hence it can be said that-

1. Vertical lines of clothing apparently increase the height of the person who wears it.
2. Horizontal lines apparently decrease the height of the person who wears it.
3. If the lines are nearer to the face of the person who wears it vertically, he/she will seem to have a long facial appearance.
4. Use of curved lines make the length less and through this, softness is expressed of that person who wears it.
5. Deep V- cut lines seem longer. For example, many people wear clothes, who make the design of neck as V-shaped. But wide-shaped V brings about a wide and flattened look in the appearance.
6. Broken lines do not leave for reaching effects and hence, long vertical lines when used in clothing in broken conditions make the body long.

So, it is found that different types of lines according to nature and characteristics have a wide impact on the physical structure of person and also it makes him/ her attractive.

Impact of texture on the designs of clothing

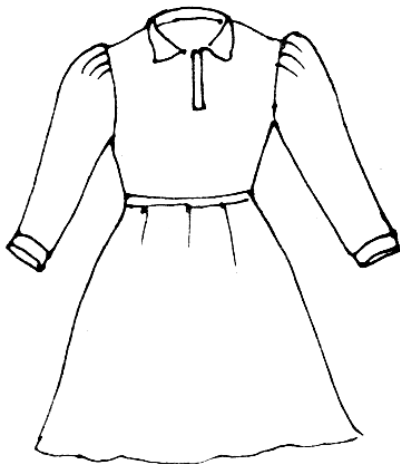
For a long time, various types of designs have been used in clothing in order to enhance physical beauty. Various designs in clothing are found depending on country, time, man, woman and person. Girls wear sarees, blouses, petticoats, salwars, kameezes and dupattas of different designs. Boys wear shirts, pants, pyjamas and panjabis of various designs. With the change of time, designs of these clothing also changed and name of the design in clothing is also changed. Different types of arts are now used in making design in clothing. With new sort of artistic design, it makes clothing more useable and keep balance, similarity, rhythm, preference, unity or coordination among design in clothing.

The impact of texture in constructive and decorative design is significantly visible. Texture of clothing means how much the fabric is coarse, thin/height, softness, roughness etc. There are different types of texture in fabrics based on varieties of uses.

1. Textures of fabrics are of various types due to the nature of threads. For example, textures of cotton, woollen, jute and silk fabrics are different from each other.
2. Textures of twin thread, khadder, molmol, markin, moslin etc, fabrics are different due to difference in weaving processes.
3. Textures of fabrics become difference with the help of finishing process. For example, mercerized cotton etc.

All types of designs do not become suitable for all types of fabrics. For this reason designs have to be made depending on textures of fabrics based on clothing. For

example, the texture that is applicable for saree is not suitable for pants and shirts too. Moreover, the same texture cannot be used for pants and shirts too. The texture of skirts is not suitable for tops. Thick and of rough textured textiles cannot make themselves much suitable if it is used to create smooth designs in clothing. Again in smooth textured clothes any type of colour appears very shining. In non-smooth textured textiles when colours are imparted, it looks light and blurred. Designs made on clothing of fine textured become more attractive. Twin threaded fabrics made by cotton and handloom fabrics are non-smooth in somewhat. Mill textiles are smooth and thin, mercerized cotton fabrics are also smooth in character. Silk fabrics are smooth and bright, so these are not suitable to use at home. If it is desired to make designs on clothing by using several fabrics, similarity should be maintained among the textures of all fabrics. If smooth and non-smooth fabrics are joined together in making design on clothing, the design does not appear attractive.



Structural



Ornamental

But although blue jacket or woollen sweaters are of different texture, the combination of this with thick jeans made of blue cotton is not unsuitable. Since, both of them are thick and mostly non-smooth, though these do not have entirely similar textures.

It is not always possible to make bloom fine designs on all types of textures. Piping also does not fit in fabrics of thick and non-smooth texture. Any sort of design can be easily made attractive on fabrics of soft, light and smooth texture. But the same design does not look beautiful on thick and rough texture. It is necessary to give importance on texture of fabrics while making designs. All types of designs are not appropriate for all textures. Hence texture of fabrics is needed to be selected according to the design. In this way, it is possible in many cases to create attractive designs in clothing.

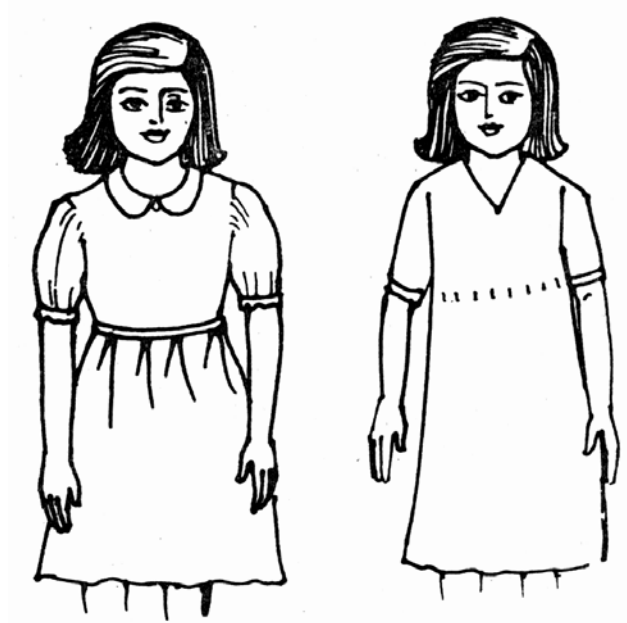
Impact of structural and ornamented designs on a person's body

The word body means physical structure, formation of body, shape, facial shape and size of human beings in a collective way. For example, body or feature means, whether a person is tall or short, fat or slim, facial shape is round or long, i.e the overall physical structure of human beings. Hence it can easily be assumed by following the previous discussion that one needs to put on clothing by maintaining consistency with one's body or features. However specific discussions have been made at this stage about the impact of structural and ornamented designs on human body.

Structural designs are those that are created through various cuts of clothing. Examples of structural designs are mini frock, long frock, kameez, wide circumference spread out kameez, punjabi, small arms, long arms etc. Again cutting like round neck, square neck, V- neck, punjabi neck, collared neck etc. are important. Ornamented designs are those when creases, freals, needlework, lace fixing, prints etc. make clothing more attractive.

Both structural and ornamented designs have significant impacts on the body of a person. Distinctive nature of a person is expressed through the person's facial structure and appearance. If the cut of neck of the clothing is done based on the facial structure and appearance of a person, it may make the person more attractive. Especially for selection of clothing for women and adolescent girls, the facial structure should be given importance. By wearing mini frock, a person looks short while long frock makes one look tall. Any sort of cut is suitable for a long facial appearance. If the face is round then V- cut neck or deep cut U- neck makes the face look long. The picture shows a girl wearing clothing of two types of neck cuts. One is deep V cut neck and the other is a round cut neck with collar.

A number of inconsistencies of one's, feature or body can be covered through structural designs and ornamented designs of clothing. Example may be cited of those who have short neck. They can appear to have still shorter necks if they put on clothing having collared round cut necks. On the other hand, for them clothing with wide cut, V or U cut necks are suitable. If fat people wear high collared clothing, they will look fatter. Again frocks or blouses with high collar is suitable for thin and tall girls.



Impact of design on body structure

Clothing for boys such as shirts, and punjabis with structural designs are usual and well accepted to all. But different persons like different designs regarding print on fabrics, needlework in ornamented design. For boys clothes also should be selected based on features or bodies. It will be more inconsistent if large prints or heavy designs are selected for fat people. For them small prints and light designs are suitable.

In this way structural and ornamented designs have their impacts on physical structure of human beings. Hence, designs of clothing should be chosen by keeping similarity with the appearance or the body of a person.

Exercise

Multiple Choice Questions

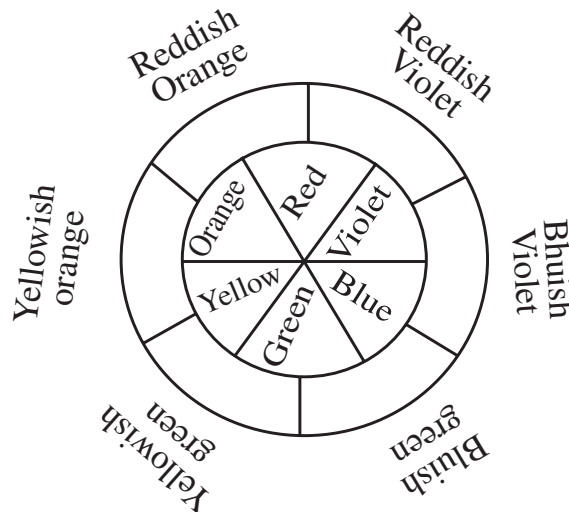
1. Shima has a round face and dark complexion. She is short. Which type of neck-cut is suitable for her?
 - a. round cut with collar
 - b. V-shaped deep cut
 - c. U-shaped deep cut
 - d. small high collar

2. Which type of stripe and colour a girl should wear who is tall, dark complexioned, and gentle but wants to have a slightly short look.
- mixed colored vertical stripe
 - bright coloured curve lines
 - bright coloured vertical stripes

Which of the following is correct?

- i
- ii
- i & ii
- i, ii & iii

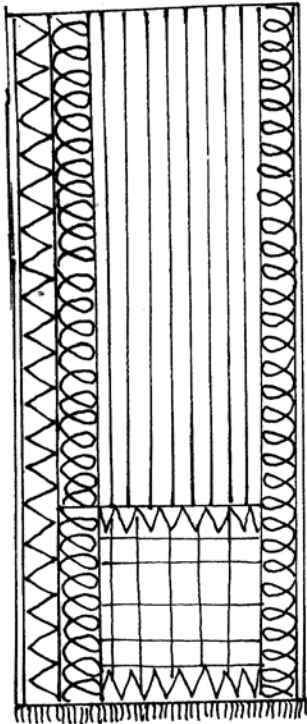
Colour diagram:



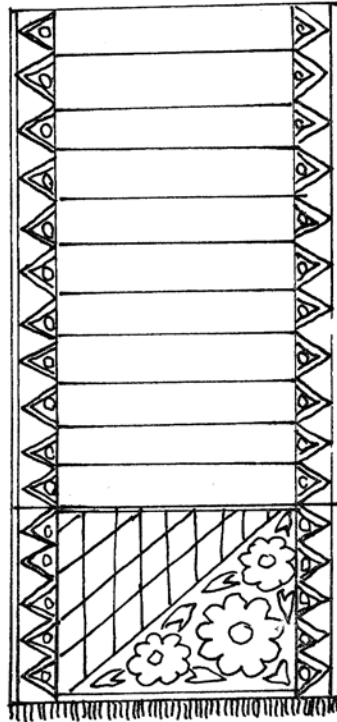
The picture is for questions no 3 - 5.

3. Which of the following is a mixed color?
- violet
 - blue
 - red
 - yellow
4. Yellow mixed with blue produces
- yellowish orange
 - yellowish green
 - reddish violet
 - bluish violet
5. Rahima is short sized. Which colour is suitable for her winter dress?
- bright yellow
 - light yellow
 - bright blue
 - light blue

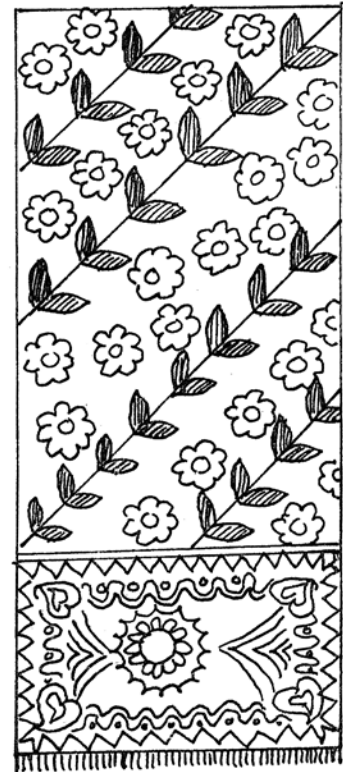
Creative questions



1



2



3

- Which of the pictures above is ornamental designed?
- Woman of which physical qualities is the picture no 2 suitable for ?
- How can the design of picture no 1 be applied to other dresses (salwar/kamiz)?
- How does the horizontal lines affect our personality? Explain.

Chapter III

Personal Hygiene and Tidiness in Clothing

It is a natural and eternal desire of human beings to present themselves in an attractive way before others. This desire is achieved by dressing up their body in various ways. Body means one's physical structure and health and dressing up means tidiness in clothing. When a person possesses a good physical body and dresses up appropriately, that person becomes more attractive than others. The very first thing that a person requires to be attractive is the possession of a healthy body. In order to possess a healthy body, we need to keep our body clean and take good care of it. The main discussion on personal hygiene and tidiness in clothing are discussed in details in this chapter.

Objective of personal hygiene

The human body consists of many organs. The different organs are hands, legs, teeth, eyes, nails, ears, nose, neck, hair, skin etc. Cleanliness and care of these organs are called personal hygiene. There is an inseparable relationship between personal health and personal hygiene. Similarly, cleanliness of clothing also has a relationship with personal health. Health is wealth and a source of happiness. If the body remains healthy, a person can enjoy life. A healthy person has unlimited work power and happiness of mind. Health is not only a personal wealth but a national wealth as well. Because, sick people cannot build a nation that is best in education and cultural activities. Moreover a healthy person is himself beautiful, a maker of beautiful things and a worshipper of beauty. In this way a healthy person can establish himself in society as an attractive person. In order to be healthy and attain good health, a person should take care of each organ of the body. In general terms, the objective of personal hygiene is to keep one's body healthy. If we observe very closely, we will see that a person who takes care of his teeth has a well-structured set of teeth. His smile and words become attractive to others. Similarly, a person with beautiful hair and skin becomes attractive to other by wearing decent clothes. In the eyes of an artist, the main objective of being attractive to others is the maintenance of personal hygiene.

Rules of personal hygiene

Hands

When we talk about personal hygiene, the first thing that comes to mind are our hands. Because when we do any work, we have to use both our hands. So others see our hands. It may also be said that hands can attract others. The hands become dirty,

as we have to do many types of work with them. So everybody should take care of his or her hands after doing some work. We should wash our hands with soap to keep our hands clean. Due to our workload if we have to wash our hands often, we should use a mild soap that contains less base and wipe our hands with a soft towel. Due to excessive use of soap, our hands may become rough and cracked. As such, during winter we should use lotion, glycerin, cold cream or oil after washing our hands to keep them smooth. While chopping vegetables, our hands get stained and also during cooking our hands get stained with turmeric and other spices. So we should be careful about these stains. It is better to wear gloves during chopping and cooking. This will keep our hands clean. To keep our hands strong, well built and operational we can do some hand exercise early in the morning.

Legs

Of all the organs legs become dirty because of walking. So we should clean our legs regularly and take good care of them. If we do not clean our legs regularly, our heels get cracked and those dirt may accumulate and cause damage to it. When we return home everyday we should wash our legs with lukewarm water and soap. If all the dirt is not washed we should use an old toothbrush to take off the dirt. After washing we should dry our feet with a towel and apply lotion, glycerin and oil. This will help to keep our sole and skin of feet very smooth. It is best not to walk with bare feet. Many people suffer from cracked feet and hands in the winter, so we should take good care of ourselves to avoid this problem.

Teeth

It is said that teeth are a valuable treasure. We use our teeth to chew our food. Teeth also enhance the beauty of our face. A beautiful set of teeth and bright smile with shiny teeth and words is pleasing to all. So it is necessary to clean our teeth to keep them healthy and long lasting. When we chew our food, some parts of the food get stuck between our teeth. So it is necessary that we gargle after eating so that the food particles come out. Otherwise these food particles will come in contact with saliva and start to rot. Then in turn, it will cause foul smell in the mouth, cause toothache and stomachache. So it is necessary to brush our teeth before going to bed at night and after getting out of bed in the morning. Many people in the villages use the branches of neem and other trees like babla and joitun to clean their teeth. At present these are also available in the cities. These branches are very useful to clean our teeth. Due to the advancement of science in the present day most people in the cities and villages use toothbrush, toothpaste and tooth powder to clean their teeth. In that case, we must be careful that the toothbrush is not very sharp and hard, the brush reaches all parts of our teeth and that all food particles are cleaned properly. Some people use ash, coal,

and brunt clay to clean their teeth. These actually damage their teeth. The enamel of the teeth gets destroyed and the teeth get decayed and come off prematurely. It must be remembered that the first step to get a well-structured and bright set of teeth is to have a clean mouth.

Eyes

Among the five senses in humans i.e eyes, ears, nose, tongue and skin, the greatest are our eyes. As the saying goes, he who has no eyes has nothing. Without eyes a person cannot enjoy the beauty of this world. Besides this, beautiful eye sight also helps a person to attain a beautiful personality. Among all the organs in a human body, the eyes are the most delicate, complicated and sensitive organs. A slight carelessness can cause serious damage to our eyes. Strong and very bright light or less or dim light, both can damage our eyes. If we want to take good care of our eyes, we must wash our eyes with cold water every morning. There are certain rules to be followed, if we want to keep our eyes healthy. These are- when we read or do any other delicate or minute work we must see that there is appropriate light. While reading or sewing we must keep a reasonable distance from the object. The best distance from the eyes is about 10-12 inches. It is not advisable to read very small, hazy or illegible writing. It is also advisable to rest the eyes after study or sewing for a long time. If we keep our eyes closed for a few minutes, the eyes get some rest. Blue and green help the eyes to overcome stress. As such, it is necessary to stare at the green grass and trees for the benefit of our eyes. We must eat foods that contain Vitamin-A. If tears come out of our eyes, or if they scratched or become swollen, we should immediately consult a doctor.

Nails

In order to be healthy, it is very important to take care of our nails. If our nails become big, dirt will accumulate in our nails very easily. If we do not clean the dirt in time, this will go into our stomach while eating and cause stomach problems. If we touch food with dirty fingernails, many germs will get into the food. Many people bite their nails with their teeth. This is a very bad habit. If we bite our nails, the shape of the nails become bad and also the dirt goes into our mouth. If the nails are not in good shape, these cannot be decorated. The hands look ugly. Even if ornaments are worn, the hands do not look attractive. So in order to look decent we must take care of our nails. To take care of our nails regularly we should use a nail-cutter, scissors and brush. The nails may break or become stained due to various illnesses. In that case, we should consult a doctor. If we eat foods that contain calcium, phosphorus and protein, our nails remain healthy.

Hair

Hair is a symbol of beauty for the Bengali women. Shiny, smooth, thick and dark hair enhances the beauty of the face and attracts others. Beautiful smooth hair is a sign of beautiful mild mannered personality. For these reasons, we should take care of our hair together with our clothes. We must take care of our hair regularly. We should wash our hair with mild soap, water of soaked mushur dal (lentil) and shampoo. We should wash our hair once a week. We should regularly brush our hair. This enables blood circulation at the base of the hair and makes them strong. If we regularly brush our hair then dirt, dandruff and lice attack will be at a minimum. In order to get rid of dandruff and dead skin, we can wash our hair with limejuice, water boiled with neem leaves, amlaki, yoke of egg and ground methi. We should apply oil in our hair to keep it strong and smooth. If the hair is thick and tangled we should use our fingers to apply oil. Each one should use a different comb. Otherwise one person's dandruff or lice may be transferred to another person. Nutritious foods with vitamins should be eaten to have shiny hair and to avoid hair loss.

Ears, nose and throat

To keep one's body healthy it is necessary to take care of the ears, the nose and the throat. Like the ears, the nose and the throat are placed very close to each other. They are specially related. Due to cough and cold these organs become badly affected. We breathe through our nose. Dried mucus forms dirt inside the nostrils.

We should clean our ears and nose with cotton buds regularly. We can also use mustard oil to soften the dirt and clean it easily. If water or insect gets into the ear we should immediately consult a doctor. Loud noise may damage the eardrum and make us deaf. To keep our voice sweet we should always control our voice. If we catch cold, we should refrain from speaking. In this condition we should use hot water and salt to gargle our throat. But if this condition becomes persistent, we should consult a doctor. We should remember that speaking in a sweet voice our personality becomes attractive.

Skin

The external covering of a human body is the skin. Naturally the smoothness and beauty of the skin comes into focus first of all. The smoothness of the skin shows the signs of a healthy body. The beautiful skin together with decent clothes enhances the personality. Cleanliness is the first step to take care of the skin. The care, cleanliness and health of the skin depend on bathing regularly. We should change our sweat soaked clothes everyday. We should never use very hot or very cold water while bathing. Mild soap should be used for bathing. Soft towel should be used to clean and

wipe our body. We should wash our hands each time we come home from outside. We should use olive oil, glycerin and cream to keep our skin smooth and soft. For rough skin we should apply milk cream, orange peel and raw turmeric paste to make the skin soft. In the winter when the skin becomes dry, we should take good care of our skin then. To keep our skin beautiful, smooth and bright we should eat foods that contain protein, vitamins, mineral salts and also drink a lot of water. This avoids constipation, pimples and other skin diseases. Girls should take good care of their skin during their menstrual period. They should bathe everyday and change all clothes everyday. On this depends the beauty and health of a girl's skin.

To bring completeness in our physical appearance and clothing we should keep all our organs, clean, beautiful and healthy. If we do not stand or sit in an upright position even our fine clothes will not be visible to others. Crooked physical posture is bad for health. A good physical posture builds our physique and enhances the beauty of our clothing. So we should be careful about how our children stand, sit and walk. We should try to know what others think about our physical posture. Then we should see ourselves in a mirror and try to rectify our posture.

We lose our personality if we stand in a bunched position. We should stand straight on our two feet, keep both feet parallel, keep both shoulders straight, hold our chin high and keep our eyes to the front.

To sit in a slouched position means to have a bad physical structure. To sit properly we must see that the height of the chair and table are comfortable for our work. When sitting, to keep our backbone straight we should sit up and keep our back and waist pushed against the backrest of the chair. We should hold our head and chin high. To get up from the chair we should place our feet one in front and the other at the back and then get up.

To keep ourselves healthy and beautiful our walking posture should be easy and comfortable. If we walk in a slouched position, we would have a bad effect on our physical appearance.

Cleanliness of clothing

We should try to keep our various organs clean and at the same time see that our clothes are also clean. A person's health depends on the cleanliness of clothes because clothes are attached to a person's body. So it is necessary to wear clean clothes. We can never be decent if we wear dirty cloths. So each person should wear clean clothes. Sometimes it is seen that some people wear clean clothes on the outside and wear dirty under garments. It is absolutely necessary to wash and clean our under garments to maintain personal hygiene. It is not wise to keep the used cloths in a crushed

manner. In order to maintain cleanliness of clothing we should regularly wash them, iron them, repair them and keep them stainless.

Rules of tidiness

We can achieve tidiness by bringing together a person with his clothing and cosmetics. To bring tidiness we should take care of our clothes by washing, ironing and mending them. We should also choose and wear contemporary clothes. Tidiness in a person blossoms when that person maintains personal hygiene, possesses a good physical posture, speaks articulately, wears contemporary clothes, dresses up fashionably and maintains a decent wardrobe of clothes. It is not necessary to wear expensive clothes to look decent and tidy. Wearing up to date clothes and keeping the hair tidy make a person look decent and tidy. So we should maintain certain rules to achieve decency. These are rules of tidiness, for example:-

1. We should always wear clothes that suit us. This means that when choosing clothes we should keep in mind the person's age, body structure and skin colour. This is because all types of clothes do not suit all people.
2. We have to keep an artistic mind in choosing our clothes. A person can also be attractive on special occasion by wearing simple clothes added with light cosmetics and jewellery. So it is possible to achieve decency in wearing clothes by choosing the right colour, design or jewellery.
3. It is advisable to discard socially unacceptable costumes or dresses.
4. Wearing contemporary and new designed clothes in a modest and tasteful manner is pleasing to all. As a result the person wearing these clothes becomes happy.
5. It is very important to see that the colour, lines and material are in unison so that it looks decent. For example, the blouse should be in good combination with the saree, the orna should match with the salwar-kameez. This will prove the taste of the person wearing these clothes.
6. To bring decency in clothes, other accessories must also be chosen with care. These include shoes, handbags, handkerchiefs, jewellery and cosmetics. Not wearing shoes spoils the show. Wearing sponge sandals with expensive clothes look bad. On the other hand, wearing pencil heels with school uniforms also looks tasteless. The handbags and handkerchiefs should also match with the colour of the costume. Decent and matching jewellery and cosmetics should be used. Light make up and cosmetics should be used during the day rather than the night. On the whole, decent and matching clothes and cosmetics should always go hand in hand. These may be called the rules of tidiness/decency in dressing up.

Exercise

Multiple Choice Questions

1. Personal hygiene includes
 - a. Brushing teeth and cutting nails
 - b. making rooms and beds
 - c. taking bath and washing cloths
 - d. trimming hair and cooking
2. A dress is considered good if it
 - a. fits with the shape and size of a body
 - b. is costly and fashionable
 - c. is of light colour
 - d. is of current fashion
3. To make a dress good, which of the following is needed?
 - i. It should be artistic.
 - ii. It should be elegant and of good taste.
 - iii. There should be good combination among colour, lines and base.

Which of the following is correct?

- a. i
- b. ii
- c. i & iii
- d. ii & iii

The following text is to answer questions no 4 - 6.

Rina is a student of class seven. She does not take bath regularly. Sometimes she does not wash her hair once in a month. She is hunchbacked while walking.

4. Rina should not be hunchbacked while walking because
 - i. It curtails the beauty of her dress.
 - ii. Her backbone may bend.
 - iii. She may have trouble in sitting on a chair.

Which of the following is correct?

- a. i
 - b. ii
 - c. ii & iii
 - d. i, ii & iii
5. How many times should Rina wash her hair?
 - a. once
 - b. twice
 - c. thrice
 - d. four times

6. If Rina goes her days in this way, she will suffer from
- i. physical inertia
 - ii. loss of glamour of her skin
 - iii. skin diseases

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Creative questions

Pushpo is a student of class six. She is not regular in brushing her teeth and taking care of her feet. Nobody in her class wants to sit beside her. Once her tooth gum swelled up. So, her father took her to the doctor. The doctor suggested her to root out a tooth.

- a. What is personal hygiene?
- b. Why doesn't any one want to sit beside Pushpo?
- c. Explain how could Pushpo avoid root outing her tooth?
- d. Analyse what kinds of difficulties Pushpo may have in future?

Chapter IV

Washing Clothes

It is only natural that the clothes will get dirty when these are used. So to keep the clothes clean, these should be washed regularly. If clothes are not washed at the right time they will lose their shape, design and brightness. Expensive clothes may also become useless. Usually we wash clothes with soap, soda powder and with natural washing colour. These are natural cleansing materials. It is not enough just to wash clothes. To bring back the shape, design and brightness of clothes, these are needed to be washed with indigo, starch and ironed should be well. There are two main objectives of washing clothes.

1. to wash the dirty clothes with soap or detergent to make them clean again.
2. to bring back the clothes to their original form, use special materials.

Materials used to clean clothes

We use different clothes all the time. After wearing for a few days these become dirty and crushed and become unusable.

We can use a number of cleansing materials to clean our clothes. These are given below :

Soap, detergent, synthetic detergents, soda, ritha, borax, ammonia, starch, boiling water starch, cold water starch, indigo, vinegar, common salt, methylated spirit, Gum Arabic, French chalk and fuller earth.

Soap

Soap is a surfactant used in conjunction with water for washing and cleaning clothes. Soap is manufactured by mixing certain fatty acids, such as palmitic acid, oleic acid etc. with caustic potash or caustic soda. This chemical mixture forms a kind of potassium or sodium salt. This salt is called soap. Many kinds of soap are available in the market. The soap that contains too much caustic soda is not good for washing and cleaning clothes.

To clean clothes, soap should have the following characteristics:

1. The soap will not be yellow or deep in colour.
2. The soap will be hard; so that if we press our finger on it, it will not develop a hole.
3. If we observe a powdery substance on the body of the soap, we should be aware that it contains too much base and is very harmful to our clothes.

Soap slakis

As soap slakis do not contain too much base, these are useful to wash silk and woolen clothes.

Soap powders

Soap powder has the power to clean clothes better than ordinary soap. But soap powder of different brands contains too much base. As such, we should not use these to wash expensive silk and woolen clothes.

Bran water

Husk or bran water is also used as a cleansing material. Colourful and printed clothes such as chintz and cretonne are washed with bran water. Bran is also known as husk. Soaking bran in a piece of cloth produces Bran water. When that water turns in brown colour we get bran water. Husk is also used for dry cleaning.

Borax

The detergent named Borax is not available in our country. Borax is found in Tibet, Peru, Chile etc. At present borax is produced from sodium carbonate boric acid. Liquid borax contains base so it is effectively used to strengthen and brightens clothes.

Ammonia

Ammonia is also called liquor ammonia. A pungent gas mixed in water is available in the market. Hard water that is used for cleaning white silk and woolen clothes is made softer by using ammonia. Coloured clothes are not washed in this type of soft water as it may cause the clothes to get discoloured. This may be used to clean stains on clothes.

Starch

Starch is obtained in great quantity from rice, potatoes and corn. By using starch, clothes get back their natural strength, and brightness. Clothes do not get dirty easily when starch is used.

Indigo

Clothes become yellowish after washing. In order to get rid of their yellowish presence indigo is used to get a light blue white appearance. Ultramarine, prussian and indigo blue are available in the market. These are used for washing clothes.

Indigo is found in both hard and powder form in the market. To use this for washing clothes, it must be taken in a small piece of cloth and mixed in water.

Vinegar

Vinegar is used in the cleansing material to get rid of the excessive blueness of clothes. Vinegar is also used to bring back the colour in discoloured clothes.

Common salt

Common salt may be used while washing coloured clothes. This will not affect the colour. It is also used to clean stains on clothes.

Gum Arabic

Gum Arabic is used to strengthen and brighten silk clothes.

French chalk and fullers earth

This is a kind of powdery, detergent. This powdery material is used to take off the oily dirt from clothes.

Synthetic detergents

Detergent is a non-base material used for cleaning clothes. Silk, woollen clothes etc. can be easily cleaned with detergent. Coloured clothes do not lose their colour.

Paraffin wax

It is a by-product of petroleum. Mixing sulfuric acid with paraffin wax produces detergent.

Washing soda

Generally, people call washing soda 'soda' and scientists call it sodium bicarbonate. This is produced by chemical reaction by mixing carbon dioxide and ammonia gas. Soda is used to soften hard water. It is also used to take off fruit stains.

Rita nuto

Since ancient times the fruit named rita nuto has been used as a cleansing material for silk and woollen clothing. This is the fruit of a kind of tree and is used for washing expensive and fine clothes. Rita nuto contains a material called saponin. To bring back the natural size and design of clothes after washing, certain helpful items are used. These are indigo, starch, vinegar, salt, lisapol etc. After washing clothes with detergent, these helpful items are used as per requirement. Indigo helps to attain brightness in clothes. As such it is used after washing white and coloured clothes, especially cotton materials. Starch may be of different types, such as arrowroot, gum arabic and flour etc. By using these, the shape and strength of clothes are easily maintained. Vinegar, salt, lisapol etc. items bring forth the brightness of clothes. These are also very helpful for maintaining silk and woollen clothes.

Before washing clothes there are certain aspects that should be first considered.

a. Selection of clothes

Beside the clothes we wear, we use many kinds of clothes in our everyday life. These are made of different fibres, are of different colours and different sizes. Some clothes attract too much dirt, some are slightly dirty. So, before washing the clothes we should select and separate the clothes according to their fiber, colour, size and dirt.

b. Repairing clothes

Before washing the clothes we should check if it is torn, detached or if the buttons are missing. We should first repair these, especially buttons. Clips etc. of army or police uniforms should be removed before washing, so that these are not damaged.

c. To get rid of stains

Certain clothes may be stained and may look odd to others when worn. These stains should be removed at first. Because if these stains come in contact with soap, detergent and water they may become permanent. These stains may not be removable completely.

d. Selection of cleansing material

Depending on the cloth, design and dirt of the clothes to be washed, we should select tough soap, soft soap, powdery soap, soda etc. The temperature of water is also an important factor. According to the material of clothes, we must either use hot, lukewarm or normal water. To increase the brightness of clothes we can use blue, starch, gum arabic etc.

e. To keep the washing item in a good place

Before washing clothes we should keep all washing item near at hand. This is very helpful in our job. After completing the washing job we should keep all items neatly and in a particular place, so that next time we can easily find these items quickly.

- The dirty clothes should be separated .
 - If any clothes are torn these should be mended soon.
 - If there are any stains on the clothes, these should be first removed, then washed.
- Different clothes are made of different materials.

We wear different clothes for different functions, occasions and jobs. Different washing system are followed for different types of fibres and clothes. We will discuss the system or washing of silk, woollen clothes in this chapter.

Washing of silk clothes

Before washing, white silk and coloured silk clothes should be separated, because the colour of coloured silk clothes may fade when kept in water for a long time and spoil

the white silk clothes. So it is better to wash the white ones and coloured ones separately. First of all the dirt should be dusted off. We should always use lukewarm water and mild soap while washing silk clothes. If we use soap that contains excessive base then the silk clothes will lose its brightness. We can use rita nuto, good soap or powdered soap as detergent. We must soak the silk clothes in lukewarm water, mix any of the above-mentioned detergents, stir them a few times and then wash them. In case of washing coloured silk, during the final stage we should mix a tablespoon of salt and vinegar in one gallon of cold water.

This process helps the cloth to retain its colour. Drying and ironing is the same as in white silk clothes. Generally, starch is not required for silk clothes. Water is removed by rinsing, silk clothes should be put in the shade and ironing should be done when the clothes are moist. This helps the silk clothes to retain their shape and natural brightness. If a hot iron is used, the silk clothes will sustain a yellowish stain and will be damaged.

Process of washing silk clothes in brief are

- It is not necessary to soak the silk clothes in water for too long.
- At first lukewarm water and finally cold water should be used.
- It is not good to use soap that contains too much base.
- Silk clothes will get damaged if washed roughly.
- Silk clothes should be rinsed by hand.
- Coloured silk clothes should be washed with salt and vinegar.
- If the silk clothes are washed for many times we may use arrowroot starch to
- maintain its firmness.
- Silk clothes must always be dried in the shade.
- Ironing should be done when the silk clothes are still moist.
- It is not good to use a very hot iron on silk clothes.

Washing of woollen clothes

Woollen clothes are comparatively expensive. These will get damaged if we do not take care properly. These should not be kept in water for too long. Dusting it properly will clean most of dirt. We must be very careful when washing woollen clothes. We should draw the design of the woollen clothes on a piece of paper, before washing. After washing if we hang it, it will lose its original shape. So it is better to keep it on a flat surface until it is half dried. This helps to retain its original shape and design. Lukewarm water should always be used for washing woollen clothes. Very hot or very cold water should not be used. Soap powder that contains fewer bases should be added to water. It is safe to use rita nuto in water. The woollen clothes should be

carefully rinsed. The water should be changed a number of time. At the final stage vinegar should be added to the water. This helps the woollen clothes to retain their brightness.

We should never wring the woollen clothes to take out the water. We can use a thick towel to suck out the water. After this the wet woollen clothes should be placed on the piece of paper where the original drawing of it was made. Due to washing ,the woollen clothes may shrink, but if we wash in the above manner then it will retain its original form.

We should place a soft cotton cloth on the woollen clothes and use a hot iron for ironing. The process of washing white and coloured woollen clothes is the same. It is better to wash them separately in order to avoid colour stains.

Process of washing woollen clothes in short is

- Very hot or very cold water should not be used. It is best to use lukewarm water.
- Powder soap that contains less base and rita nuto should be used.
- Woollen clothes should not be rinsed roughly.
- Woollen clothes should not be kept in water for too long.
- A thick towel should be used to suck out the water. It should not be twisted by hands.
- A very hot iron should not be used.
- After ironing it should be kept in the open air.

Methods of dry washing silk and woollen clothes

Dry washing means the washing of clothes without water, but by using special chemical compounds. Constant use and experience tells us that by washing silk and woollen clothes with soap, soda and water shrink the clothes. Colour may also fade. For this reason dry cleaning system is used for washing silk and woollen clothes. Dry cleaning system helps silk and woollen clothes to retain its original shape, form and brightness.

For dry cleaning a number of liquid chemicals and compounds are used. These chemicals are fully water less. Even if these contain a small amount of water, this water is sucked off by cotton or other absorbent material. Because if this type of chemical compound contains water, the clothes cannot be cleaned. Certain chemical compounds have a dirty smell, so these should be avoided. There are also certain chemicals that easily evaporate into the air, so they are expensive to use for dry cleaning. Certain chemicals do not evaporate so easily, so the clothes take long time to dry. So the chemicals that evaporate in a moderate way are best for dry cleaning. It is also seen that one or two compounds may be good for dry cleaning. Many types of cleaning liquids are available in the market for dry cleaning. Among these, petroleum, ether, turpentine carbon tetrachloride, benzale, benzene and petrol are notable. Petrol

is the best product for dry cleaning. Because it is less expensive and readily available. Petrol is highly inflammable so it should be used very cautiously.

Rules of washing

First of all the dirt should be dust off. The cleansing liquid should be made water less. This water less liquid should be kept in 3 or 4 buckets. We can mix benzene soap or lisapol in the first bucket. The clothes should then be dipped in their solution, wringed lightly and taken off. After this, the excess liquid should be taken off from the clothes etc. by using both our hands and then the clothes are dipped in the second, third and fourth buckets. The fourth bucket should contain some vinegar. After washing in this system, the clothes should be dried in the shade. While it is drying, the clothes should be pulled, to bring it back to its original form and shape. This will prevent the clothes from shrinking. When it is nearly dried we can iron it by putting a wet piece of cloth on it. The following steps should be followed with caution while dry cleaning:

- There should be enough movement of air at the place of dry cleaning.
- There should not be any type of fire at the place or near the place of dry cleaning.
- The chemical liquids should not fall on the floor. In this system silk or woollen clothes may be dry washed at home. It may be mentioned here that in the cities, dry cleaning of silk, woollen clothes is done in laundries, using automatic washing machines.

Exercise

Multiple Choice Questions

1. Which of the following is used to reduce excess blue in cloths?
 - a. Ammonia
 - b. Borax
 - c. Vinegar
 - d. Starch
2. Woolen dresses are deformed if it is
 - i. kept hanging in the air
 - ii. kept hanging in wet condition
 - iii. kept in water for a long time

Which of the following is correct?

- a. i
- b. i & ii
- c. ii & iii
- d. i, ii & iii

Answer question numbers 3 and 4 from the following text

Ball soap	blue
detergent powder	starch
salt	vinegar
Rita	Lisapal

Ingredients for washing cloths

3. Which of the following is used to clean excessively dirty cotton cloths?
- a. Rita fruit
 - b. Ball soap
 - c. Detergent powder
 - d. Lisapal
4. Which of the following is used to keep the brilliance of cloths intact?
- i. blue, lisapal
 - ii. vinegar, salt
 - iii. vinegar, starch

Which of the following is correct:

- a. i
- b. i & ii
- c. iii
- d. i & iii

Creative Questions

Lovely is very lively and she is very sensitive about the colour and design of her dress. She is 14 years old, 5 feet high and she has round shaped bright face. She likes silk but since it needs dry wash, she refrain herself from using it.

- a. What is 'dry wash'?
- b. What impact does any colour create on the complexion and shape of body?
- c. Describe the design of a dress for Lovely with suitable colour and stripe.
- d. Analyze the process of dry wash of cloths.

Practical

PRESERVATION OF SPICES IN CONTAINER

Different types of spices are needed to make a dish palatable and nutritious. These spices should be stored in a proper way in every house. Usually a housewife and those who are engaged in cooking make spices nicely. We use various kinds of spices such as seeds (caliper, cumin), flowers, bark, leaves etc. These types of seed crops can stay fresh for a long time. So, these should be preserved at home. These spices are dry in nature. But if they are dried in sunlight it can be kept for a longer period.

1. Ingredients for preservation

Spices can be preserved in glass jars, tin containers, and in plastic containers. For drying up the spices, materials like bamboo strainer, dala, winnowing fan (kula), aluminum plate, tray, wooden spoon etc. can be used. Each and every spice should be preserved separately.

For practical class, students can bring clean containers and jars from home. This type of containers can be made of glass, tin or plastic. Each container should be labelled after the name of the spices. During preservation of spices in container the following points should be kept in mind:

1. Preservation place or store should be clean and a healthy environment should be ascertained.
2. Preservation container such as tin, jar, container, basket etc. should be kept clean and moisture free. These containers can dry under sunlight.
3. The container's lid or opening should be tied strongly so that moisture and insects cannot go inside and harm the spices.
4. Good quality and insect free seeds should be preserved.
5. Regularly, or at least once in a week the container should be observed for proper preservation. Sometimes during at rainy season seeds can be dried up in sunlight for better preservation.
6. Seeds or crops when harvested, should immediately be preserved in a proper way.
7. All the containers should be rust free. After collection of containers, different types of spices should be preserved by following the methods given below:-

Turmeric:

After purchasing, turmeric should be cleaned properly and dried in sunlight for some days. When dried properly it should be preserved in a container.

Red chilly

After purchasing, the stalks should be removed from chilly and then dried in the sun light for 2/3 days and then preserved in a container.

Coriander

After purchasing or harvesting, coriander should be cleaned properly. It should be washed and kept on a bamboo tray (winnowing fan or kula) and dried in sun light for

several days. When dried properly, it can be preserved in a container. Coriander powder can be preserved in glass jar with strong lid or in plastic container.

Cumin seed

Cumin seeds are also preserved like coriander. But it should be remembered that cumin seeds should not be washed in water for a long time.

Cardamom and cinnamon

After purchasing these should be cleaned with soft old cloth and kept in a glass jar or plastic pot with a tight lid.

Poppy seed

After purchasing, poppy seed should be cleaned properly, kept on an aluminum dish and dried in sunlight. When it becomes cold, it can be preserved in a container.

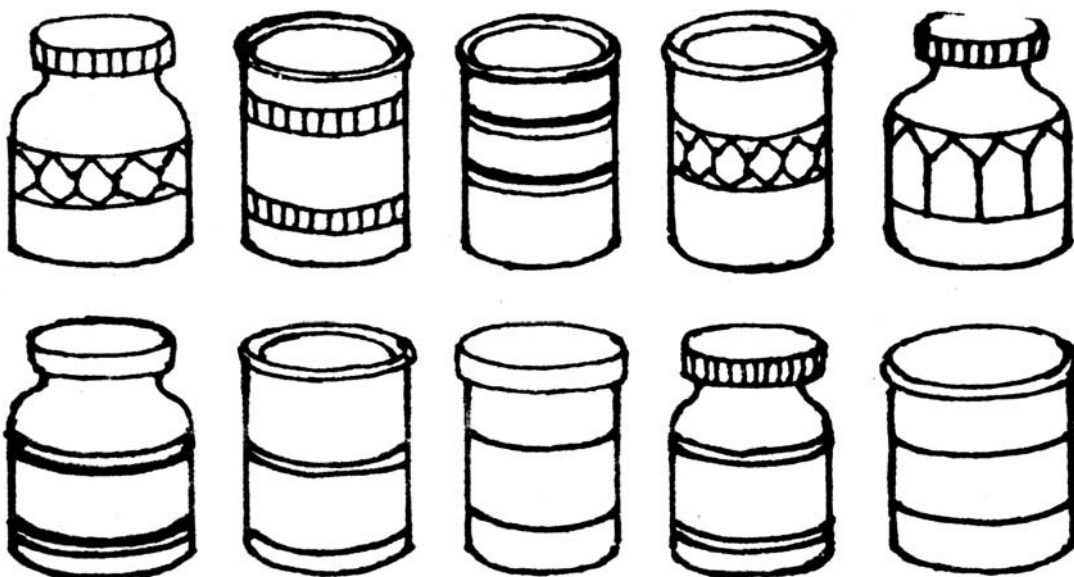
Mustard

Mustard should be brushed off by winnowing fan for separating dusts and can be kept in a glass jar or a plastic container.

Mace, cloves and nutmeg

All these fruits and flower seeds are flavoured spices. After cleaning they can be properly cleaned and preserved in a glass jar.

Aniseed, fenugreek seed, pepper, parsley, white cumin, all these types of flavored spices can be preserved in the same process. These spices when mixed together, is called "panchforon" and it can also be preserved.



Containers for preserving Spices

Complimentary food for six months old infant

An infant should get used to complimentary food along with milk. The complimentary food should be given gradually to the infant, starting from liquid to semi solid and solid foods. The food should be rich in nutrition. When an infant is offered soft khichuri it should contain cereals, vegetables, meat, oil, etc. By this an infant will get ingredients like, carbohydrate, protein, fats, minerals salt, vitamins etc. A list of complimentary food including cooking procedure, suitable for infant (6 months old) has been given below:

1. Milk suji
2. Orange juice/lemon juice/ripe banana/ripe papaya
3. Boiled and smashed potatoes
4. Egg poached or boiled
5. Mashed vegetable and pulse with rice
6. Vegetable soup.
7. Soft khichuri including chicken meat, rice, pulse and vegetable

1. Milk suji

Ingredients	Amount
Suji	2 tea spoon
Water	1.5 cup
Milk	1 cup
Sugar	1 table spoon

Preparation procedure

Pour 1.5 cup of water in a pan on stove. Stir suji with water in separate cup and when water starts to boil, pour suji in the boiling water stirring constantly. When it becomes thick, pour 1 cup of milk and stir. When it boils add 1 table spoon sugar with it and remove from heat in semi solid position. Keep milk suji in a bowl with spoon and serve it to the infant when it cools down. Instead of suji, sagu can be used also.

2. Orange juice/ lemon juice/ ripe bananas/ ripe papayas

Take orange and lemon juice as required and mix with water and sugar, then serve it to the infant. Mash or blend ripe banana and papaya; mix with little water and serve it to the infant with spoon.

3. Smashed boiled potatoes

Ingredients	Amount
Potatoes	1 (medium size)
Salt	As required

Boil a medium sized potato and peel it. Mash it and mix some salt as required. Make it suitable to feed the infant. Then feed it in small amount to the infant. Mashed ripe bananas can be added with potatoes also.

4. Egg poached or boiled

Egg poach can be done in water to feed infant. Heat water in a fry pan or iron pan and then take an egg on pan. There should be sufficient amount of water in pan so that the egg can be boiled in low heat. After a few minutes a white level will be observed on the top portion of egg like jam and the yolk should soft. 3- 4 minutes time is needed for poaching an egg.

5. Mashed vegetables and pulse with rice

Ingredients	Amount
Rice	1. Table spoon
Water	1/2 Litre
Vegetables	Little amount
Ghee/oil	1.5 Teaspoon.

Preparation procedure

Wash rice and boil it with $\frac{1}{2}$ litre of water. If necessary use more water to boil rice. Take some seasonal vegetables like spinach, cauliflowers, beans, and papayas and wash them and cut them into pieces, boil them with oil and salt. Then mix mashed vegetables with rice. Water should be given in such way that after cooking the mixture can dry up. To give flavour, a little amount of ghee, butter or oil can be mixed. Then serve it to the infant. Lentils can also be used with rice instead of vegetable.

6. Vegetable soup

Ingredients- seasonal vegetables like spinach, red spinach, kidney beans, green papayas, carrots, beans, cauliflowers, peas, green bananas, cabbages etc. can be mixed (amount about 250 gm) with small chicken with bones (a little amount) and also spices like ginger paste, soyabean oil, cumin ground, onion chopped and salt etc. can be mixed.



Ingredients for infants balanced diet as liquid hotchpotch.

Preparation procedure

Cut all prescribed vegetables into pieces. Wash them. Then boil all the vegetables including other ingredients except spinach over low heat in a covered pan. When it will be half boiled, add spinach. When all will be boiled, remove it from heat and then separate the bones from chicken meat and strain it before serving. The solid elements like vegetable and meat can be smashed and given to infant.

7. Soft khichuri prepared with small chicken meat, pulses and vegetables

Ingredients- Boiled rice, mug dal, lentil that amount will be about 2 tablespoons altogether. Green papayas, carrots, kidney beans or any seasonal vegetables together of 100 gm. One piece of fish (boneless) or meat of small chicken. Onion, ginger paste, salt and soyabean as required.

Preparation procedure

1. Boil the piece of meat or fish with salt and ginger paste.
2. Wash and cut the vegetables and boil them.
3. Wash rice, pulses and boil them. After boiling for a few minutes add vegetables, chopped onions, ginger paste, soyabean oil and enough water to make them tender; cook it with cover in low heat.
4. When boiled, mix all with a beater or whisk till it is well mixed. Now add meat or fish that was boiled before and mix well.
5. Stir it and remove from heat while it is soft. Cool and serve with spoon to the baby.

Preparation and serving for balanced food for school going students

For students at different ages from primary to secondary level, the requirement or demand for food also varies. For this reason the table given below shows the requirements of food of students of different ages :-

Food	4-6 years	7-9 years	10-12 years boy	10-12 years girl
Food grains rice wheat	270 gm	203 gm	420 gm	380gm
Pulses	35 gm	44 gm	45gm	45gm
Red, yellow, Green leaf vegetable	50gm	50 gm	50gm	50gm
Other vegetables	30gm	45gm	50gm	50 gm
Roots, Potato (Kochu)	20 gm	25gm	30 gm	30gm
Milk	175 gm	175 gm	175 gm	175 gm
Fish, meat, egg	45 gm	45 gm	45 gm	45 gm
Fats /oil	25 gm	30 gm	40 gm	45 gm
Molasses/ Sugar	40gm	43 gm	45gm	45 gm

A sample of balanced diet for school going children for one day is given below:

One-day menu (with tiffin) for school going students

Breakfast: Potato chop/chola dal/ vegetable bhaji/ bread with butter/chapati, milk and suji.

Lunch: Rui fish with potol curry, red spinach bhaji, rice, salad / lemon.

Dinner: Fried liver/ chicken curry, vegetable (bean, Potato bhaji/ potato cauli flower dalna, pulse, rice, custard/ firni

School tiffin: Vegetable cutlet, luchi/ bread, cottage cheese

Evening shack: Sandwich and milk

Students for class: I-III: Bananas and biscuits.

Tiffin preparation and servings

Vegetable cutlet

Ingredients	Amounts	Number of servings
Potatoes (boiled)	250 gm	
Green bananas (boiled)	250gm	
Carrots (boiled)	250 gm	
Kidney beans (boiled)	250 gm	
Onion chopped	100gm	
Toast (powder)	2 cups	
Hot spices	Little amount	50
Eggs	3	
Salt	As per requirement	
Green chilly chopped	2 tea spoons	
Black pepper (powder)	1/2 tea spoon	
Sugar	1 tea spoon	
Coriander chopped	1 tea spoon	
Oil	For fry	

Procedure

1. Fry hot spices in small amount of cooking oil and grind them well.
2. Fry chopped onion in a large quantity of oil until the colour looks brown (beresta)
3. Mix ground hot spices, beresta, egg yolk, three fourth cup of toast powder, other ingredients (without oil) and all mashed vegetables.
4. Beat separately the white portion of egg.
5. Make 50 portions of all mixed vegetable.
6. Then make each portion the shape of a cutlet by hand.
7. Now dip them in the white portion of egg and then roll them on the toast powder one by one.
8. Fry the cutlet in deep oil until the colour is brown.
9. Serve with tomato sauce.
10. Wrap it in tissue paper or other paper for distribution.

Patient's diet : soup and pishpash- preparation and servings

Soup (1)

Ingredients	Amount	Number of servings
Chicken small (size)	1	
Ginger chopped	$\frac{1}{4}$ Tea spoon	
Onion chopped	1 Tea spoon	
Garlic chopped	$\frac{1}{4}$ Tea spoon	4 servings
Hot spices	Little amount	
Bay leaf	One	
Salt	1 Tea spoon	
Oil	2 Tea spoon	
Water	8 cups	

Preparation procedure

1. Cut chicken into pieces, clean and then crush the bones on a grindstone.
2. Keep all ingredients, crushed chicken and water in a saucepan and then boil the mixture.
3. Boil it at low temperature up to 30-35 minutes
4. When the liquid or soup reduces and comes down to 4 cups then the soup has to be strained with a strainer or with a light old clean cloth.

This clear soup is useful for patients and children.

Soup- (2)

Ingredients	Amount	Number of servings
Chicken (small size)	1 small size	
Ginger chopped	$\frac{1}{4}$ Tea spoon	
Onion chopped	1 Tea spoon	
Garlic chopped	$\frac{1}{4}$ Tea spoon	3 servings
Black pepper	4-6 pieces	
Hot spices	Small amount	
Salt	$\frac{1}{4}$ Tea spoon	
Water	1 cup	

Preparation procedure

1. Cut the chicken into small pieces and clean well.
2. Keep meat including all ingredients into a horlicks jar or other type of jar.

3. Take 2.5 litres of water in a saucepan and put the horlicks jar into the water up to its neck.
 4. Soup will be ready by steam in the jar within 30-35 minutes.
 5. Let the water cool and then remove the jar from water.
 6. If necessary, strain the soup.
- This thick soup is good for elderly people.

Vegetable soup at rainy season

Soup (3)

Ingredients	Amount	Number of servings
Jhinga	50 gm	
Potol	50gm	
Chichinga	50gm	
Pumpkin (lau)	50gm	3 servings
Spinach, red spinach	50gm	
Green papaya	50gm	
Green chilli	2	
Onion (chopped)	1 (small size)	
Tasting salt	1 tea spoon	
Salt	1 tea spoon	
Vinegar	$\frac{1}{2}$ tea spoon	
Corn flour	2 tea spoons	
Water	3 cups	
Oil	1 tea spoon	

Preparation procedure

1. Cut all vegetables into small pieces, except spinach and red spinach and then mix two and half-cup of water with the vegetables and put them on the oven.
2. Boil for 20 minutes at a low temperature.
3. Then put salt and spinach in it and boil for 5-7 minutes. Then remove it from heat.
4. Fry chopped onions until brown. Then put it in soup.
5. Add tasting salt, green chilly and vinegar.
6. Mix half cup of normal water with corn flour and then pour it in the soup slowly with low heat. Stir it after one minute.
7. When the soup becomes thick, remove it from heat. Serve it hot. It has 3 servings. This is not suitable for diabetic patient as it is cooked with corn flour. But it is good for others and also palatable.

Pishpash

Ingredients	Amount
Keema (boiled)	1 cup
Carrots (grated)	1/2
Cauliflowers (chopped)	1
Green papayas (grated)	1/2 cup
Potatoes	3
Onions	240 gm
Oil	1/2 cup
Ginger (smashed)	1/2 tea spoon
Rice	1 cup
Salt	1 Tea spoon
Cumin seed (powder)	1 Tea spoon
Bay leaves	2
Cinnamons	4, 2-5 c.m
Cloves	6
Black pepper (powder)	1/2 Tea spoon
Green chilly	2
Water	2 cups
Sugar	1/2 Tea spoon

Preparation Procedure

1. Boil keema with black pepper, cloves, cinnamon, bay leaves and cumin.
2. Mix salt with grated vegetables and fry it with little oil and then again mix green chilly and boiled keema.
3. Wash rice and drain water.
4. Fry chopped onion and pour rice, ginger paste with salt; then give 2 cups of hot water in it.
5. When rice boils a little, mix vegetables and sugar. Keep it 2 minutes in low heat and then put fried cumin powder on it.
6. Add some salt when served.

Here is given some known recipes of some snacks. Tentative cost for preparation, distribution and number of serving are also mentioned here.

Tomato sauce

Ingredients	Amounts	Value (Tk.)	Amounts of cooked food
Tomato	2 kg	30.00	900gm
Onions (chopped)	1/4 cup	1.00	(3 bottles)
Cloves	10		
Cardamons	6		
Cinnamons	4 pieces 2.5 c.m		
Gingers (chopped)	1 Tea spoon		
Red chillies	6		
Salt	As per requirement	5.00	
Sugar	1/3 cup	2.00	
Vinegar	1/2 cup	2.00	
Other (fuel)		5.00	
	Total cost	45.00	

Preparation procedure

1. Clean tomatoes and cut each one into four pieces and keep them into saucepan.
2. Mix all ingredients with tomatoes except salt, sugar and vinegar and cover it; boil it over low heat.
3. Blend it when boiled.
4. Strain by wide whole strainer and remove seed, skin of tomatoes.
5. Add sugar, salt and vinegar with tomato juice and boil again.
6. When it becomes thick then remove from oven and let it cool.

If sauce is preserved in packets then it should cool earlier to packing. But in clean glass bottle slightly hot sauce can be kept. Lid of the bottle should be made of plastic. Each bottle can contain 300 gm of sauce.

Fixing price

Total price for raw materials and fuel (as per seasonal market price) Tk. 45.00

Safe margin x Tk. 2.50

Tk. 112.50

Total sale price = 112.50 Tk. only sale price of each bottle $112.50 \div 3 = 37.50$

Distribution: for distribution, each glass bottle can contain 300 grams of sauce or 25

grams of sauce can be kept in each polybag for distribution. Servings amount- An amount of 25 grams sauce can be served for each snack or the amount can be more as per choice.

Dal puri

Ingredients	Amount	Price (Tk)	Amount of cooked food
Lentil	1/2 cup	5.00	30
Ginger smashed	1/2 Tea spoon		
Onion chopped	2		
Green chilly	1		
Red chilly powder (fried)	2		
Onion chopped	6		
Coriander leaf /Pudina leaf chopped	6		
Salt	2 Table spoons		
Flour	1 Table spoon	7.00	
Oil	3 cups	14.00	
Oil	250 ml	4.00	
	Total cost	30.00	

Preparation procedure

1. Prepare pulse stuff (pur). Lump is prepared when pulse, ginger paste, chopped green chilly, salt and three-fourth cup of water are mixed, put in saucepan and boiled in low heat. When water is absorbed and it becomes dry remove the mixture from heat. From this mixture pulse stuff prepared.
2. Mix chopped coriander/ pudina leaves, fried red chilly powder and fried onion (beresta) with pulses.
3. Add 2 table spoons of salt, one- third cup of oil with flour. Prepare flour dough (khamir).
4. Make 30 balls from flour dough (khamir). Make 30 balls also from pulse stuff (pur). Keep pulse stuff in the middle part of flour dough then seal the opening of flour dough.
5. Heat oil in fry pan. Prepare luchi by rolling out the balls in to round shape. If it is not done properly, during rolling then rub little amount of oil on wooden dial (piri).
6. Fry these into deep oil in medium heat . Keep it on paper to soak oil.

Fixing price

Raw materials and fuel cost Tk. 35.00

Safe margin = Tk. $\times 1.5$

Total = Tk. 52.50

Total selling price = Tk. 52.00

Cost of each puri = Tk. $52.00 \div 30 = \text{Tk. } 1.66$

Distribution process

Hot dalpuri can be distributed by keeping it in a paper packet (thonga).

Serving

Serve with tomato sauce/tamarind sauce, cucumber and chopped onion. In each serving two puris can be served.

Chotpoti

Ingredients	Amount	Price	Quantity of cooked food
Peas	1/2 kg	14.00	1 kg
Potatoes (medium size)	6 nos.	3.00	12 no persons can be served
Egg (boiled)	2 nos.	7.00	
Tomatoes (pieces)	3 nos.	9.00	
Cucumbers (pieces)	1nos.		
Onions (chopped)	6 nos.		
Salt	As per requirement		
Soda (edible)	1/2 tea spoon		
Tamarind (liquid)	100 gm	10.00	
Cardamom powder (fried)	3 table spoon		
Red chilly powder (fried)	12 nos.		
Green chilly (chopped)	6 nos.		
Coriander leaf (chopped)	2 table spoon	2.00	
Bay leaves	3 nos.		
Fuchka	10 nos.	2.00	
Oil	As per requirement	5.00	
	Total cost	52.00	

Preparation process

1. Keep peas in deep water in a saucepan. After 4 hours, boil peas adding a teaspoonful sugar, salt as needed and 1 cup of water in a pressure cooker. When the pressure rises, slow the heat and keep for 7-8 minutes on heat or boil peas with sugar and salt in a saucepan in deep water.
2. Mix boiled and pieces of potatoes, half portion of tamarind, fried bay leaves and powdered spices (half).
3. Remove from oven when chotpoti becomes thick and then spread remaining fried powdered spices on it.
4. Decorate with chopped boiled egg, cucumber, coriander leaf, and pieces of tomatoes, chopped green chilly and fuchka.
5. Heat tamarind (remaining portion) with water and then mix fried chilly powder (1. tea spoon) with it.
6. Keep hot chotpoti on a serving dish and decorate with different ingredients as desired.

Fixing price

Ingredients and fuel cost Tk. 52.00

Safe margin Tk. $\times 1.50$

Total = Tk. 78.00

Total sell: Tk. 78.00

One serving cost $78.00 \div 12 = \text{Tk. } 6.50$

Distribution

Keep about 500 gm of chotpoti in an earthen pot and cover it with paper. Spread 2 tablespoons of other ingredients on it and again cover with paper. It can be distributed like halim or can be served in plastic bowls. The amount is 250 gm (for each bowl). Total serving number is 20.

Tempura

Ingredients	Amount	Price (Tk.)	Amount of cooked food
Prawns	40 nos (medium)	115.00	
Eggs	3 nos.	10.00	40
Flour	1 cup	2.00	
Onion chopped	2 nos.		
Green chillies	3 nos (five chopped)		
Salt	3 tea spoon		

Baking powder	1/4 tea spoon	7.00	
Lemon juice	4 table spoon		
Red spinach leaves	40 cup		
Water	1/2 cup	5.00	
Oil	250gm	14.00	
Fuel		4.00	
	Total cost	157.00	

Preparation procedure

1. Take forty prawns of equal size. Keep the tail but remove the head and skin of prawn. Wash prawns well. Cut prawns with knife horizontally from portion of belly and cut as a leaf. Then prick prawns lightly with a small fork. Mix lemon juice and salt with prawns and keep for 7-8 minutes.
2. Mix baking powder and salt with flour.
3. Mix chopped onion and green chilly. Beat the eggs well.
4. Mix flour with beated egg. Knead well and add lemon juice.
5. Take 40 big size spinach leaves, wash well and remove water. Roll each prawn in each leaf and put it in egg mixture. But the tail is kept out of leaf.
6. Fry tempura in deep oil until brown. Serve it on a tray.

Fixing price

Ingredients and fuel cost = Tk. 157.00

Safe margin x 1.50

Total : Tk. 235.50

Total selling price Tk. 235.50

Single price = $235.50 \div 40 = 5.88$ Tk.

Distribution

It can be distributed in aluminum foil or paper packet.

Serving

Serve hot tempuras with bread and tomato sauce.

Luchi Niramish

Ingredients	Amount	Price (Tk.)	Amount of cooked food
Flour	2 cups	4.00	20 no
Milk (liquid)	1/4 cup	3.00	10 persons can be served
Salt	1 tea spoon		
Water	1/2 Cup		
Sugar	1/2 tea spoon	10.00	
Oil	150 gm		
Fuel		3.00	
	Total cost	20.00	

Preparation procedure

1. Add milk and sugar with water.
2. Mix salt and ghee or oil with flour. Add water that was mixed with milk and sugar. Rub flour by this mixture. Knead well. Make 20 balls. Take a little amount of oil on hand and mix oil on each ball and keep for 5 minutes.
3. Rub oil on wooden dial (piri). Roll out each ball into round shape (10 c.m diameter) and decorate it on tray.
4. Heat oil and fry it in deep oil. Keep it on light paper so that extra oil is absorbed.

Niramish

Ingredients	Amount	Price (Tk.)	Amount of cooked food
Sweet pumpkin	200 gm		
Brinjals	200gm		1 kg
Green bananas	200 gm	15.00	
Potols	200gm		
Green papaya	200 gm		10 nos
Potatoes	200 gm		Persons can be served
Ginger paste	1 tea spoon		
Garlic paste	1/2 tea spoon		
Turmeric powder	1/2 tea spoon		
Red chilly powder	1/2 tea spoon		
Coriander powder	1 tea spoon		

Cumin powder	1/2 tea spoon	5.00	
Panchforon powder	1 tea spoon		
Salt	2 spoon		
Sugar	As per requirement		
Green chilly	1/4 tea spoon		
Bay leaf	2 no		
Oil	100 gm	6.00	
Fuel		22.00	
	Total cost	48.00	

Preparation procedure

1. Cut all vegetables into cubes.
2. Fry chopped onions, grind spices and powdered spices in hot oil and keep aside.
3. Mix salt with all vegetables except brinjal and sweet pumpkin in a saucepan. After 3-4 minutes pour 1 cup of hot water in it. Put lid on it and cook in moderate heat.
4. When vegetables are half cooked add brinjal, sweet pumpkin and cover it and simmer in low heat.
5. After 8-10 minutes when vegetable are boiled or soft, then add green chillies, sugar and fried powder. When vegetables will dry up and will come up on oil, then remove from heat.

Fixing price

Ingredients and fuel cost $20 + 28 = \text{Tk. } 48.00$

Safety margin $\times 1.50$

Total = 72.00

Total selling price = Tk. 72.00

Each serving costs = $\text{Tk. } 72.00 \div 10.00 = 7.20$

Distribution system

Luchis can be distributed in paper packet and niramish can be distributed in packets or boxes.

Serving

For each serving two luchis and half cup of niramish.

Total number of serving is 10.

Patishapta pitha

Ingredients	Amount	Price (Tk.)	Amount of cooked food
Milk	1 litre	20.00	
Sugar	1/2 cup	4.00	20 nos
Baking powder	1/2 tea spoon		
Oil	1/2 cup	6.00	
Rice flour (per boil)	4 cups		
Flour	1/2 tea spoon	8.00	
Molasses	250 gm	5.00	
Water	3 cups		
Fuel		5.00	
	Total cost	48.00	

Preparation procedure

1. Boil milk and make it thick. Keep it on low heat and pour sugar on it. Stir it. For thickness add some rice powder. When milk will be like khir then remove it from oven and cool it.
2. Mix molasses with water, heat it and strain it.
3. Mix rice powder and flour, strain the mixture. Mix molasses water with it. Keep it for one hour.
4. Heat an iron pan, brush oil (small amount) on pan. Pour half-cup of mixture on pan and give it a round shape. Cover the pan with lid for a few minutes. Put one tablespoon prepared thick milk or khir at one edge. Then roll on the pancake. After rolling press the pancake by spoon at each side and then take it out from the iron pan.

Fixing price

Ingredients and cost of fuel = Tk. 48.00

Safety margin = x 1.5

Total Tk: 72.00

Total selling price = Tk. 72.00

Cost for each pitha = Tk. 72.00 ÷ 20 = Tk. 3.6

Distribution

Cold pithas can be served or distributed in plastic packet.

Serving

For each serving 2 pithas. Total serving member is 10.

Cholar daler halua

Ingredients	Amount	Price (Tk.)	Amount of cooked food
Gram(Chola dal)	1 kg	30.00	
Milk	2 litres	40.00	2.5 kg
Sugar	2.5 Kg	75.00	
Cinnamon	25 gm	4.00	50 persons can be served
Ghee and oil	(100+ 200)=300 gm	42.00	
Jaffron	As needed		
Rose water	2 table spoons	15.00	
Pistachio nuts chopped	1 table spoon		
Raisins	50gm or as per choice	6.00	
Fuel		8.00	
	Total cost	220.00	

Preparation Procedure

1. Prepare a mixture of $\frac{1}{4}$ cup of milk, 2 cups of water and sugar in a pot. Put it on the oven and strain it into another pot after simmering. Let it cool.
2. Rinse bengal gram and boil it with 4 cups of water. After 15 minutes, add a teaspoon of sugar and a cup of milk. Stir the mixture in a low heat until it becomes dry.
3. Condense the remaining milk.
4. Pour ghee and oil on the frying pan and stir it with spices and mashed gram for 3-4 minutes. Add condensed milk, sugar and colour. Keep stirring frequently again and then add rose water. When the ghee comes up the halua, remove the pan from the oven.
5. Spread a little ghee on a large plate and then spread the halua on the plate. Make it smooth with a roller, cut into varied shapes and garnish with shredded almonds, pistachios and raisins.

Fixing price

Ingredients and fuel cost	=	Tk 220.00
Safety margin		x 1.5
Total	=	Tk 330.00
Total selling	=	Tk 330.00
Each serving costs	=	Tk 6.60

Distribution system

In every plastic or paper box 200 grams of halua can be distributed.

Serving

Serve packets containing 50 grams of halua to 50 persons.

Pudding

Ingredients	Quantity	Price (Tk)	Quantity of total prepared item
Eggs	1 dozen	35.00	1+1=2kg
Milk	1 and 1/2 litre	30.00	For 20 people
Sugar	1 and 1/2 cup	12.00	
Vanilla essence	2 tablespoons	3.00	
Fuel			
	Total cost	80.00	

How to prepare

1. Prepare caramel with sugar in two medium sized saucepans. To prepare caramel, a quarter cup of sugar and 2 teaspoons of water is needed for each saucepan. Then mix them together and beat until it appears brown and dry. Let the saucepan cool.
2. Simmer milk for a long time for condensation. Then let it be cooled.
3. Beat yolk and white segment of the eggs separately. Then mix them together and beat then again through an eggbeater or fork. Add sugar and beat once more to mix it properly. Add milk and vanilla essence. Then pour the mixture equally into the two moulds or saucepans.
4. Keep 1 litre of water in another large saucepan on the oven. Cover the mould with a coaster and put it on water in such a way, so that $\frac{3}{4}$ of the mould remains under water. Put a small but heavy thing like a little stone on the coaster. It will stop the movement of the box and won't let water into the box. Make the two saucepans ready in the same manner and put it on the oven.

5. After keeping them in medium heat for an hour, insert a knife inside the pudding. If it comes out clean, and then the pudding is made. Otherwise, keep it on the stove for further 15 minutes.
6. Remove the saucepan from hot water and keep on cold water. Turn over the pudding on a plate after 15-20 minutes.

Fixing price

Ingredients and cost of fuel	=	Tk 80.00
Safety margin		x 1.5
Total	=	Tk 120.00
Total selling price	=	Tk 120.00
Each pudding cost	=	Tk 6.00
Each serving costs	=	Tk 120.20
	=	Tk. 6.00

Distribution system

Put the pudding in a plastic pot for selling.

Serving

Cut every pudding into 10 pieces and there will be 20 pieces in total.

One can have his/her snacks at different times of the day from the above 8 recipes. As the number of serving is mentioned, one can prepare more or less in quantity using more or less ingredients if necessary. The snacks are also fit for children's school tiffin.

Here is a recipe for 30 dalpuries. If one wants to serve the dalpuries to 300 people, One should multiply it 10 times. Quantity of the ingredients should be increased then.

Dalpuri

Ingredients	Quantity
Gram	1 kg and 220 grams
Ginger paste	25 kg
Chopped onions	5 pieces
Green chilly	10 pieces
Red chilly powder	50 grams
Chopped onion fry (beresta)	1/2 kg
Coriander / mint leaves	300 grams
Salt	240 grams
Flour	6 kg 720 grams
Oil	As needed to fry

Strategies of fixing price

To fix the price of different foods, one needs to count the price of raw materials first. One must be informed about the market price first for the right cost counting.

Drafting, cutting and stitching salwar and kameez

Different types of fabrics are used to make salwars and kameezes. Though the adolescents and teen-age girls usually wear this dress, middle-aged women are also seen wearing this dress now-a- days. It needs drafting, cutting and stitching to prepare a dress with fabrics.

What is drafting?

Drafting means drawing a design according to the size of figure in a systematic way before cutting the piece of cloth while making a dress. If one first formulates a draft before cutting the cloth, a well fitting dress could be made then. It also hinders wastage of fabric and the risk of faulty cutting. Those who are learners need to sketch a design on a piece of paper according to the body measurement first.

- 1) Different measurements
- 2) Rules of taking measurements
- 3) Necessary materials
- 4) Preparation of the fabric before cutting

Different measurements

Whichever type of clothing may be, some general rules need to be followed in every stage of preparing the dress. The relevant materials are needed to be arranged first.

It is wise to note the measurements in a specific format. Such as:

Total length

Waist size

Chest size

Length of legs (up to heels)

Length up to waist

Hip size

Shoulder

High

Circumference at the end of the legs and arms

Length of arms

Neck size

Length of Arms

- 1) Total length means how long the dress will be. One has to stand straight at the time of giving length measurement.
- 2) Rounding the tape from the armpits to the widest part of the chest we get the size of chest. While giving the chest measurement one first takes a deep breath and then stops breathing for a while.
- 3) From the highest point of the neck to the thinnest point of the waist is the length up to waist.
- 4) From the left joint of the shoulder to the right joint is the shoulder measurement.
- 5) Circumference of the end of the arm is called muhuri.
- 6) Length of arm means length from the shoulder bone to the hand according to choice. The hands will be folded on chest while giving hands measurement.
- 7) Circumference of the waist is circumference of the thinnest part of the waist.

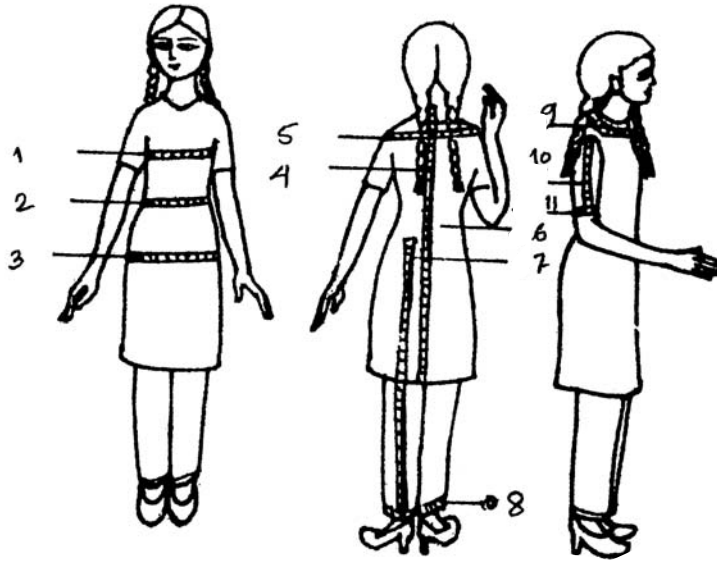
The original shape should be drawn on a large brown paper after taking the measurement. The main draft is prepared leaving spaces that will reduce after stitching and then the paper is cut accordingly.

Then the draft design is set on the piece of cloth and the cloth is cut. One can cut the cloth without using any draft, when he/she becomes expert in making dresses. The design of the neck can be made round, V cut or square according to one's choice. Normally the salwar and kameezes are large in size. So it is better to draw designs on the fabric directly following the directions.

2) Rules of taking measurements

Procedures of drafting ,cutting and stitching a kameez.

- 1) Length – total length of kameez.
- 2) Chest size
- 3) Waist size
- 4) Measurement of length from the bulging bones of the back shoulder upto the waist.
- 5) Shoulder size
- 6) Length of arm
- 7) Circumference of the end of the arms.
- 8) Circumference of neck.



Rules of taking masurement

3) Necessary materials

Tape, pencil, paper, brown paper, scissors, pin, pincushion, scale, chalk etc.

Preparation of the fabric before cutting

- Purchasing the fabric - Buy fabric as per the need
- Shrinking - The cloth should be washed after keeping it for sometime in water. So that the fabric does not shrink after the dress is made.
- Straightened - when it is dried, it should be straightened by pulling it lengthwise across the end of a table.
- Calendaring - Calendar the fabric with low, medium or heavy heat as it is needed for different types of clothes.

Required fabric for kameez

How much cloth should we buy for making a kameez? We need to multiply the total length of kameez by 2 + 10 cm + length of arms. But if the width of the fabric is $\frac{1}{4}$ yards or more, then it is enough to take twice the total length. However if we want more wider circumference of the kameez we need to buy more clothes.

Rules of taking measurements

- | | |
|---------------------------|---|
| 1) Size of the chest | 7) Length from waist to toes |
| 2) Size of the waist | 8) Circumference at the end of the legs |
| 3) Size of the hip | 9) Circumference of the neck |
| 4) Total length of kameez | 10) Length of arms |
| 5) Size of the shoulder | 11) Circumference of the end of arms |
| 6) Length up to waist | |

Basic cut of a kameez (front and back side)

Cut the cloth vertically twice of the total length +7.5 cm. Make four folds - once from length and once from width. Follow the drawing of the main cutting of kameez. Mark 'a' at the left corner of the folded cloth. Then match it with the design drawn in the book.

$ab = \frac{1}{2}$ of shoulder + 1.5 cm (If shoulder is 35 cm, then 'ab' will be 17.5 cm + 1.5 cm)

$af = \frac{1}{4}$ of chest size (If chest size is 80 cm, 'af' is 20cm then)

$ag =$ length from bulging part of the back shoulder up to the waist.

$ah =$ Length up to waist + 17 cm . This is the length up to hip from the bulging part of the back (If the length up to waist is 38 cm, the 'ah' will be 38 cm + 17 cm)

$fk = \frac{1}{4}$ of chest size +3.7 cm +2cm)

$up =$ length of kameez +7.5 cm for lower folding (if the length is 1 metre, $ap = 1.75$ cm)

$gl = \frac{1}{4}$ of the waist +2.5 cm +2cm

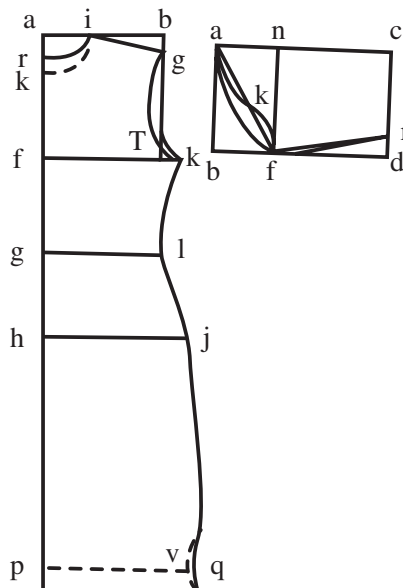
$hj = \frac{1}{4}$ of hip +2.5 cm + 2 cm

$pq = hj + 4.5$ cm

Then draw lines according to the marking. Mark 'r' from 3.2 below 'a' and identify 'i' from the right side of 'a' I ri will be $\frac{1}{4}$ of shoulder connect r i by a curved line. Mark 's' from 1.5 cm below 'b' and add F 'if'

Draw a pendant from 'b' on fk line. It will meet at point 'x' on fk line. Then identify 't' on 6 cm above of x and add kts 1

Mark 'u' at the front part of the kameez from 2cm in to make a shape of the armpit. Then add kIJq in slight curve .Mark 'q' on 18cm above P. It is open side of the kameez.



Basic cut of a Kameez (Fornts & back) & arms

Arms

Follow the drawing. Fold the rest of the cloth four times along its length.

ac = length of arms, should fall along the fold line of the fabric.

ab = $\frac{1}{4}$ of chest

Draw a rectangle 'abdc'. Mark 'e' from 9 cm away of 'a' and 'ef' as a perpendicular. Then join 'af' by a tangent. Identify a point 7.5 cm above f in 'af' line. Mark 'k' from 2 cm right from the point and 'l' from 2 cm left. Then join 'akf' and 'alf' according to the diagram. Mark 'n' along the line 'cd' so that $cr = \frac{1}{2}$ of circumference of the arm + 2 cm. Then join as shown in the diagram.

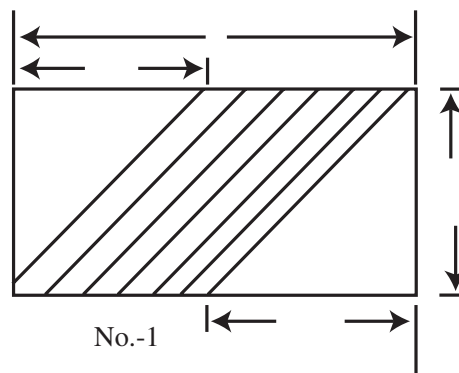
Cutting

Cutting should be started from the fold line of the cloth. So cut the kameez along a $I \rightarrow s \rightarrow x \rightarrow k \rightarrow i \rightarrow J \rightarrow q \rightarrow p$. Separate the front part from the back and cut along 'kus' for the shape of armpit and then cut the neck as per your choice.

Cut the arm following the diagram. First cut along 'alr'. Then make 'fka' shape in front side unfolding the cloth. The following diagram shows how to cut out the fabric to make a lining and fix in with the neck of the kameez.

Stitching

First stitch two shoulders (5 mm inside the fabric). Adjust a button lining on the shoulder. Cut a tangent wise lining for the neck and stitch it from 5 mm inside the neck. Then reverse it and fix it along the neckline by calendaring and hem stitch. Then join two sides of the kameez by stitching from 2 cm inside. Keep 18 cm open at the lower end. Now fold and stitch in lower circumference of the arm and join both sides together. Then set the arm with the armpit of kameez and join it keeping 5mm off inside. Front side of the arm portion should be adjusted with the front side of the kameez. Hem stitch is appropriate for a thin fold in both the open sides of the kameez. Stitch the lower end of the kameez by folding it as desired. Fix buttons or hooks on shoulders. Then iron the kameez to finish the work.

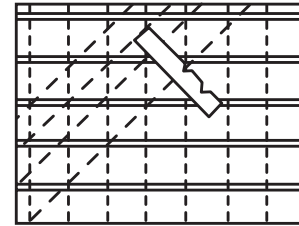


Salwar

Both males and females can wear Salwar. But the young women wear it more frequently. Salwar covers from waist to toes, keeping consistency with Kameez, Salwar is made normally.

Measurement

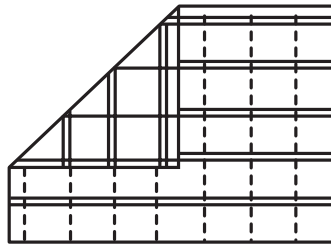
Length - From waist to toes the size of hip
Circumference of the end of legs near toes.



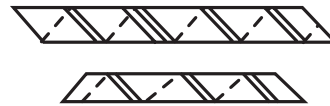
No.-2

Measurement of clothe for salwar

We need twice the total length + 30 cm cloth for a salwar. The width of the cloth may be of one yard or 1 $\frac{1}{4}$ yards. If it is 1 $\frac{1}{4}$ yards, the circumference will be better. The recent fashion is to make an 18 cm liner or yoke and make a frill beneath the yoke rather than using frill in the waist. However the style of cutting is more or less the same.



No.-3

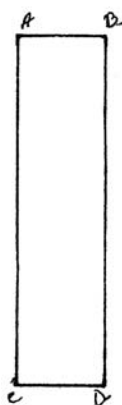


No.-4

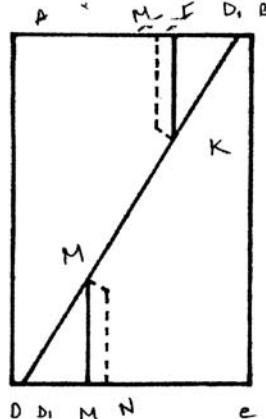
Cutting

Cut the cloth according to the following measurement. Length + 5 cm for folding in waist + 12 cm Four fold a piece of cloth length wise so that the width becomes $\frac{1}{2}$ of the circumference of the end of leg $\frac{1}{2} \div 1.5$ cm.

Double the cloth and cut a rectangle $abcd$ from the fold line (look at diagram 1) Then fold the rest of the cloth lengthwise according to No 2 diagram. Again a rectangle 'abcd' is created. Now mark b_1 from 1.2cm left to b and d_2 from 1.2 cm right to d . Connect b_1 and d_1 tangently and cut it. Draw perpendicular fk on 'ab' line and rm on cd line so that the length of the perpendiculars $\frac{1}{4}$ of the hip size + 189 cm. It is the 'high' of the salwar. The shape 'mn'and 'ek' according to the picture. Now set the cut pieces like picture no. 3.

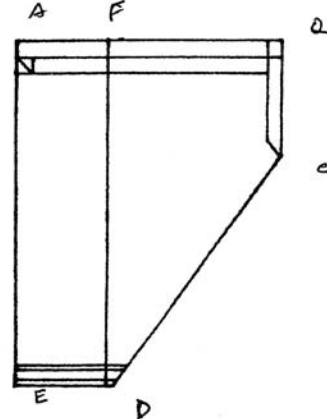


No-1



No-2

Cutting of Salwar



No-3

Stitching the salwar

Fold the circumference of the leg as your wish with a hard fabric inside it and stitch on it. Thereafter make the mouths of the waistband angular, keep provision of inserting lace within it and stitch accordingly. Then join the highs together. Start stitching from circumference of one leg to another by reversing the position. Make lace for the salwar utilizing the cut pieces of the fabric. Complete the work after ironing the whole salwar.

Specific rules of stitching -

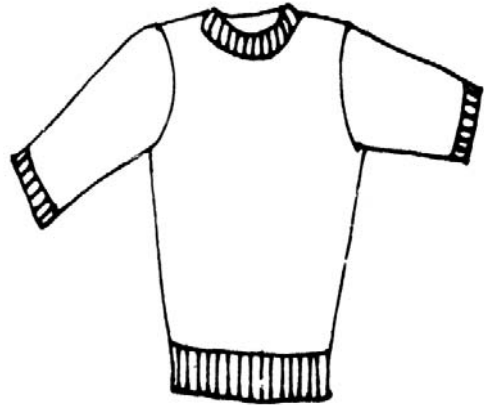
- (1) It is better to adjust different parts of the dress with loose and big stitches. This will help identifying the defects if there is any or whether the dress fits well to the body before final stitching.
- (2) Shoulders of the kameez or frock need to be joined first.
- (3) A Kameez or a frock doesn't fit well if we keep more than 5 mm cloth inside the stitch while joining the arms with the body.
- (4) While adjusting piping with neck, we should keep less than 5 mm for stitching. Otherwise, the edge will be swelled and the piping will not adjust properly.
- (5) Fold the fabric at the lower end which is the excess length of the Kameez and give big and loose stitch over it. Then have a trail to ensure that the length is all right.

Precautions

- (1) It is not wise to cut the cloth depending on assumption. Rather one should cut it according to the directions and using a draft design. It is better to draw a design on the cloth with a chalk.
- (2) One should keep extra cloth for stitching and then draw lines. The cloth should be cut from outside the margins.
- (3) While drawing we must be careful that there is no wrinkle on it.
- (4) Length of the dress should fall along the length of the fabric.
- (5) The neck of the dress must not be wrinkled while adjusting the piping.
- (6) The sides of the dress should not be joined before stitching the neck.
- (7) We should keep enough cloth inside the stitching. It means keeping provisions in case we need to loose the dress later. The sides should not be cut in such a way that the ends make the scope of widening it.
- (8) The prints of designs on the fabric should appear on the same direction. If the prints are displaced, the design would be distorted spoiling the very purpose of the clothing.
- (9) The thread should match the color of the fabric. The colour of the stitching thread should be fast, otherwise the cloth will be spoiled.

Knitting of woolen blouse

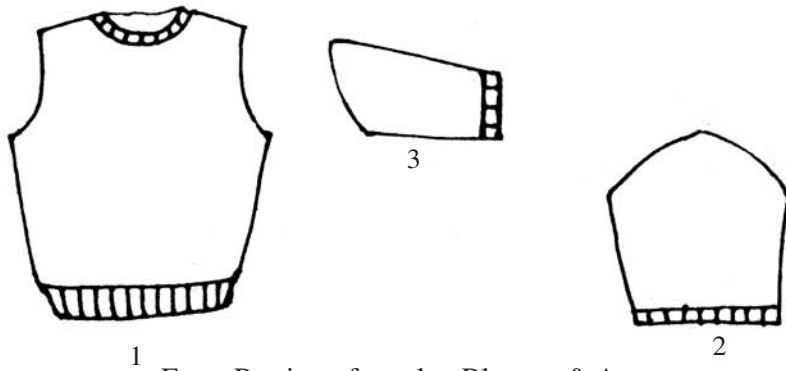
Size = 32	Total length	= 51 cm
Chest circumference		= 74 cm
Waist Circumference		= 61 cm
Length of arms		= 23cm
Circumference of the end of arms		= 20 - 21 cm
Circumference of the elbows		= 36 cm
Border		= 5cm
Neck lining		2.5 cm



Woolen Blouse

Weaving the front portion

- Pick up 90 loops by a No 11 stick. Knit all the loops tightly first a direct loop and then the next is a reverse loop knit 20 sticks alternative.
- Pick up all the loops through direct weaving by No 9 stick.
- After weaving ten sticks (5 directly and 5 reversibly) increase two loops in two sides.
- Increase loops thrice in such way after weaving 10 stick measure each.
- Then increase two loops in two sides after weaving 6 stick measures. Thus 14 loops will be increased after weaving for 7 times. So, the total loop increase to 22. Now the total loop will be $98 + 14 = 112$.
- Now increase two loops in two sides after knitting 4 sticks measurement. Do it thrice to increase 6 loops. The total loops are now $112 + 6 = 118$.
- Weave 6 stick measures. Then start shaping the armpit.



Front Postion of woolen Blouese & Arms

Shaping armpit

- Close seven loops in the beginning of direct weaving along the stick. Similarly close 7 loops beginning the reverse weaving.

- b) In the same way, during weaving the next stick measures, start closing 4 loops once, 2 loops twice each time, then one loop twice each time and lastly weave 2 stick measures and close 2 loops 2 time. Thus total of 38 loops were closed in both sides. 80 loops rested on the stick.
- c) From here on, continue weaving up to 30 stick measures. After having a shape to armpits at this stage, loops should be closed to give shape of the neck.
- d) Knit 36 loops straight from the right side.
- e) 8 loops need to be closed in the middle.
- f) The rest 36 loops will be knitted straightly again. It will divide the blouse on both the sides. On one side, the loops will have to be taken on a large safety pin or on another stick. After knitting a reverse one-stick measure the neck will be shaped from where the wool is tied.
- g) 2 loops will have to be closed in the direction of the neck from the 36 loops. After coming round, one loop should be closed again twice each time. After weaving 4 stick measures, again close one loop twice in each time. Thus after closing 6 loops, 30 will remain.
- h) 10 loops will have to be closed weaving directly along the stick near shoulder. During the next stick weaving further 10 loops will be closed. The shape of the shoulder and neck will be completed after closing 30 loops.
- i) Repeat the process for giving shape to shoulder and neck while weaving the other portion.

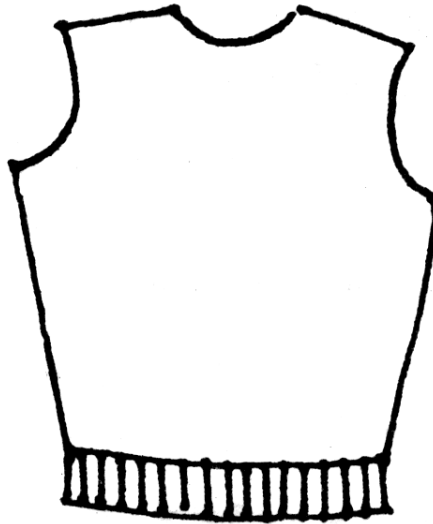
Weaving the arms

- a) Take 64 loops a No 11 stick.
- b) Make a border up to 20 stick measurement once straight and once reverse respectively.
- c) Take loops on a No 9 stick.
- d) Extend one loop after 6 stick measure each and thus increase 8 loops in 4 time.
- e) The extend one loop in every four stick measure. Thus make 100 pcs on both side 6 time and it will let increasing 12 loops to 20 loops will become $(64 + 20) = 84$ loops.
- f) Follow the same procedure of shaping the armpit in the front part of the blouse to shape the armpit of the arms /hands. As a result. $(19 \times 2) = 38$ loops will be closed and $(84 - 38 = 46)$ will remain.
- g) Then continue weaving up to 24 stick measures.
- h) All the loops have to be closed from one side.

Weaving backside

Back portion will be woven exactly like the front portion. But it needs to pick fewer loops. Steps to weave back portion are given below-

- a) Pick up 86 loops on a No 11 stick. Weave the border up to 20 stick measures.
- b) Take the loops on a No 9 stick.
- c) After weaving every 10 stick measures, 8 loops will increase in both sides 4 times. There will be $(86 + 8) = 94$ loops then.
- d) Then extend 14 loops on both sides at 7 times after weaving every 6 stick measures. Then there will be $(94 + 14) = 108$ loops.
- e) 6 loops will increase on both sides by weaving every 4 stick measures at 3 time. $(108 + 106) = 114$



Back side of woolen Blouse

Shaping the armpit

Following the procedure-shaping armpit according to the front portion, we need to close and knit loops according to the numbers given below.

- f) $114 - (7 + 7) = 100$
- g) $100 - (4 + 4) = 92$
- h) $92 - (2 + 2) - (2 + 2) = 84$
- i) $84 - (1 + 1) - (1 + 1) = 80$
- j) Weave up to 40 stick measures.
- k) Close 12 loops after knitting 34 loops straight. Weave the rest 34 loops. It will divide the blouse into two parts as it was done in the front portion.

- l) Close 2 loops every two times towards the neck in next straight weaving.
- m) Close every 10 loops in 3 times from the shoulder. A total of 30 loops will be closed then.
- n) Similarly, shape the neck and shoulder for the other side.

Joining parts and making neck border

- (1) First join the two portions by the left shoulder. Use carpet needle here.
- (2) Take 64 loops from the front neck and 48 from the back on a No 11 stick. $(64 + 48) = 112$ loops will be prepared then
- (3) Weave up to 20 stick measures once straight and once reverse like a border. Then close all the loops by weaving straight and reverse consecutively.
- (4) Join the other side of the shoulder and the ends of the border rounding the neck. Its total circumference will be 41 cm.
- (5) Fold the border to the inner side. Its width will be 2.5 cm and thickness will be doubled.
- (6) Now reverse the front and back portion of the entire blouse and fin together by stitching along both sides through a needle.
- (7) Arms have to be fixed in the same way one by one.
- (8) Calendar the blouse with low heat. The above measurement and number of loops is appropriate for 4 – ply wools. But if lean wool is used to this purpose, it needs to start from more loops. Again in case of thick wool the number of loops will be reduced.

Buttons can be used on shoulders of woollen blouses if necessary. Instead of joining, the left shoulder border can be knitted. After knitting the border in both sides, the border of the front portion is to be placed upon the border of the backside and then the ends are to be fixed together. Later, the arms are to be fixed.

Variations in woollen blouses

Woollen blouses can also be made by keeping the front portions open. Then the front portion should be woven in two phases.

Take 55 loops in every portion. It means the loops will be $90 \div 2 = 45 + 10 = 55$.

10 loops are needed for piping.

Begin to shape the armpits and then start closing loops for neck after 4 stick measures. Close 1 loop towards the neck in the beginning of every stick measure. Stop closing loops keeping 10 stick measures upward.

Variations can be brought on woollen blouses in different ways. Such as, the armpit could be cut/shaped diagonally rather than in common manner.

In such cases, shaping of the armpit begins just after closing seven loops on each side of the stick towards the armpit. Drop 1 loop in every stick measure. However, weaving 4 loops by one straight loop and one reverse and then the 5th loop in a pair, the loops are closed wonderfully. Such type of weaving is known as raglan. Woollen threads of several colours can be used in weaving woollen blouses. This brings about the impact of lines. Besides, designs of flowers and leaves can be made on such blouses with a carpet needle and wools of different colours.

Making doormats with used cloths

The doormat is an important supplementary item to keep the room clean. It grabs dust from the sole of the shoes when we come back home from outside. It absorbs water from the foot when we get out with wet legs from the bathroom.

If we do not use doormats, dust and water will make the bed cover more dirty as we go to bed without cleaning our dirty legs and the feet. The use of doormats has much significance. A number of housewives purchase doormats from market. A few temporarily use torn clothes as doormats. But if one uses her creativity a little bit, one can prepare doormats. It saves money and at the same time delights her leisure hours. Moreover, attractively made doormats can create provision of carving as well. If we search, we will find usable old clothes in our trunks or suitcases. We can make doormats with these clothes easily. So, the procedure of preparing doormats is discussed below.

Necessary materials

Old bed sheets, a bedcover, pillow covers, fabric of old mattresses, fabric of old cushions, $\frac{1}{2}$ metre jute fabric, a large needle, white and coloured threads.

How to prepare

Doormats could be of various sizes and shapes. The measurement of a doormat to keep along the side the bed should be 30 cm x 46 cm. It will be firm if jute fabric is used inside.

So, first cut the piece of jute fabric, which is 2.5 cm less in all sides from the original measurement. Set $\frac{3}{4}$ fold old, soft pieces of cloths on both sides of the jute fabric and join the pieces of cloths by running stitch.

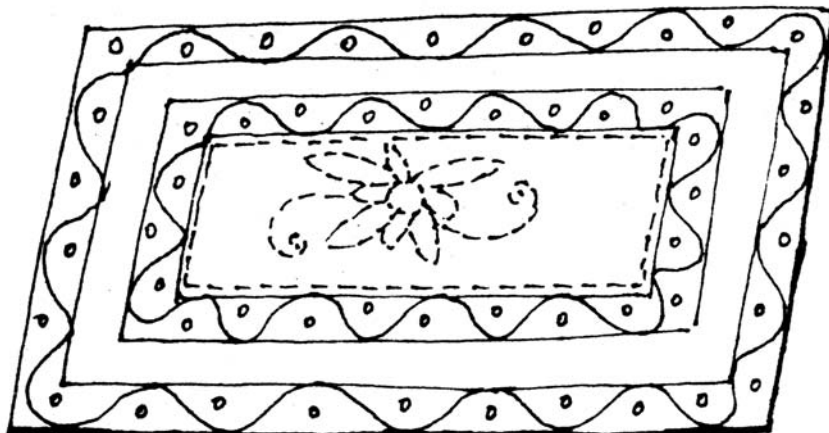
Thereafter, cut a piece of fabric from a bed sheet or pillow cover. It should be cut larger than the original measurement for fold lining in every four sides. Then place on both sides of the previously improved portion of the jute fabric and give stitch in every four side by folding it. Use running stitch in the middle of the cloth to restraint from wrinkling inside.

Then create a border in all the four sides with coloured threads and running stitch to enhance its beauty. Different stitches can be used in the middle for designing. This is the way of making usable doormats with old fabrics.

Making doormat - 2

Doormats can be made in other ways too. If there is an old curtain, a pad can be made with this. Then a doormat could be prepared by covering the pad with a bed cover. The procedure is discussed below:

- a) Cut off the hooked portion of the door screen and make a double fold along its length. Then fold it.
- b) Stitch it either by a machine or by hand keeping $1\frac{1}{2}$ cm free from all the four sides.
- c) Cut two pieces of clothes from an old, printed bed cover according to the size of the doormat. Fix the pieces on both sides of the doormat by stitching.
- (4) Make a lining along the four sides of the doormat by an old, coloured designed lining of a sari. It will look bright and attractive if coloured cloth is used on the doormat. The door mat can be placed near the door of a drawing room. This fabric can be fixed to the doormat by making designs on it previously. This will cover the knots of the threads appearing on the opposite side of the fabric.



Doormat