UNIT-1 NUTRITION THERAPY MANAGEMENT

Structure

1.0 Objective

In this unit, we shall learn about:

- the meaning and necessity for therapeutic nutrition
- the processes involved in providing therapeutic nutrition ,
- how to assess the nutritional status of an individual,
- Understand the importance of team approach in therapeutic nutrition.
- plan and implement therapeutic nutrition based on the assessment and
- Understand the importance of patient care and counseling.

1.1 Introduction

In ancient times, healing of a diseased body was done with a combination of medicines and food i.e., nutrition. However, with changing times food started becoming the cause for many diseases. Today modern medicine understands that food is an important aspect of medical therapy. Therapeutic nutrition or medically known as medical nutrition therapy can be administered anytime from the point of diagnosis to pre surgery, post surgery, recuperation in hospital to post hospital period like at home. We know that good nutrition is essential for the maintenance of optimum health, prevention of disease and recovery from illness. Provision of proper attention to nutrition can remarkably alter the course of illness when it occurs.

In this unit, we shall deal with the importance of therapeutic nutrition. Nutrition is an integral part of medical therapy as adequate nutrition support is essential to prevent an extended and complicated hospital stay. Working closely with the physician, the nutritionist/dietitian determines an individual's nutritional therapy needs and plan of care. We shall also know about the role of a dietitian and about his/ her responsibilities. Patient care and counseling also are very important to help to improve a patient's status and we shall see how a dietitian does this. This unit also focuses on nutritional care process, its components and its effectiveness.

1.2 Need for nutrition therapy management of diseases

Therapeutic nutrition or Nutrition therapy is defined as the assessment of the nutritional status of a client followed by nutrition therapy ranging from diet modification to specialized nutritional support such as the administration of enteral and parenteral nutrition and monitoring to evaluate the patient. It is different from clinical nutrition from the fact that clinical nutrition is the application of dietetics in a hospital or health care institutional setting only. It focuses on an individual, nutrition support and symptom management.

Therapeutic nutrition may also be defined as nutritional diagnostic, therapy and counseling services for the purpose of disease management. It starts with the assessment of nutritional status of patient with a condition, illness or injury that puts them at risk. This includes the review and analysis of medical and diet history, laboratory values and anthropometric measurements. Based on the assessment, a nutrition care plan, most appropriate to manage the condition or treat the illness or injury is formulated. Nutritional therapy also includes intervention and evaluation of achievement of desired clinical outcomes. Appropriate nutrition therapy provided by the dietetics professional has been shown to result in health benefits and reduced health care costs.

Nutrition and Dietetics

The study of nutrition means an understanding of the various components of food and the role and requirement of each of these components for the body. It also involves the study of the processes by which the food is digested and absorbed in the body. This field finds application in various fields like medicine, veterinary, agriculture and public health.

Dietetics is the interpretation and communication of the science of nutrition to enable people to make informed and practical choices about food and lifestyle, in both health and disease. A dietitian is someone who has qualified in this course and has training in both hospital and community settings as a part of their course.

Dietetics can also be defined as the *science* and *art of feeding individuals based on the principles of nutrition.* It can also be said to be the "science and art of human nutritional care." In other words, diet therapy and its application in patient related settings is a major focus of dietetics.

Thus, the field of dietetics can be related to:

- Nutrition care and intervention focused on the individual, and
- Nutrition care and intervention focused on the group.

Traditionally nutritionists have always focused largely on biological aspects of nutrition. Nevertheless, it has been seen that just physiological biochemistry does not solve the problems in human nutrition.Hence, nutritionists are moving towards a comprehensive approach to human nutrition and societies, as well as, professionals from a variety of related fields have begun to increasingly recognize the central role of nutrition in every aspect of human life.

The need of the hour is a holistic or encompassing approach to nutrition which encompasses the biological, socio-cultural, psychological and environmental aspects in human life.

Dietetics as a study and practice optimizes the nutrition of populations and individuals. It therefore requires interdisciplinary approaches since the nutrition and diet counseling is not only a science, it is an art.

Diet plays a very crucial role in the health and well-being of people. A good and balanced diet improves the quality of life. Poor eating habits and inadequate food intake or malnutrition are major causes of many diseases. Nutrition and dietetics are fields related to this aspect of life.

1.3 The nutrition therapy management process

The nutrition therapy management process is *a systematic and logical approach that ensures effective and successful nutrition intervention.* The American Dietetic Association (ADA)defines this care process as ' *a systematic problem-solving method that dietitians use to think and make decisions regarding nutrition related problems and provide safe and quality nutrition care'.*

The purpose is

- to give dietitians a consistent and systematic structure and method by which to think critically and make decisions. It also
- to assist dietitians to scientifically and holistically manage nutrition care, thus helping the patients to meet their health and nutritional goals.

The nutrition care process supports and promotes individualized care and not standardized care and it acknowledges the common dimensions of practice by the following:

- defining a common language that allows nutrition practice *to* be more measurable,
- creating a format that enables the process to generate qualitative and quantitative data that can then be analyzed and interpreted, and
- serving as a structure to validate nutrition care and
- showing how the nutritional care that was provided does what it was intended to do.

Factors that influence the nutritional therapy process :

The nutrition care provided by dietitians or other qualified dietetic professionals should always reflect both the state of the science and art of dietetic practice to meet the individualized needs of each patient or client.

The factors that influence the nutritional therapy process are the strengths and abilities that dietetics professional bring to the process namely dietetic knowledge, skills and competencies, critical thinking, collaboration and communication and evidence-based practice while other factors like environmental factors ,especially practice setting, health care system, social system and economics are also important contributors.

The nutrition therapy process consists of four distinct, but interrelated and connected steps. They are:

1. Nutrition assessment
2. Nutrition diagnosis
3. Nutrition intervention, and
4. Nutrition monitoring and evaluation

Documentation is equally important in the nutrition therapy process and the process cannot be complete without it.

Education

Dietetics knowledge Skills and competencies

Nutritional assessment

- Collect timely and appropriate data.
- Interpret data with evidence based standard documents

Nutritional diagnosis

- Identify and label problem
- Determine contributing factors
- Cluster signs and symptoms defining characteristics
- Document

Nutritional monitoring and evaluation

- Monitor progress
- Measure outcome indicators
- Evaluate outcomes
- Document

Nutritional intervention

- Plan nutrition intervention
- Formulate goals and determine plan of action
- Implement nutritional intervention
- Provide care
- Document
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Collaboration & Communication

Social support

The above figure shows the relationship between the patient/client and the health care professionals. The dietetic professional or dietitian is at the core of the nutrition therapy process. Therefore, nutrition care provided by dietitians or other qualified dietetic professionals should always reflect both the state of the science and the state of the art of dietetic practice to meet the individualized needs of each patient.

1.4 Role and responsibilities of the team

Also known as health care professionals the team consists of the doctor or physician, the nurse and the dietitian. While the doctor and nurse's role are generally important in the hospital settings, the dietitian's role may go beyond i.e., also when the patient is recuperating at home. We shall first learn about the dietitian's role as he/she plays the most vital role in nutritional therapy management of diseases.

1.4.1 Dietitian

The role of the dietitian has come a long way since its inception in the early 1900s. Most people till date do not know the importance of the role of a dietitian. Some think that dietitians, as their name implies, only prescribe diets for individuals to lose weight, which is true but there is a lot more that they do.

The dietitian has a defined role concerning the ethical issues and dilemmas of nutrition care for patients. The dietitian is the vital link between the patient and the medical team in assisting important decision making about nutrition care. The dietitian needs to

continue to play an essential role in evaluation and decision-making in the nutritional support of a patient even after discharge from hospital. No individual is better trained to interpret and coordinate nutrition issues between the patient and the doctor in this unique situation. The development of new feeding technologies, supplements, and interventions and the desires of the patient will see continuous rise in the importance of the role of the dietitian in future.

Today, nearly all medical and nutritional organizations understand and lay emphasis on the role of the dietitian in nutrition care issues and dilemmas.

The American Dietetic Association (ADA) remarked on the role of the dietitian in feeding dilemmas as:

"*The dietitian, like other healthcare professional, has an inherent ethical responsibility to respect the sanctity of life and the dignity and rights of all persons and to provide relief from suffering. It is the dietitian's responsibility to provide a combination of emotional support and technical nutrition advice on how best to meet each patient's nutritional and emotional needs.*"

This statement affirms that dietitians have an active role in the care and support of patients. The dietitian should be:

- informed on the rights and desires of the patient and/or family,
- informed on the severity of illness and complications of treatments, inclusive of the benefits and burdens of feeding in all conceivable routes,
- active in the patient's care as the dietitian reporting on the nutritional status of the patient, as well as, the advisor to the physician and medical team, and
- informed of legal decisions that may help determine the route of care for the patient, such as more aggressive or palliative care.

Some of the situations that concern ethical decisions in nutrition care are as follows:

- difficulty of adequate nutritional support of malnourished patients,
- problem of providing nourishment to competent patients who refuse feeding,
- benefit vs. burden questions, especially in terminally ill patients, and
- incompetent patients who may or may not have families to help determine their wishes for feeding.

A common scenario that occurs in daily practice is providing adequate nutritional support to malnourished patients. The patients who are usually seriously ill may have complicating medical conditions that impede delivery of adequate nourishment. The dietitian plans to provide adequate nutritional support in relation to the medical condition and the desires of the patient.

Work settings for Dietitians:

Dietitians are engaged in a variety of positions and in a number of work settings.

The largest proportion is involved/ engaged in food service and in patient care within hospitals or outpatients. Usually the dietitians services focus on :

- Clinical services
- Public health/community nutrition
- Nutrition information /communication
- Food services
- Wellness/disease prevention and
- Nutrition research.

Many dietitians are beginning to be involved in newer specialty areas such as sports nutrition, cardiovascular fitness, nutrition education of the public, prenatal nutrition, as well as, physical medicine and rehabilitation.

Dietitian's need to possess a wide variety of skills. Beyond the technical knowledge and practical skills, dietitians needs to have communication and education skill (both oral and written), since they may be expected to plan, organize, implement and evaluate nutrition education for individuals, clients and groups.

In all of this the dietitian's involvement is not only in therapeutic nutrition i.e. rehabilitation but also health promotion and health maintenance. High-ranking competencies are needed to apply skills in communicating scientific information at a level appropriate to different audience. A good professional dietitian should also have the ability to select and/or develop nutrition education materials and approaches appropriate for a variety of target groups.

Another upcoming area is home health care where patient counseling, caregiver education, documentation, diet histories and developing a nutrition care plan are important activities.

Thus dietitians are "helping professionals" because they provide beneficial services to individuals and society and are dedicated to improving the nutritional status of the people. Helping professional need a variety of skills:

- Techniques of interviewing
- Techniques of counseling
- Ability to relate to individuals, groups and individuals

- Effectiveness in bringing about change
- Capacity for self-understanding
- Establishment of professional, interdisciplinary relationship and
- Knowledge of personality, group and societal dynamics.

If a dietitian has these skills, he/she can assist others to be able to assess the dimensions of a problem, explore alternative solutions and stimulate action towards resolving problems and bringing a positive change. Along with the role and responsibilities stated above, the dietitian is an important link in the chain of patient care decisions like:

a) Consulting with Physicians

The dietitian is an important link in the chain of nutrition care decisions, often as a consultant or a fact-gatherer for the doctor and the medical team. This assists patients in their care.

b) Assessment of nutritional *status*

The dietitian presents a nutritional assessment of the patient that includes information specific to ideal body weight, history of weight loss, pertinent laboratory values, and anthropometrical measurements. The dietitian also presents the patient's history, which may include presence or history of emesis (vomiting), diarrhoea, fat malabsorption food allergy and/or lactose intolerance etc.

Responsibilities of a dietitian:

Dietitians, as we already know, form an important part of the health care team within a hospital and are responsible for planning and organizing all activities for food service within the hospital. Apart from this, dietitians have direct responsibility for food service operations, where one food safety mistake can affect hundreds, and even thousands of people. The fact that many institutions are serving food to individuals, who may already be in a "high-risk" category for food-borne illness, makes the dietitian's role even more critical.

A few important responsibilities include planning menus, purchasing and ordering food / equipment within budget, recruitment, education and evaluation of staff, observing and practicing all safety and sanitation rules strictly.

Dietitians have a direct contact with the public and other health care professionals.

They with people to inform and guide them about the diet they should take to improve the general health, to avoid certain diseases or to keep the existing ailments in control. People suffering from certain diseases need to take extra care of their eating habits and the kinds of food they eat. Ignorance of this can aggravate the disease, whereas, adherence to the right diet can help in speedy recovery or stability of the condition.

Major role of dietitians is to assist people in planning their meals according to their age, sickness and/or work routine. Dietitians counsel individuals and groups, organize the food service systems in hospitals, schools, hotels etc. Dietitians and nutritionists plan food and nutrition programs and supervise the preparation and serving of meals. They help to prevent and treat illnesses by promoting healthy eating habits and recommending dietary modifications.

There are several areas like administration, clinical dietetics, research and community dietetics where dietitians can specialize in.

1) ***Administrative dietitian*** play a major role in large-scale meal planning and monitoring the food preparation process by applying the principles of nutrition and food management in hospitals, schools, industrial canteens etc. They take up the entire responsibility of their department and actively participate in planning, purchasing, preparation, distribution and service of meals. These dietitians select, train and direct food service supervisors and workers; prepare budget for food, equipment and supplies; enforce sanitary and safety regulations; and prepare records and reports. Nowadays dietitians use customized computer programs to plan meals, which satisfy the nutritional requirements of the patients and are economical at the same time.

   Dietitians who are the directors of dietetic departments also decide on departmental policy, coordinate dietetic services with the activities of other departments, and are responsible for the dietetic department budget.

2) ***Clinical dietitians***, sometimes called therapeutic dietitians, are associated with health care institutes, hospitals and nursing homes. Based on individual nutritional assessment they prepare diet charts and monitor the results of diet therapy. They assess patient's nutritional needs, develop and implement nutrition care plans, evaluate and report the results. Clinical dietitians confer with doctors and other members of the health care team

about patient's nutritional care, instruct patients and their families on the requirements and importance of their diets, and suggest ways to maintain these diets at home. Technological advances in nutritional support for the critically ill have enhanced the clinical dietitian's role. In the hospital, dietitians oversee the preparation of custom-mixed high-nutrition formulas for patients who are critically or terminally ill and require special feeding through oral, enteral or parenteral route. In the home health field, they help develop and oversee sophisticated nutritional therapies for homebound patients who, because of surgery or illness, are unable to eat regular foods. In addition, clinical dietitians in nursing care facilities and small hospitals may sometimes manage the food service department.

3) ***Research dietitians***
   They work in the field of normal or therapeutic nutrition. Research dietitians seek ways to improve the nutrition of both healthy and sick people. They study nutrition science and education and food management. Other research projects may investigate the nutritional needs of aging persons who have chronic diseases, or space travelers. Research dietitians take advanced training in this field and usually are employed in medical centers or educational facilities, or they may work in community health programs.
4) ***Community dietitians***
   Also known as nutritionists they counsel individuals and groups on good nutrition practices to prevent disease, maintain health and rehabilitate people recovering from illness. They engage in teaching and research with a community health focus. This work covers areas such as special diets, meal planning and preparation, food budgeting and purchasing. Dietitians or nutritionists are usually associated with community health programs; they may be responsible for planning, developing, coordinating and administering nutrition programs followed by proper evaluation. They work in places such as public health clinics, home health agencies, and health maintenance organizations. Dietitians working in home health agencies provide instruction on grocery shopping and food preparation to the elderly individuals with special needs and children.
   Dietitians also analyze foods, prepare literature for distribution, or report on issues such as the nutritional content of recipes, dietary fiber, or vitamin supplements.
5) ***Consultant dietitians***
   They work under contract with healthcare clinics or in their own private practice. They perform nutrition screenings for their clients and offer advice on diet-related issues like weight loss or cholesterol reduction. Some work for wellness programs, sports teams, supermarkets and other nutrition-related businesses.
6) Teaching /academic dietitians
   Dietitians process knowledge on all aspects of nutrition and dietetics. They constantly keep themselves updated with the necessary information and knowledge which they transfer to the young interns/trainees under the internship programs. They help translate theoretical concepts into applied aspects of dietetics (preventive and curative aspects of normal/ therapeutic nutrition).

Therefore, it must be evident, that the nature of work or activities undertaken by a dietitian is multifarious.

1.4.2 Doctor

A doctor is a certified, qualified and experienced professional who is trained to diagnose and treat patients. As a general physician or a specialized surgeon, the doctor's role is the most important role when it comes to diagnosis of a disease in a patient. The doctor arrives at a conclusion after general diagnosis supported by several clinical investigations. A health care team revolves around the doctor and all necessary steps are taken only after consultation with the doctor. Hence his role is the most vital when it comes to the recovery and well- being of a patient. The doctor's function is primarily in hospital or healthcare institutional setting only and his help is sought only when necessary when the patient has moved to home.

1.4.3 Nurse

The nurse along with the dietitian holds a unique position on the health care team in relation to the patient's nutritional needs. Their roles are enhancing as their team responsibilities expand. The dietitian determines nutritional care needs in relation to medical diagnosis and care, as well as, individual patient needs. The nurse assists the dietitian with this nutritional care applying it in the general nursing care. These two healthcare professionals are closest to the patient and the family and have the opportunity to determine many of the patient's needs. They are the ones who coordinate services and help the patient understand and participate in personal care. Hence, individualized care must be the focus of therapy. The doctor, nurse and dietitian working together as a team provide the best possible nutritional care.

Many patients have problems that seriously limit their ability to function normally in everyday activities. In such cases, special planning can help them achieve and maintain their optimal level of functioning. The care that aims to prevent further disabilities and to restore function is called as ***rehabilitation.*** The planning that emphasizes rehabilitation is often beneficial to the clients with cardiovascular, respiratory and neurologic disorders. Nutritional rehabilitation focuses on maintaining adequate nutritional status and adjusting daily activities related to eating.

The patient is the focus of the team endeavor and must be included as an active and participating member. The patient himself is the one who probably has the greatest interest in his/her care plan. He can work better with health team members if

- he is informed about his current nutritional status,
- the relationship between his food habits and nutritional status to his health.
- about the care services, which the various health team members will provide for him and
- the resources available.

Sharing the nutritional care plan and goals with family members helps in clarifying their role in assisting the patient. This plan also facilitates the communication between health-team members such as nurses and dietitians who work as colleagues and frequently meet to discuss the patient's nutritional needs.
Often, the communication process involves consultations and referrals among health team members. The consultation is provided to a patient from a dietitian or nutritionist who develops a care plan to assist the client to make more appropriate food choices.

1.5 Dietary counseling

Today in the health care sector lot of emphasis is given to setting high standards of practice to ensure the delivery of quality patient care. The focus has been effectively evaluating patient care programs based on two factors - cost effectiveness and provision of nutritional services. In the study of Dietetics we shall learn about the different models of quality patient care with standards for identifying patients requiring increased nutritional support or education, determining patient care priorities and spelling out the degree of care required keeping in mind health care costs.

It has been seen that counseling is one of the most useful methods for assisting an individual to arrive at a solution of his/her problems. We shall learn about the patient care process and the science and art behind dietetic counseling.

a) Patient Care

The primary basic principle in any nutritional practice to be valid is that it must be person or patient centered. It must be focused on:

- initial and continuing identified needs of the patient and updated constantly with the patient,
- providing essential physical care and support personal needs for maintaining self-esteem on the basis of the identified needs.

The health care team, which provides patient care, comprises of a doctor, dietitian, nurse and other health care professionals.

The patient care process has five distinct yet constantly interacting phases.

These include:

1. Assessment: Information about the patient's nutritional status, food habits, and life style is necessary for making valid initial assessments. Such information can be obtained from a variety of sources, such as the patient himself, patient's hospital chart, family, relatives, friends, hospital staff etc.

2. Analysis: The data collected must be analyzed to determine specific patient needs, on the basis of which a list is formed.

3. Planning Care: The plan for care must always be based on personal needs and goals of the patient, as well as, on the identified medical care requirements,

4. Implementing Care: The patient care plan is put into action according to realistic and appropriate activities. In this case, nutritional care and education will involve decisions and actions.

5. Evaluating and Recording Care: The results are checked carefully to see if identified needs have been met. Then any appropriate revision of the plan can be made as needed for continuing care. These results are recorded in the patient's medical record. A clear documentation of all the activities is essential.

b) Counseling

The term 'counseling' or 'nutrition/ diet counseling' is a broader term than teaching. It is one of the most useful methods for assisting an individual to arrive at a solution of his/her health care problems. It is a personal meeting of two individuals- the counselor, who assists in analyzing and understanding the problem and the counselee, who has a problem and needs assistance in arriving at a solution for this problem. It has been described as:

- an internal process for the counselee,
- a sequence of events, and
- the elements of interpersonal relationship between counselor and counselee.

Nutrition or diet counseling is a primary educational activity of the dietitian. It incorporates

- the idea of working with a patient,
- encouraging him to make changes in his pattern of living so that he sees it as desirable and attainable and
- supporting him throughout the process.

It is a process that assists people in learning about themselves, their environment and methods of handling their roles and relationships. It involves problem solving and identifying goals and changes. The counselor assists individuals with the decision making process, resolving interpersonal concerns and helping them learn new ways of dealing with and adjusting to life situation. Counseling aims to help clients make and sustain desired changes over time. It is based on two principles:

- each person controls his own life and behavior, and
- each individual has a background of personal interactions, socialization and education that he/she uses to make choices about their behavior.

Counseling is explored as a four-stage process.

- The first stage concentrates on the development of a trusting, helping form a relationship between the counselor and the counselee.
- The remaining three stages focus on problem solving.

Dietetic counseling includes in its scope

- behavior modification,
- counseling and cognitions,
- nutrition counseling and
- multi-cultural communications.

The health professional, including the dietitian uses the knowledge and skills to assist patients to identify problems, discover and list possible solutions, consider the consequences of each alternative, choose a solution and incorporate it into their daily activities.

In most instances, it is important to outline a plan to provide patient education or counseling. Some of these areas include:

- reinforcement of sound eating habits,
- positive suggestions to improve poor habits,
- discussion of reasons for diet modifications,
- guidance and practice in planning meals meeting specific diet modifications,
- training in various feeding techniques, and

- explanations of various assessment and treatment techniques.

There are almost 40 different therapy models or approaches but a few are most commonly used. They are:

Reality Theory

Developed in the 1960s by Willianl Glassear ,a psychiatrist, reality therapists view human nature in terms of behavior. They believe that human behavior is motivated by two common basic needs:

(a) The need to love and be loved, and

(b) The need to feel worthwhile.

People are responsible for their behavior and behaving in a responsible manner helps people fulfill their needs. Clients are helped and encouraged to make judgments about their own behavior. Once the chosen behavior is viewed as responsible, clients feelings about their behavior tend to become positive. This approach can help the dietetic practitioner to use a structure approach for assisting a client lo change inappropriate eating behavior.

Behavioral Counseling

This evolved from the early theories of behaviorism. The focus is on examining current behaviors and learning new ones. It is believed that feelings and thoughts may come before the behavior, nor after. For example, a person feels upset, so he/she eats.

Cognitive - Behavioral Approaches

They include psycho-educational and rational-emotive therapy. The goal is to identify problem behavior and irrational beliefs and then to design strategies for immediate action plans.

Psycho-educational therapy specifically involves a process of learning about oneself, gaining self-understanding and self-knowledge. Once the client has progressed in the understanding, he/she will be in a position to regulate his/her behavior in accordance with some standard. This therapy is intended to teach the individual to manage physical and mental impulses.

The rational-emotive therapy is based on the premise that negative self-talk and irrational ideas are a major cause of emotion-related difficulties. The therapy aims to provide the client with an insight to stimulate logic and emotion simultaneously in the direction of the planned change, For example, when working with a patient with high serum cholesterol, the dietitian would help the client :

(a) to understand that the cholesterol levels are very high,

(b) to develop emotions like concern or fear in order to get the patient to make an effort toward change and sustain it, and

(c) to encourage patient to eat foods low in fat and cholesterol.

The Family Nutrition Approach

This involves relatives and family who live in the client's household; in assisting the client to make necessary dietary changes to prevent or to control diet-responsive diseases and to maintain client adherence to nutrition advice over the long-term. Family counseling is used very commonly when working with children and adolescents. Family counseling is appropriate where the client's problems are related to his relationship or function in the family. Working with the family helps to achieve improvement faster and prevent lapses than if the patient is handled alone.

Directive and Non-directive Counseling

Directive Counseling tends to be appropriate when the counselor is aware of the problem and/or is concerned about the behavior of the patient but the latter is unaware about the problem and is avoiding acknowledging it.

Non-directive counseling is more appropriate when the patient or the counselee has insight and says that the counselor's help is needed to solve the problem. This approach is often called 'client-centered'. A basic assumption is that humans are basically rational, socialized and realistic. If a person's needs for a positive regard from others and for positive self-regard are satisfied, the individual can realize the inherent tendency he/she possesses towards realizing their potential for growth and self-actualization. Counseling releases the potentials and capacities of the individual.

One of the assumptions is the relationship between the counselor and the client. The client cannot be helped only by listening to the knowledge the counselor possesses or to the counselor's explanation of the client's behavior or the personality. Prescribing "cures" or corrective behaviors are not considered to be of a lasting value. The helpful relationship is the one that enables the patient (client) to discover within himself/herself the capacity to change and grow. Using this relationship four specific characteristics are desirable: acceptance, congruence, understanding and the ability to communicate these to the clients.

The counselor should accept the clients as individuals, as they are. When a counselor accepts the person unconditionally and non-judgmentally, then the patient begins to trust the counselor. Trust is generally focused on predictability, genuine concern and faithfulness. Good counselors are integrated, consistent with no contradictions between what they say and what they are. The counselor's verbal and non-verbal behaviors should be consistent. Empathy is essential to non-directive therapy. Thus, the counselor needs to be

- a good listener,
- have intuition,
- provide feedback on the data, feelings, and,
- provide motivation and inspiration.

In directive counseling, the counselor initiates the discussion. Clients tend to be more likely to become resistant or defensive. Thus, the counselor should be very sensitive to all verbal and non-verbal behavior, as well as, supportive. Such a relationship (directive counseling) is generally not used between a dietitian and client. In general, directive counseling techniques are used to expose poor employee performance about which employees are unaware or unwilling to expose it themselves.

Counseling Strategies

Different counseling strategies are required to handle different mindsets. Two counseling strategies that are generally used are described below.

Individual Counseling:

Individual counseling is personal counseling. The first step in this is to establish a sense of trust and a therapeutic alliance with the patient so as to ensure a productive counseling session. A counselor can use several techniques to enhance the process of learning. These are:

- Clarify goals at the beginning of the session
- Start instruction in a positive manner
- Approach the patient in a competent, quietly enthusiastic manner
- Keep the session patient-centered
- Focus on the topic to be covered
- Adjust counseling approach as the need arises
- Find out if the client understands what he is being told
- Give honest, sincere praise for successes
- Use teaching techniques that impart on more than one of the client's senses and actively involve him.

Group Counseling:

Group counseling is a technique where a group of people are counseled by employing group interaction method for arriving at a solution to a problem common to the group. All the group members are given an opportunity to discuss their problems together, in a free atmosphere

Group counseling can be provided via formal classroom sessions or small group sessions. An active participation of group members facilitates the process of learning. Specific techniques are used for the purpose of instruction and these could be a lecture either with or without additional teaching aids or a role-play, demonstration and practical sessions.

An important strategy could be to conduct small group meetings for behavioral change encouraging full participation. The group atmosphere provides support and motivation to members to help them achieve their individual goals. Recommended actions often seem more acceptable when group members tell how they were helped by those actions. In addition, learning in groups is sometimes more interesting and 'fun' than in a one to-one setting. However, a person benefits from a group only if he can identify with it. In such cases, individualized nutrition counseling sessions are better.

Now we realize how important it is to motivate the patients and to maintain their interest during counseling sessions and ensure behavior modifications.

Factors that play a major role in contributing towards motivation:

Psychological factors: Depression, anxiety or phobia induced by illness, lifestyle changes or medication effects, may hinder the ability to comply with the desired health behavior changes.

Psychosocial factors: These may prevent patients from expressing concern for their health. They may lack confidence in the health professional or simply be unable to cope with dietary changes at that particular point of time because of the degree of illness or personal problems.

Physical factors: The drugs or illness may induce pain, fatigue or depression which might block desire or ability to follow health care instructions.

Personal factors: There may be a language barrier or a lack of transportation or money for clinic visits.

Counselor-related factors: A personality conflict may exist between the patient and counselor.

COUNSELING CHILDREN AND ELDERLY:

Children:

- Assess the child's stage of development.
- Adjust counseling for a child's dependency needs, lack of experience and the development tasks faced by him.
- Have a cheerful and enthusiastic approach for better adaptation of nutrition and dietary practices.
- Provide them with opportunities to learn by playing games, painting, reading stories, using puppets, handling and tasting food.
- Since they have not developed many ingrained habits, they learn more quickly and so teaching must be made more interesting.

Elderly:

- Emphasize and build on established dietary practices and attitudes.
- Focus on the positive influence of a good diet to motivate them on making changes in the dietary habits. The focus, in most cases must be on good health.
- Encourage their full participation in counseling programs.
- Establish rapport with them to ensure their interaction and discussion on various issues.
- Utilize the benefits of group discussions to bring more reluctant persons into the group and reduce anxiety related to educational programs.
- Concerning an appropriate mode of feeding and the training and educational needs for the patient, staff and family to carry it out.

1.6 Let us sum up

We learnt about the need for therapeutic nutrition and the importance of the science of nutrition and dietetics. We also learnt how dietitians are trained to provide effective nutritional care in therapeutic nutrition alongwith the health care team, i.e, the doctor , the nurse and other healthcare professionals.

The primary goal of diet therapy is to achieve or maintain optimal nutrition status and the nutrition care process is a systematic and logical approach to ensure effective and successful nutrition intervention. The basic steps in the process include:

- assessing nutrition status,
- interpreting assessment data to determine nutrient requirements,
- developing a plan of action for nutritional needs,
- implementing and evaluating the plan and
- documentation of the entire process.

Further, we also learnt about the importance, scope, process , approaches and strategies to dietetic counseling which is as important as the diet itself.

1.7 Glossary

1.8 Check your progress:

1. Define the following terms:
   a) Dietetics
   b) Therapeutic Nutrition
2. Diet and nutrition plays a crucial role in the health and well-being of people. Comment.
3. What are the different areas of specialization for dietitians? Briefly highlight the role of the clinical dietitian.
4. What is a nutritional care process? List the steps involved.
5. Discuss the role *of* nutrition in patient care.
6. What do you understand by the term diet counseling? List a few counseling strategies.
7. Suppose you were to counsel a group of teenage anemic girls. What are the points you would keep in mind while counseling the group?
8. Enumerate the five phases involved in the nutritional care process.

UNIT 2 DIETARY MODIFICATION

Structure

2.0 Objective

In this unit, you will:

- discuss the purpose(s) of therapeutic diet adaptations,
- explain the different ways by which the normal diet can be modified to suit therapeutic needs,
- plan a diet prescription,
- describe the principles of general hospital diets - normal, liquid and soft diets,
- and
- elaborate on the different modes of feeding.

2.1 Introduction

In the earlier unit, we learnt how nutrition is playing a lead role in health care sector today. This need has led to the development of nutrition and dietetics as a subject for study. A student of dietetics also known as dietitian is a professional who is aware of the processes necessary for rendering effective nutritional care. He/she forms a part of the health care team and together they provide holistic care to the patient.

In this unit, we shall learn about therapeutic diets and the ways in which a normal diet can be modified to suit an individual's therapeutic needs. Like discussed, a dietitian is educated and trained to interpret the science of nutrition to prepare such diets and enhance the quality of life of individuals and groups in health and disease. Each diet prescribed for an individual has its own rationale and purpose.

2.2 Therapeutic Diets – Definition and purpose

Therapeutic diets are *adaptations of a normal or regular diet.* In other words, it is a diet for a patient suffering from a specific disease such as heart failure, hypertension, renal failure, diabetes etc.

We know that there are certain diseases, which can be cured by food, or nutrient concentrates, such as deficiency diseases. In diseases such as diabetes, making alterations in the diet can help to control the extent of the disease and prevent the onset of

complications. Similarly, in genetic diseases some simple dietary modifications can keep a check on the progression of the disease and symptoms which otherwise could be fatal. The disease process also influences both the quality and quantity of the diet. The other aspects that may require changes include meal frequency. These changes result because of the following reasons:

- loss of appetite and therefore low intake,
- feel more hungry and therefore an increase in the intake, and
- problems with mastication, swallowing, digestion or absorption of food or specific/ nutrients (due to structural and/or functional changes) leading to changes in types of food that can be tolerated, and,
- Feeding frequency.

Purpose of Therapeutic Dietary Adaptations

A therapeutic diet is a quantitative/ qualitative modified version of a basic nutritious diet, which has been tailored to suit the changing nutritional needs of a patient/ disease condition. The regular or normal diet may be modified for one or more of the following reasons:

- to maintain or restore optimum nutritional status,
- to provide rest or relieve an affected organ (e.g. soft or liquid diet in gastritis),
- to adjust to the body's ability to digest, absorb, metabolize or excrete (e.g. a low fat diet for fat malabsorption),
- to adjust to tolerance of food intake by mouth (e.g. tube feeding for patients with cancer of esophagus),
- to adjust to mechanical difficulties (e.g. soft diet for patients with denture problems), and
- to increase or decrease body weight body composition (e.g. high calorie, low calorie etc.).

The modified diet may reduce symptoms, make the patient more comfortable or improve the quality of life.

2.3 Types of Therapeutic diets

Normal nutrition is the foundation upon which therapeutic modifications are based.
We already know about the purpose of dietary modifications. Normal diet can be modified into the following form in order to suit therapeutic needs of the patient:

- Change in consistency of foods, such as
  - liquid diet, soft diet, low fiber diet, high fiber diet.
- Increase or decrease in energy value of the diet such as
  - low calorie diet for weight reduction, high calorie diet for burns.
- Increase or decrease in specific nutrients or type of food consumed, such as
  - sodium restricted diet, lactose restricted diet, high fiber diet, high potassium diet.
- Elimination of spices and condiments, such as
  - bland diets.
- Omission of specific foods such as
  - allergy diets, gluten free diet.
- Adjustment in the ratio and balance of proteins, fats and carbohydrate such as
  - diabetic diet, ketogenic diet, renal diet and cholesterol-lowering diets.
- Rearrangement of the number and frequency of the meals such as
  - diabetic diet, post gastrectomy diet, diet for peptic ulcer disease.
- Test diets:
  - These are single meals or diets lasting one or few days that are given to patients in connection with certain tests e.g. the fat absorption test used to determine if steatorrhea is present.
- Change in feeding intervals i.e., meal frequency.

2.4 Normal diet and therapeutic diet

Therapeutic modifications are based on normal nutrition/ diets. The primary principle of diet/nutrition therapy is that it is based on the patient's normal nutritional requirements. Any therapeutic diet is only a modification of the normal nutritional needs of an individual to suit what his/her specific health condition requires. Diet is defined as a normal/ healthy person's intake of food and drink.

Dietary modifications or therapeutic diets are detailed diets which consist of choices/ alternatives, clear guidelines- menu guidance and supporting information. Patients are encouraged to understand the key relationship between a food and a diet. The value of a food depends on the amount of nutrient in the food and the frequency with which the food is consumed. Dietary changes necessary are more likely to be followed if they are clearly explained and simple instructions are provided as to why and how the diet has to be changed.

The Recommended Dietary Allowances (RDA) are often used as a basis for evaluating the adequacy of therapeutic diets. Nutrient requirements specific to a particular disease state or a disorder are kept in mind when planning the diet. As a dietitian, one needs to remember that an individual's diet is affected by various factors such as lifestyle, income, knowledge, taste preferences, religious beliefs and various other socio cultural factors. Failure to account for these could result in an impractical therapeutic diet planning and non-adherence to the diet by the patient.

2.5 Dietary prescription and follow up

The diet prescription designates the type, amount and frequency of feeding based on an individual's disease process and disease management goals.

- The disease may require a calorie level or a food restriction to be implemented. It may also limit or increase various components of the diet such as carbohydrate, protein, fat, vitamins, minerals, fiber, phytonutrients or water.
- Another aspect which the dietetic prescription takes into account includes the economic status, food habits (such as vegetarian, ovo-vegetarian, non-vegetarian), food intolerances (such as lactose intolerance, gluten sensitive enteropathy), allergy (such as milk, eggs), occupation of the patient and meal timings.

Economic Status: It is one of the important practical considerations to be kept in mind while formulating a diet prescription. During an acute illness, a few expensive items may be permissible but for more prolonged or chronic illnesses like diabetes or peptic ulcer the recommended foods must be within the means of the patient.

Food Habits: Diets are recommended keeping in mind the food preferences of the patient. If the patient is a vegetarian, then the degree of vegetarianism is assessed. For instance, ovo-vegetarians eat egg but no flesh; egg and fish vegetarians eat just egg and fish but not animal flesh.

Food Intolerances: The dietitian should have knowledge of the patient's intolerances for specific food items like for example, milk may lead to diarrhea in some people while constipation in others. Those with colonic disorders are likely to get flatulence if they have whole pulses. Hence, while prescribing the diet, food intolerances must be clearly indicated.

Allergy: Food allergies manifest themselves as urticaria, abdominal cramps or bleeding, asthma and angioedema. Many are found to be allergic to milk or egg and these foods have to be excluded from the diet of the patient. Gluten enteropathy (celiac disease) may result due to presence of gluten (a protein found in cereals and millets) sensitivity. Similarly young children may suffer from colitis due to milk allergy.

Occupation and Meal Timings: The occupation of the patient and the time at which he/ she consumes food daily is considered while planning a diet. A factory worker who works on different shifts requires more detailed information for a peptic ulcer diet than a manager whose hours of work are fixed.

ASSESSMENT OF NUTRIENT INTAKE:

This is based on the patient's state of health.

- **Energy Allowance**: The patient's requirement for energy varies with the physical activity and physiological condition. For instance, a person confined to bed will consume less food than someone who does more activity that is physical. Another example of a physiological state that leads to an increase in caloric needs is fever. A diet high in calories is indicated for under nourished patients. They are advised to take more energy-dense foods such as starchy foods, sweets, cereals, butter and oils whereas a low-calorie diet is indicated for patients who are obese. The patient is asked to restrict their food intake to three meals a day, not to eat in-between meals and to avoid energy-dense foods.

  Their diet consists of raw and cooked vegetables, fruits, egg, meat, fish, chicken and skimmed milk with a low intake of cereals. An individual's energy requirement can be determined by calculating either:

  - required number of Kcal/kg/day OR
  - percentage increase over basal metabolic demands.

  The basal energy expenditure (BEE) can be calculated from anthropometric data using the following Harris-Benedict formula:

  - For men: BEE = 66 + (13.7 x W) -t *(5* x I-I) - (6.8 x A)
  - For women: BEE = 655 + (9.6 x W) + (1.85 x H) - (4.7 x A) where,

  W = kg body weight, H = height in cm and A = age in years.

  An additional factor is added depending on the activity level of the patient. Another factor may also have to be added if the patient is under physiologic stress.

  - Mild stress - 20% over BEE
  - Acute infections or burns - may require 100% over basal.

Components of a Diet:

- **Carbohydrates:** Carbohydrates provide bulk to the diet and along with fats, form the chief source of calories. The comparatively inexpensive form of carbohydrates in a high calorie diet can include chapatties, bread and biscuits. In a low-calorie diet, these must be used sparingly.
- **Protein:** Once the energy requirements have been estimated, protein requirements are calculated. The aim is to achieve nitrogen balance. There are several factors influencing protein requirements and these include
    - o total energy intake,
    - o the metabolic state of the patient and
    - o protein losses.

  It is important to keep in mind that protein synthesis requires energy. The RDA for protein for a normal adult is 0.8 g to 1.0 g/kg body weight. The minimum amount of protein needed to maintain nitrogen balance in healthy adults is 0.5g/kg. The requirement varies with specific disease states or protein needs related to specific conditions or illnesses. Large amount of proteins may be needed during severe protein wasting, such as extensive drainage from wounds and fistulas whereas protein restriction may be needed in acute renal failure or hepatic insufficiency. Patients who require high protein diets are encouraged to drink 600-800 ml of milk a day by flavoring the milk (by addition of coffee, horlicks, chocolate) or consuming milk as in milk shakes, ice creams, and yoghurt. Another way of including rich proteins can be from different sources like egg, cheese, sausages etc.

  Patients on protein-restricted or low protein diets include the ones with portal systemic encephalopathy, CRF etc. In such cases, the diet is based upon a daily allowance of protein foods with an emphasis on high-class proteins. These can include low protein foods like beetroot, carrots, cabbage, mushrooms, tomatoes, turnips and most fruits.
- **Fats:** Fats are reservoir of calories so in addition to carbohydrates, fats can also be an important source of needed calories. In certain therapeutic conditions, fat is necessary to prevent essential fatty acid deficiency. A high calorie diet should contain fatty foods (such as cream, butter, ghee and oil) while a low calorie diet contains little or no fat.

  Patients requiring low animal fat diets must restrict their total fat consumption to less than 30% of their energy needs and ideally, this must be in the form of polyunsaturated fatty acids (PUFA) and monosaturated fatty acids (MUFA).

  This can be achieved by avoiding foods that are rich in saturated fatty acids (SFA) such as all fried meats and fish, whole milk, fried eggs, cream, cheese, and nuts (peanuts, coconut) chocolates and butter etc. Food products like poultry, white fish, egg whites, cottage cheese, skimmed milk, whole meal cereals, fruits and vegetables, whole meal bread, meringues, plain biscuits and fatless cakes need no restriction.
- **Mineral and Vitamins:** The requirements for vitamins such as ascorbic acid and B-complex vitamins and vital minerals like zinc may need to be increased to promote wound healing. Also in cases of long-term nutrition support, a careful assessment of vitamin and mineral status is essential to prevent the development of deficit or toxicities.

  The following factors determine an appropriate vitamin and mineral intake:
    - o the requirements for healthy individuals,
    - o nature of disease and injury,
    - o body stores of specific nutrients,
    - o normal and abnormal losses through the skin, urine or intestinal tract, and
    - o drug - nutrient interactions. '
- **The vital minerals sodium and potassium:-**

  Sodium (Na) : In sodium-restricted diets, no salt is added to the diet which still provides approximately 50 micromilligram Na. Foods containing high Na content must be avoided and the examples include processed or cured meats, tinned or smoked fish, tinned vegetables and soups, dehydrated and pre-packed meals, salted biscuits, nuts and crisps. Unsalted butter is used and milk is restricted to 250 ml.

  Potassium (K): Potassium restricted diets are important for patients with advance adrenal failure undergoing conservative treatment or hemo-dialysis. The high potassium foods such as wholegrain breakfast cereals, vegetables like beetroot, beans, broccoli, leeks, mushrooms, spinach, tomatoes, dry and split peas, lentils, fruits like prunes, dates, currants, grapefruit, oranges, banana are avoided. Vegetables should not be eaten raw rather they should be blanched before consumption. The patients must also be aware of and warned against using salt substitutes.

  Fluids: Fluid diets are given to patients with more advanced dysphagia or fractured jaws. The diet may include fruit juices, thin strained porridge with milk, egg in milk, strained soups, thin milk pudding, ice cream or yoghurt. In addition, whole protein polymeric liquid feeds can be given. Since such diets lack bulk and can cause colonic dysfunction, these are available with fiber supplements.

A normal healthy adult at rest needs 1800 to 2500 ml/ fluids day (or approximately 1ml /Kcal consumed). If sufficient water is not consumed, it leads to constipation.

Optimal convalescence requires adequate tissue hydration. The water intake must be liberal to ensure passage of light colored urine. Additional fluids must be added to replace water lost by excessive perspiration, vomiting, diarrhea, tube drainage or other conditions marked by increased water loss. If sufficient water is not obtained through fluid intake and food, it must be supplied parenterally, usually along with electrolytes. Fluid restriction is needed in cases when excretion is impaired as in acute nephritis and kidney failure. Fluid requirements per day are calculated as 500 ml per day to replace the loss in perspiration and sweating plus the volume of urine passed during the previous 24 hours.

Types of diets:

1. **High fibre diets:** Patients are advised to eat food items with high fibre cereals like whole grain flour and bread, whole grain breakfast cereals, whole wheat pasta and brown rice, all kinds of fruits and vegetables (with their-edible peels) . Unprocessed bran can also be added to cereals or soups to give more fibre.
2. **Gluten-free diet:** It is a diet recommended for the patients with gluten enteropathy.Gluten is present in wheat, rye, barley and oats. Thus, foods containing these should not be eaten. A number of gluten free products are available on prescription and these include gluten-free flour, bread and biscuits.
3. **Elimination diets:** This type of diet is used in a patient with suspected food intolerance, food allergy or Crohn's disease.
4. **Exclusion diets***:* Specific dietary exclusion becomes a necessity in case of food allergy or food intolerance. The therapeutic use of such diets requires a detailed and thorough discussion between the patient and the dietitian. Each patient is provided with a list of foods that are permissible and avoided. Some examples are:

- *Wheat free diet: F*oods excluded in such a diet are ordinary bread, biscuits, cakes, pastries, pasta and spaghetti and all wheat-containing breakfast cereals.
- *Milk free diet*: All foods containing milk protein must be avoided such as cheese, yoghurt, cream, ice cream and butter.
- *Egg free diet:* In this diet, eggs and all products containing eggs are excluded from the diet such cakes, some biscuits and health bars.

5. **Additive free diets:** Additives include permitted food colours such astartrazine, sunset yellow and preservatives such as benzoic acetylsalicylates etc.
6. **Ketogenic diet:** It is occasionally used to facilitate the control of epilepsy. The patient is initially fasted for 48 hours and thereafter, half the energy requirement is provided as MCT (medium chain triglyceride) oil. Energy intake from ordinary food must be restricted to prevent the suppression of ketones.
7. **Diabetic diets:** these are therapeutic modifications in the quantity/ quality of various macronutrients particularly carbohydrates.

2.6 Preparation of diet and diet chart

A diet chart can be prepared by either using qualitative methods or quantitative methods and sometimes a combination of both methods may be used.

a) Qualitative Methods: In this method the patient is given individual choices, clear guidelines, menu guidance and supporting information such as advice on suitably manufactured products. The patient is encouraged to understand the relationship between a food and a diet. The various qualitative methods include:

- Guidelines issued for healthy eating
- The Food Guide Pyramid
- List of Desirable Food Choices, and
- Elimination diets

b) Quantitative Methods: These are often essential for constructing therapeutic diets. The two ways by which this could be done are as follows:

i) Using an exchange system, which delivers a fixed amount of nutrient per food portion. An example of this is the carbohydrate exchange system used in planning diets for insulin dependent diabetics. The desired level of intake is specified and the diet is constructed from an exchange list.

ii) Quantifying the portion size of foods and the frequency of their consumption.

This diet is constructed from normal sized portions of foods but those foods, which have the highest content of a particular nutrient per portion, are excluded from the diet. We learnt about this aspect earlier also, where we got to know about fat, Na and K restricted diets. Frequency of consumption of the various types of foods should also be considered.
This method is typically used when the diet is a key component of a multifactorial condition e.g. coronary heart disease.

2.7 Routine hospital diets

The most common diets that are prescribed or ordered in hospital situations are enumerated in this section and in Figure 2.1

2.7.1 Normal or general diets

This diet is planned with the Recommended Dietary Allowances (RDAs) of nutrients in mind and is based on the food groups. It is based on cyclic menus and planned according to the region, type of hospital and clientele. Nutritional adequacy depends on the patient's selection of food, as well as, the patient's intake of food. It is the responsibility of the clinical dietitian to monitor food selection and food intake to ensure adequate nutritional intake. The general diet is intended for the hospitalized patient whose medical condition does not warrant a therapeutic modification.
A sample diet plan for your reference is given here in Table 2.1.

2.7.2 Liquid diets

A liquid diet is the one which consists of foods that can be served in liquid or strained form at room temperature. These are usually prescribed after certain kinds of surgery.
The two major types of liquid diets include - Clear liquids and Full liquids.

a) ***Clear Liquid Diet:*** It is composed of foods with low residue content, which help to minimize the load of food needing digestion in the intestines. The clear liquid diet provides foods and fluids that are clear and liquid at room temperature. The type of liquid provided may vary depending upon the clinical condition of the patient,' the diagnostic test or procedure, or specific surgery a patient is undergoing. The purpose of the clear liquid diet is to provide fluids and electrolytes to prevent dehydration. The diet is inadequate in calories and in essential nutrients. The clear liquid diet should not be the sole source of nourishment for more than 1 to 3 days without protein, calorie, vitamin and mineral supplementation. The clear liquid diet leaves minimal residue in the gastrointestinal tract. It also minimizes stimulation of the gastrointestinal tract.

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The diet is used as an initial feeding progression between intravenous feeding and a full liquid or solid diet that follows surgery. It could be used as a dietary preparation for bowel examination or for surgery. It is also useful at times of acute disturbance of gastrointestinal function. It has application in many illnesses characterized by a high fever. Recommended food items include

- clear, fat free soups/broths
- light coffee, tea (without milk or cream)
- strained fruit juices
- tender coconut water, whey water, barley water
- gelatin, fruit ice, popsicle.
- sugar and salt added to liquids
- carbonated beverages as tolerated
- high protein high calorie supplements (to be dissolved in a beverage or water)
- honey.
- ice
- no other food is used.

Small amounts of fluids are offered at frequent intervals (50-100 ml every hour or two). The nutrient composition of the clear liquid diet varies depending upon the types and amount of liquids provided and consumed by the patient. No solid food is used.

Full Liquid Diet: This diet provides foods and fluids that are liquid or semi liquid at room temperature. The type of food provided varies depending upon the clinical condition of the patient. It is used as a step between a clear liquid diet and a regular diet.
The purpose of the diet is to provide an oral source of fluids for individuals who are incapable of chewing, swallowing or digesting solid food. It is used as an intermediate progression to solid foods following surgery, in conjunction with parenteral nutrition or in the presence of chewing or swallowing disorders or certain procedures such as jaw wiring. It is

also used in the case of esophageal or gastrointestinal strictures, during moderate gastrointestinal inflammations and for acutely ill patients. No solid food is used.

Recommended food items include: -

-soups and broths
- cereal porridges (refined cereals)
- milk and milk beverages, yoghurt
- coffee, tea, fruit juices, carbonated beverages
- butter, cream and oil added to foods
- plain puddings, custard, ice-cream, jelly, and
- sugar, honey, salt and mild flavorings.

The nutrient composition of the diet will depend upon the type(s) and amount(s) of liquids the patient can consume. The diet is low in iron, vitamin B12, vitamin A and thiamine. With careful planning the diet can be made adequate for maintenance requirements, except for fibre. Liquid nutritional supplements or pulverized foods could be added to improve nutritional adequacy. The patient is fed in every 2-4 hour intervals. Because this diet generally is inadequate in fiber, constipation may result from prolonged use. If it has to be used for long periods, vitamins, iron or liquid nutritional supplements must be added.

2.7.3 Soft diets

The soft diet provides soft whole food that is lightly seasoned and moderately low in fibre. The foods have a soft texture and are easy to digest. Small volume meals are given until the patient's tolerance to solid food is established.

The soft diet provides a transition between a liquid and a normal diet. It is useful for postoperative cases, for patients with acute infections, gastrointestinal conditions or chewing problems. It is a normal diet that is modified only in texture for ease of mastication especially when a patient cannot chew or use the facial muscles, for a variety of dental, medical or surgical conditions. The contents in the diet may be liquid, chopped, pureed or regular foods with a very soft consistency.

The soft diet is individualized according to the clinical diagnosis, surgery, the patient's appetite, food tolerances, previous nutritional status and chewing and swallowing ability.

The soft diet can be nutritionally adequate provided the patient is able to consume adequate amounts of food. Supplements or in between meal feedings could be used to increase nutrient intake.

Recommended food items include:

- mildly flavored soups like broths and cream soups.
-Beverages
- Moist, tender meat, fish or chicken, cottage cheese, eggs (not fried)
-Fat like butter, cream, oil, salad dressing.
-Milk ,milk beverages, yoghurt
-Cereals - soft cooked refined cereals - rice, pasta, bread, porridges.
-Vegetables - soft, cooked vegetables.
-Fruits - cooked and soft fruits, fruit juices
-Desserts - custard, ice-cream, jelly, cake (sponge), puddings without nuts
-Sweets - sugar, honey, plain candies.

Foods to avoid include:

-fried foods and nuts,
-rich pastries and desserts,
-raw vegetables,
-heavily spiced foods,
-flatulence forming vegetables,
-skin and seeds of vegetables and fruits.
- rich gravies, sauces, pickles, fried foods, rich cakes and nuts.

2.8 Mode of feeding

As a clinical dietitian one has to be able to decide the method of feeding to be adopted.

The method used will depend upon the patient's condition.

Many times the patient may require assistance in feeding. The dietitian understands the limitations of the patient and takes the help of the nurse or patient's relative. The challenge is to be innovative and responsive. It is the dietitian's responsibility to provide a combination of emotional support with the right technical nutrition advice . Hospitalized individuals generally need to be motivated or encouraged to eat. Hence, the food should be hygienically and attractively served and itshould be of the right temperature and

served in portions appropriate for the patient. A correctly planned diet is successful only if it is eaten. There should also be effective communication between the physician, dietitian and nurse.

The different feeding methods include:

2.8.1 Oral feeding

This is the preferred and most palatable method of feeding for meeting the increased nutritional demands of catabolism. It should be used as long as possible and necessary nutrient supplements can be added as and when necessary.

2.8.2 Tube or enteral feeding

Ideally, the patient is fed orally, but in cases where the patient is unable to take solid foods orally and the gastrointestinal tract is functioning then a part or all of intake is usually given by the tube. This is an alternate form of feeding which provides nutritional support and is called enteral feeding. Enteral nutrition can be provided by supplying intact, semi or completely hydrolyzed formulas through nasogastric/ duodenal/ jejunal routes or by the help of gastrostomy or jejunostomy.
The conditions where enteral feeding is used include oral surgery, gastrointestinal surgery, dysphagia, unconsciousness, anorexia or esophageal obstruction. Various commercial formulas are also available for enteral tube feeding. Special formulas can also be calculated and blends prepared but these can get contaminated.

2.8.3 Peripheral vein feeding

Intravenous feeding is a method of providing parenteral nutrition when a patient cannot take in food or formula through the gastrointestinal tract. Various solutions of dextrose, amino acids, vitamins, minerals and lipids can be fed through peripheral veins. But in this method the nutrient and calorie intake is limited. It is used only when the nutritional need is not extensive or long term. Nutrition is provided peripherally as a mixture of 5-10% glucose, a 3.5-5% amino acid solution and 10-20% lipid emulsion.
The total fat intake does not exceed 2.5 g/kg/day. Vitamins, minerals and electrolytes are added as necessary, based on requirements and intake. The osmolarity of the solution is not greater than 600 mOsin/L. This means that large amounts of solution are needed to meet nutritional requirements. It is also used as a supplement to oral feeding in patients who cannotmeet nutritional requirements completely by the oral or enteral route.

2.8.4 Total parenteral nutrition

it is a method of providing, complete nutritional support in which the gastrointestinal
(GI) tract is bypassed by introducing nutrients into a central vein. This is done in cases where a patient's nutritional need is great and assisted feeding is required for a longer time. Here, specifically a central vein (mostly superior vena cava) is used. This is because it is the central vein which can tolerate a hyperosmolar solution and hence nutritional support can be provided in a form that meets all nutritional needs. Total Parenteral Nutrition (TPN) is a special surgical procedure in which special nutrient solutions are administered by a nutrition support team which includes the physician, dietitian, pharmacist and nurse and the patient needs special care and support.

2.9 Let us sum up

In this unit, we learnt that therapeutic nutrition refers to the role of food and nutrition in the treatment of various diseases and disorders. We also learnt about therapeutic diets, and the different types of dietary modification done in a normal diet to meet the therapeutic needs of a patient.
We discussed the purposes for dietary modifications and the various types of therapeutic adaptations possible. These included liquid diets, soft diets and various modes of feeding such as oral feeding, tube feeding, peripheral vein feeding and total parenteral nutrition. Nutritional support is an integral part of medical therapy. As a dietitian accurate perception and sensitivity is essential to translate nutrition knowledge into a language appropriate for the patient's need. Adequate knowledge, skills and proper attitudes are required to achieve or maintain optimal nutrition status.

2.10 Glossary

- **Acute Renal failure** : renal failure associated with burns or other trauma or with acute infection or obstruction of the urinary tract.
- **Angio-edema** : swelling of the mucous membranes, tissues beneath the skin or an internal organ due to an allergic reaction.
- **Crohn's disease** : a chronic, recurrent disease characterized by patchy inflammation of any portion of digestive tract from the mouth to anus.
- **Portal Systemic** : a syndrome associated with advanced liver disease.
- **Encephalopathy**
- **Fistulas** : an abnormal opening between an internal cavity and another cavity or the surface.
- **Haemodialysis** : removal of chemical waste from the blood using blood flow through an artificial kidney.
- **Urticaria** : a skin condition characterized by the development of itchy, raised white lumps surrounded by an area of red inflammation.
- **Osmolarity** : The osmotic concentration of a solution expressed as osmoles of solute per unit of solution.

2.11 Check your progress:

1. What is a therapeutic diet? Discuss the purpose behind modifying a normal of regular diet.
2. List the types of dietary adaptations to meet therapeutic needs.
3. Normal nutrition is a basis for a therapeutic diet. Discuss.
4. A male patient admitted to the hospital whose weight is 70 kg, height 170 cm and age 60 years. Calculate his basal energy expenditure.
5. Enlist any five therapeutic diets. What do you mean by exclusion diets?
6. What are the different dietary adaptations that are made to meet the therapeutic needs?
7. Discuss quantitative method used for constructing therapeutic diets.
8. State whether the following statements are True or False:
    a) A full liquid diet will not meet the normal nutritional requirements of an adult.
    b) TPN is the preferred mode of feeding for a sick individual whose GI tract is functioning.
    c) The normal diet of an individual is the basis for planning his therapeutic diet.
    d) Cream of tomato soup is a good item to include in a clear fluid diet.
    e) In times of physiological stress the energy requirement of an individual is increased.
9. How is a clear liquid diet different from a full liquid diet?
10. What is a mechanical soft diet? List any five foods to be avoided in a soft diet.
11. What are the various modes of feeding a patient? Which one of these is most preferred?

UNIT 3 NUTRITION THERAPY FOR DEFICIENCY DISEASES

UNIT 4 MODIFICATION OF DIETS IN SPECIAL CONDITIONS (fever, infection, surgery, injury, allergy, and sports)

STRUCTURE

4.0 Objective

After studying this unit you will be able to: discuss the various defense mechanisms in the body which protect us from infections,

- explain the relationship between nutrition and infection,
- differentiate between acute and chronic infections,
- identify the symptoms associated with some common acute and chronic infections and their physiological significance
- describe the dietary management of acute and chronic infections.

4.1 Introduction

In this unit, we shall deal with defense mechanisms and the role of nutrition in managing fevers and infections caused due to impairment in the immune system.

4.2 Need for therapeutic nutrition in special conditions

4.3 Fever (Typhoid) and Infection (Tuberculosis)

Infection and fevers can be classified into two broad categories.

a) *Acute infections/ fever:* Acute fevers are of short duration with acute symptoms where the body temperature may rise to above 104°F. Examples of such infections are chickenpox, tonsillitis, influenza, pneumonia, typhoid and malaria.

b) *Chronic infection/fever:* These are generally of longer and sustained duration. The patients have a past history of repeated episodes or continued spells of infection. Such infection may be characterized with a low-grade fever, which continues for several months as in the case of tuberculosis. Examples of chronic fever infections include tuberculosis, HIV infection and AIDS.

Fevers can also be intermittent or cyclic in pattern and they are associated with infections like Malaria.
Infection and fevers are coexistent. Fever is an outcome of the infection and a number of internal (endogenous) and external (exogenous) factors play a role.

1. *Internal (endogenous) factors*: This could be caused within the body. Examples are antigen-antibody reactions, malignant cancer and graft rejections etc.
***2. External (exogenous) factors*:** These are caused by bacteria, fungi, virus etc. that invade the body. The cause is from a source outside the body.

We have discussed the interrelationship between fever, infection and their association with nutrition. Now we shall discuss some common infections such as typhoid, tuberculosis and HIV-AIDS to understand the care of patients with acute or chronic infections and fever.

TYPHOID:
Typhoid, also called as ***enteric fever*** is an infection caused by bacteria (Salmonella typhosn) found in the intestines, which attaches itself to the epithelium of the intestinal wall where it multiplies or finally reaches the blood causing damage and increase in the body temperature. It relates to acute infection of short duration. The mode of spread of this infection is through the fecal-oral route. The source of infection is drinking water, milk and food contaminated by intestinal contents (through feces and urine) of the patients or "carriers" or by flies which transmit the disease. It may affect all age groups but is commonly observed in children. Today the incidence and magnitude of typhoid fever is greatly reduced due to improved sanitation and availability of vaccines and effective drugs.
This fever has a number of adverse effects on the body as it is extremely catabolic in nature. In no time it causes weakness, and tremendous weight loss due to associated nutritional problems.

1. Massive loss of lean body mass or muscle due to tissue breakdown (250-500 g muscle tissue is lost/day) leading to excessive nitrogen losses.
2. Body stores of glycogen are quickly depleted because of increased energy requirements.

3. The gastrointestinal tract is highly inflamed and irritable as the seat of typhoid infection is the Peyer's patches of the intestine. The bacteria attaches to the epithelium of the intestinal wall, penetrates and multiplies in the mesenteric lymph nodes, eventually reaching the blood stream which in turn leads to secondary infection of the intestines.
4. Excessive diarrhea, vomiting and perspiration can cause a lot of fluid and electrolyte losses.
5. Inflammation of GI tract can lead to intestinal ulceration and bleeding.

Clinical symptoms of typhoid are:

- Graded fever which follows an upward pattern.
- Abdominal pain, cramps and diarrhea.
- Anorexia and vomiting.
- Internal hemorrhage and malena (gastrointestinal bleeding and black tarry stools)

Treatment of the typhoid patient includes:

- Bed rest
- Antibiotics and
- Diet Modification

Dietary Management

The golden rule in the dietary management of any fever is "feed the fever". Considering that enteric (typhoid) fever is accompanied by anorexia, vomiting and high temperature, the diet has to be modified as per the patients' tolerance.
The patient needs to be encouraged to eat. Feeding several times a day improves tolerance. The texture foods given would depend on the severity of infection.Bland, low fibre and soft foods are beneficial.

The dietary principles underlying the enteric diet include:

- High calorie
- High protein
- High carbohydrate
- Moderate fat
- High fluid and
- Low fibre and soft diet

Energy: Fever is characterized by elevation of BMR, thus caloric requirements are increased.. The increase in caloric needs is dependent on severity of infection and degree of rise of temperature. During fevers, there is a decrease in appetite and a decreased tolerance due to enteric infection, thus a desired increase in calories is 10-20% above the normal recommended requirements. The actual intake can be adjusted and given as per patients' tolerance.

Protein: The requirement of protein is more in typhoid, as there is a massive tissue loss. Thus, the protein intake is@ 1g/kg/day to 1.5-2g of protein/kg/day above the normal requirement. A high protein diet should be supported with a highcarbohydrate intake to favour efficient protein utilization for anabolic or tissue building purposes. Foods with good quality protein of high biological value should be incorporated in liberal amounts. Use of protein supplements is also recommended to add on to the nutrient density without increasing the bulk of the diet.

Carbohydrates: Carbohydrate intake should be liberal so that there is:

- Repletion of glycogen stores and
- Protein sparing action.

Well cooked, easily digestible carbohydrates like simple starches, glucose, honey, jam should be included as they require digestion and are well assimilated in the body. Glucose can be supplemented in a variety of beverages and light desserts as it is less sweet than sucrose which adds on to the total calorie intake.

Dietary fibre : A typhoid patient has an inflamed intestinal mucosa, which can be easily
perforated and ulcerated leading to internal hemorrhage. Thus foods high in fibre such as certain green leafy vegetables, whole pulses or cereals, thick skinned fruits or vegetables must be avoided. Foods with soluble fibre like apples canbe given.

Fats: Fats should be used in moderation. This is because the typhoid patient has decreased ability to digest and assimilate due to peyer's patches (elongated
thickening of the intestinal epithelium) which result in repeated episodes of diarrhoea.

Fats help in increasing the energy density of the food without increasing the bulk of the diet, but it is important to administer the right type of fat. Use of dairy fats like butter, cream, fats in milk products, egg yolk etc. help in easy digestion as they contain medium chain triglycerides. Excessive use of fat in cooking, eating fried foods should be avoided as they can aggravate nausea, impair digestion and lead to severe diarrhea.

Minerals: Diarrhea leads to loss of electrolytes and water .Thus increasing sodium intake through salty soups, beverages is recommended. Including cooked fruits, low fibre vegetables, washed and dehusked pulses can increase potassium intake. Food preparations in forms like juices, stews, soups and dal water are beneficial.
The other minerals, which are of importance, include iron, zinc and chromium Loss of iron due to blood lost in hemorrhage in the intestines can be compensated through supplements..

Vitamins: Vitamins of importance include B complex, considering the increase in the energy requirement and a decreased ability of the intestine to assimilate and synthesize some of these vitamins due to weakened digestive processes and altered microbial flora. As a result, antibiotics are prescribed. In addition, vitamins A and C are also needed to boost immunity, wound healing and maintenance of the epithelial membrane (gut mucosa). Vitamin supplementation may be given in the early stages of the infection when the patient is anorexic and has low food tolerance.

Fluids: Enough fluid intake (about *2.5* to 3.5 litres) is encouraged to compensate for the fluid losses from the body. Fluid intake can be through a variety of beverages, soups, juices, broths, dal besides plain water. Adequate fluid intake helps in eliminating wastes and maintaining water balance in the body.

Foods to be included are:

- Juices, soups, dal water, broths.
- Refined cereals and their products (e.g. nlaida, rava, bread, rice, noodles, washed dals, pureed vegetables, stewed fruits). These foods contain low insoluble fibre.
- Eggs, cottage cheese, tender steamed or baked chicken, fish. These contain high biological value proteins.
- Fruit juices, gelatin, honey, sugar and milk products. Calorie and protein-rich desserts could be prepared.

Foods to be restricted are:

- Excessive milk and inilk products and dairy fats such as cream and butter.

Foods to be avoided are:

- High fibre foods like whole grain cereals and their products (e.g. whole wheat flour, cracked wheat, whole pulses)
- Raw vegetables and fruits
- Fried fatty foods
- Chemical irritants like spices, pickles, papad, ketchups etc.

CHRONIC FEVER/INFECTION

Chronic fever and infection are always supported with a longstanding history of symptoms or repeated episodes of infection. One of the commonly observed chronic infections is tuberculosis. Let us understand the treatment and management of this chronic infection.

3.7.1 Tuberculosis

Tuberculosis is a chronic infectious disease, which is caused by the bacterium- Mycobacterium tuberculosis. It affects the lungs most commonly but can get localized in other organs also, like lymph nodes, kidney, bone etc. The most commonly observed form of tuberculosis in India is pulmonary tuberculosis (lungs).
Initially, the prevalence of tuberculosis was restricted to lower socioeconomic groups due to poor hygiene, sanitation and poor diets. But research reveals an increasing incidence of tuberculosis in people from higher socioeconomic groups as well. This points to a strong genetic history in most of the cases.
This disease presents itself in an acute and a chronic phase.
In the acute stage, the disease is quite similar to that of acute fever and in the chronic phase to that of chronic fever. The chronic phase is accompanied by low grade fever and therefore increase in metabolic rate is not so marked. The long duration of illness in turn leads to wasting of body tissues.
The symptoms, treatment and dietary management are enumerated next.

Symptoms of pulmonary tuberculosis:

- Wasting of tissues
- Exhaustion

- Cough
- Expectoration, and
- Fever

The acute phase, resembles pneumonia with high fever. The chronic phase presents itself with low grade fever accompanied with exhaustion, cough, expectoration and loss of weight. The progression of the disease may be slow with gradual worsening of the cough. This can lead to erosion of the blood vessel of lungs. The tubercle bacteria may thus subsequently get access to other body organs, thereby, establishing numerous secondary foci of infection.

Treatment:

The disease can be very effectively treated with the help of antibiotic therapy, rest and nourishing food. The key to the treatment is early detection of the disease.

The antibiotic therapy given should be continued for the stipulated period (6 months to 1 year), in spite of waning of the symptoms. A clinically recovered tuberculosis case can still be a carrier and thus a relapse of the disease is likely if the antibiotic therapy is not followed the right way.

Dietary Management of Tuberculosis patient:

Majority of the tuberculosis patients are emancipated and malnourished. Proper dietary management is necessary during and after the infection in order to ensure complete treatment, proper rehabilitation and prevention of relapse.

Nutritional requirement of patients:

- **Energy:** Energy intake is calculated according to the body weight status coupled with the rise in body temperature. Considering that the BMR is not highly elevated in the chronic stage of the disease, the energy intake may be increased by 300-500 kcal/day above the normal recommended intake.

Protein:: Achronic infection is marked by a prolonged duration of fevcr. This leads to wasting of muscles, increased nitrogenous loss and a subsequent decrease in serum albumin levels. Thus, the chronic stage of the disease needs to be supported with a high protein intake. A level of 1.2 to 1.5 *g* proteinkg body weight/day should be given. Emphasis should be on energy and protein dense foods coupled with high biological value of protein rich sources to favour its elfective utilization. If the disease is observed in the low socioecononlic strata, selectio~ol f cheaper oplions of protein dense foods like pulses, soya, nuts in conibination with coarse cereals for mutual supplementation may bc opted for. *Carbolzydrates* : Adequacy of ci~rboliydratew ill also favour the optimal utilization of proteins. To favour 111e process of anabolism a total calories to nitrogen ratio of 150:l should be achieved in a high calorie high protein diet. Carbohydrate being the most preferred substrate of energy by the body has a protein sparing effect.

Fats: Fats add to the calorie density of the diet. Digestibility of fats (medium chain triglycerides and emulsified fats should be preferred) and fat based preparations should be considered.

Vitamins : The vitamins of significance for a tuberculosis patient include:

a) *Vitamin A:* The prcfoimed vitainill A or the retinnl form of vitamin Aiieeds to be emphasized in the diet of TB patient as the metabolis~nof vilamin Ais adversely affected. Carotene appears to be poorly converted to vitamin A. Considering that the retinol form is restricted to milk, milk products, dietary fats and animal foods, vitamin A supplement may be recommended.

b) *Vitamin B complex:* The recluiremcnt of the B-complex vitamin increases with an increase in the energy requirement of the tuberculosis patient. The salient ones out of the R complex group are pyridoxine, folic acid and vitamin B,,.

Neuritis (inflammation of peripheral nerves) can be prevented by treatment with 50 to 100 mglday dose of pyridoxine. Fvlic acid and vitamin B,, is also supplemented.

c) *Vitamin C:* Vitamin C helps in collagen synthesis and helps healing of the tubercle lesions. Rich vitamin C food sources like amla, guava, drumsticks, cabbage, capsicum and citrus juice should be included liberally in a tuberculosis patients' diet.

Minerals: The minerals to be emphasized in tlic diet of a tuberculosis patient include:

1) *Calcium:* Calcium intake needs to be increased since it is essential for healing the tuberculosis lesions. Intake of half a litre to 1 litre of milk is recommended in different forms which call be well tolerated by the patient. Calcium supplementation (500 mglday) with active form of vitamill D may also be prescribed.

2) *Iron:* The need of iron may be a concern in case of blood loss associated wit11 expectoration or haemorrhage. Thc patient's haemoglobin levels should be

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monitored. The diet should be tailored as per the needs. Supplementation with iron is recommended in case blood haemoglobin levels are low.

3) The other minerals of significance are *zinc* and chromium. These minerals help in boosting the immune system. Losses of these are see11 in the patients having tuberculosis.

Other consideratiorzs

i) The diet should have good amount of fluid and electrolytes especially potassium.

ij] Fibre need not be restricted but the food options sl~ouldb e easy to digest and well tolerated.

E) Frequent nutrient-dense feeds are recommended. Force feeding is not desired. iv) Anormal dietary pattern needs to be followed with a wise, balanced and nutritious selection of foods.
Let us conclude the discussion by highlighting the foods to be included or restricted in the diet of a tuberculosis patient.
Foods to be included: **e** Cereals (Ragi, jowar, bajra).
0 Pulses (black cbanna, chawli, moth, rajrnah). ***0*** Nuts and oilseeds. **e** Green leafy vegetables like methi, chaulai, mint, spinach, cabbage, drumstick
leaves, colocasia and cauliflower greens.
e Citrus fruits (guava, amla, capsicum). **e** Milk and milk products. **e** Jaggery, sugar.
Foods to be restricted Excess fat, fried preparations, organ me,ats (liver, kidney, brain), red meat aiid refined sugars.

4.5 Surgery

Now that your successful surgery is complete, you may wonder what you can eat. The progression of intake, from nothing to regular foods again, is straightforward. If you have surgery in a hospital or inpatient setting, your nurse and physician are responsible for advancing your diet. If the surgery is on an outpatient basis, it's good to be prepared with the appropriate post-surgical foods in your home.

Non-chewed Foods

Post-surgery, you'll probably begin with a clear liquid diet and progress to soft foods. Soft foods are generally considered those that can be swallowed without being chewed. Sherbet, puddings, soft eggs and overcooked pastas are considered soft foods. It's recommended that you start with a clear soft food, such as gelatin, and progress to an opaque soft food such as sherbet. Usually, your body will notify you if your appetite is moving too fast. If you become nauseated or bloated with gas, your body may need more time before advancing the diet. One more consideration when choosing a soft food is fat content. According to the National Institutes of Health, although they can be considered soft, foods high in fat content should be avoided because they can cause painful bloating and gas.

Clear Soft Foods

The soft food diet can be broken into many different types, including clear soft, mechanical soft and thickened soft. A clear soft diet contains any items you can see through but do not have to chew. Gelatin and thickened broths are examples of clear soft foods. These items are easily digested and passed, causing no unnecessary post-surgical discomfort. Clear soft foods have another benefit of being low in fat content, so they don't stimulate excess gas production in bowels or trigger nausea. If your doctor has cleared diet progression, the next step will be a mechanical soft diet.

Mechanical Soft Foods

The list of mechanical soft foods is only limited by your imagination. The National Institutes of Health offers meals suggestions and food ideas; however, the only set rule is that foods in this group do not require chewing. Some easy-to-prepare mechanical soft foods include ice creams, sherbets and milkshakes. A blended fruit smoothie is an excellent source of vitamins and can have protein powders added for extra nutritional value. Plain meatless stews and soft-boiled vegetables are also allowable. If these are well tolerated, you can get creative and eat tender pasta, milk toast, even scrambled eggs.

Read more: http://www.livestrong.com/article/69911-list-soft-foods-allowed-following/#ixzz2neBoDrgw

After surgery, your appetite may be slow in returning. It should improve with time. Remember, however, that during your recovery, your body needs enough calories and protein to heal. Thus, eating is important. Some helpful tips to remember as you begin eating again:

If you feel nauseated or have other side effects from your medications, try to relieve your symptoms with clear or cold items like ginger ale and fruit ices and/or dry foods like plain bread or crackers.

- You may feel more comfortable eating smaller frequent meals.
- You may wish to circle extra foods on your menu to save for between snacks such as milkshakes and juices.
- If you feel you just cannot eat enough, discuss this with the dietician. She may recommend a nutritional supplement, but try "real" food first.

What is a surgical transition diet?

A surgical transition diet includes foods that are changed in texture. These foods are easy to eat and digest while providing needed nutrition. They also tend to be foods that will cause less irritation when they are digested. This diet is used for patients who are not ready for foods of normal consistency or with too many spices after trauma, surgery, or other treatments. Surgical soft foods include: cooked fruit and tender vegetables; baked, roasted, and stewed meats; as well as refined breads, cereals, and pastries.

Here is a list of appropriate foods:

- mashed potatoes
- pasta
- bagels
- eggs
- soft meat
- fish
- yogurt
- ice cream
- cottage cheese
- pudding
- cooked soft vegetables
- soups or stews
- blenderized foods such as shakes and smoothies

Here is a list of foods to avoid:

- raw foods with skin, seeds, and pulp such as fresh fruit and vegetables
- fried foods
- spicy foods
- tomato juice and products
- orange juice
- nuts
- crunchy chips

4.6 Injury

4.7 Allergy

You may have read or heard of cases, wherein an individual after consuming specific foods have reported immediate and often dramatic physical reactions such as vomiting, diarrhoea, cramps, wheezing, swelling of the airways, a severe drop in blood pressure etc. On the other hand, you may have also come across individuals, who cannot tolerate particular foods say milk, wheat products etc. For example, people with lactose intolerance cannot digest the sugar lactose, in milk. They develop gas, bloating, and abdominal pain when they consume milk products. These are, in fact, different conditions, which link food to adverse reactions. Food allergies and food intolerance can cause **much** more than annoying gastrointestinal symptoms. And in some cases they cause no obvious symptoms until a chronic disease shows up later in life. Therefore it is important to detect and treat food allergics and food intolerance as early as possible. In this unit we will learn about different types of adverse food reactions – their cause, effects and the dietary management.

Food Allergy (Hypersensitivity)

Afaod allergy or hypersensitivity is an abnormal response to a food by our immune system. Antibodies, we learnt, are immunoglobulin produced by plasma cells in response to an antigen or allergen. Antigen, you may already be aware, is usually a foreign substance (i.e. protein, bacteria, virus, polysaccharide etc.) that stimulates antibody production. Allergens, on the other hand, are substances foreign to the body that on interaction with the immune system causes an allergic reaction. Most frequently occurring symptoms are those linked to the skin, respiratory, cardiovascular and gastrointestinal system. a wide range of symptoms express during an allergic reaction ranging from mild abdominal discomfort to life-threatening anaphylaxis . Systemic ***anaphylaxis*** (severe allergic hypersensitivity) is the most dangerous allergic reaction and can include abdominal pain, nausea, vomiting, cyanosis, a drop in the blood pressure, chest pain, diarrohoea, shock and death.

Symptoms of food allergy

Gastrointestinal	Skin	Respiratory	Systemic	Neurological
Abdominal pain, nausea, vomiting, diarrhoea, gastrointestinal bleeding, colitis, distention, protein losing enteropathy	Itching, flushing, urticaria (hives), angioedema (swelling of the blood vessels) eczema, erythema (skin inflammation), redness	Running nose, cough, airway obstruction, airway tightening, wheezing, laryngeal oedema, asthma, rhinitis	Failure to thrive: anaphylaxis, hypotension, dysrythmias	Headache, irritability, restlessness

FACTORS RESPONSIBLE FOR DEVELOPMENT OF FOOD ALLERGY:

a genuine food allergy occurs when a specific
immune reaction occurs in the body in response to consuming a particular food. In other words, exposure to a food (antigen) or some element in the food (allergen, usually a protein) (refer to Figure **6.3)** is a prerequisite for the development of food allergy. Excessive exposure to a particular food -for example, in Japan where rice is a staple, rice is a common food allergen; in Scandinavia the common allergen is codfish; while in India, it is chickpeas. Eggs, cow's milk, peanuts, wheat, soya and fish cause most of the allergic reactions in children. Peanuts, walnuts or almonds, fish, and shellfish (such as shrimps, crabfish, lobsters, crab) cause most of the allergic reactions in adults.
Besides food allergens, other risk factors include heredity, gastrointestinal permeability, and environmental factors as highlighted in Figure **6.3.** Heredity is thought to play a major role in the development of atopic disease. ***Atopy refers to an individual being prone to develop allergies because of a genetic state of hyper responsiveness to aliergens. In*** most cases, allergies occur when an individual who has a genetic sensitivity to certain allergens is exposed to the substance. Family history of allergies increases our risk of developing allergies, including food allergies.

FOOD INTOLERANCE:

Food intolerance like food allergy is an adverse reaction to food. Food intolerance is different from food allergy in that it does not involve the body's immune systcm. Food intolerance is **a** digestive system response rather than an immune system response. It occurs when a food component irritates a person's digestive system or when a person is irnable to properly digest or breakdown, the food. It is **a** non-allergic hypersensitivity, which can occur for variety of reasons. Many factors may contribute to food intolerance. In some cases, as with lactose intolerance, the person lacks the chemicals, called enzymes, necessary to properly digest certain proteins found in food. Also common are intolerances to some chemical . ingredients added to food to provide colour, enhance taste and protect against the

 growth of bacteria. These ingredients include various dyes and monosodium glutamate (MSG), a flavour enhancer

DIAGNOSIS:

Diagnosis requires an initial screening, perhaps by a physician (a full physical examination) to rulc out other diseases. Diagnostic test in food allergy also includes the biocl~emicalh, nmunological testing {CAP-FEIA,r adioallcrgosorbent test (RAST) etc.) and skin tests.

Following questions'about food reactions may be useful for this diagnosis:
e Whether the individual/patient can pinpoint a particular food **e** The amount of food eaten
0 The time it took from eating to the reaction developing
e Whether the same food has caused a reaction at some other time too
e Whether other foods have caused the same reaction
e How often the reactions occur

Whether reactions are seasonal
- What is the usual food intake pattern?
- Whether a symptom and food intake diary is maintained, if not keep a symptom

and food intake diary and record all events in chronological order.

1. The first diagnostic tool therefore is the clinical history. Information related to description of symptoms, the time of food ingested relative to the onset of symptoms, a description of the most recent reaction, a list of suspected foods, and an estimate of the quantity of food required to cause a reaction will be useful. The food and symptom diary is, therefore, a useful tool if there is a perceived general food reaction with chronic symptoms but no specific suspect food(s).

Food elimination is the second tool in the diagnosis process. the diagnosis of the adverse food reaction based on the responseto a carefully designed elimination diet is also useful apart from clinical history.In the diagnostic food elimination, the elimination diets are prescribed ***for short term and under supervision .*** Elimination diets are therapeutic trials. The elimination diet, as the name suggests, is a diet that eliminates a single or several foods depending on the medical and dietary history. This diet eliminates foods and food additives considered to be common allergens, such as wheat, dairy products, eggs, corn, soy, citrus fruits, nuts, peanuts, tomatoes, food colouring agents and preservatives, coffee, chocolate etc. In immediate type food reaction the culprit is often known and only the offending food is eliminated. If the reactions are delayed, multiple foods may need to be eliminated. The type of elimination diet selected depends on the diet history, symptoms and severity of the reactions. The elimination diet may be ***basic, targeted*** or ***severe elimination diets.***

The diagnostic elimination diet is followed for a set period usually approximately for 4-6 weeks. if no response is seen within this period, a diet of different foods can be tried. If response is seen, the diet should be abandoned and alternate explarlations for syrnpto~nse xplored. If a marked improvement is seen, foods are re-introduced individually or in the case of food intolerance according to food chemical content. Food re-introduction is therefore yet another tool in diagnosis.

Food reintroduction: Challenge involves *eniing* a *test dose **of** suspected food or food chenzical and noting **down** the response and the severity of the response.* The food challenge can be conducted in three ways. a) Open food challenge (OFC), which allows the fuod to be given openly, b) single-blind food challenge (SBPCFC), in which the food is hidden from the patient with at least one placebo; and c) doubleblind, placebo-controlled bod challenge ((DBPCFC), in which the food is hidden 11oiii the patient and presented with at least one to three placebo. The ultimate 'gold standard' for the positive diagnosis is the DBPCFC, where the patient is challenged with the ollending food in a disguised manner after an elimination period. Interestingly neither the patient nor the physician/dietitian knows whether they are consuming or introducing the allergen or not. Once thc adverse food condition is diagnosed, it is easy to treat and manage the problem.

TREATMENT AND MANAGEMENT OF ADVERSE FOOD REACTIONS:

Management of adverse food reactions involves diagnosing the problem followed by nutritional and medical care.

The four general principles of allergy management include:

1. Avoid factors that cause symptoms.
2. Use appropriate rncdications.
3. Evaluate for immunotherapy.
4. Educate and follow-up.

The primary treatment for managing food allergies is eliminating the offending food or foods.

non-pharmacological treatment of food allergy requires complete . elimination and strict avoidance of the allergen from the diet. A diet should be planned carefully so that the nutrient and calorie needs are met. If a major food group such as dairy products causes an allergy, a supplement or non-dairy food/fomula may be added to the diet. In food intolerance, however, the aim should be to eat a diet with a tolerable dose of food chemicals including a wide variety of foods, Once all food challenges have been completed, a maintenance diet should be planned.

A maintenance diet is based on avoidance of offending foods and substitution aiming at a nutritionally balanced diet. To help identify and avoid offending foods, allergyspecific list that describes foods to avoid may be useful. , certain nutritional supplements LIKE PROBIOTICS, vitamin C and flavonoids may serve useful in management of adverse food reactions and maintenance of a good nutritional status during the course of treatment.

PREVENTION OF ADVERSE FOOD REACTIONS

Considering the increasing incidence, cost and morbidity associated with allergic reactions, it is perhaps useful to design preventive strategies geared towards minimizing the allergic responses. In fact, preventioil strategies for allergic diseases are the key to minimizing the allergic response three steps involved in the allergic reaction process i,e. first sensitization, followed by expression of the disease and syn~ptomsin the second and third step. Based on these three stages of allergic sensitization/elicitation of disease, the preventive strategies too call be classified under three stages, namely:

- ***Primary Prevention:*** Focuses on blocking *sensitization and development* of *IgE-mediated response*. These strategies would be useful for those individuals who have an atopic disposition but no sensitization.
- *Secondary Prevention:* Attempts to inhibit *expression of the disease despite*

sensitization. These are used for the patients who have been sensitized but do not express the disease or only expresses one type of disease (e.g., atopic ' dermatitis) but not other disorders (e.g., asthma)

0 *Tertiary Preventio~z:*T argets the *control of factors that* cause *symptoms.* This strategy would be appropriate for patients who have expressed the disease and needs to limit symptoms. Patient education, therefore, is critical and should include:

e Allergen identification (e.g., how to read food labels),

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e Synlptom recognition, (D Cautions regarding the possibility of a life-threatening reaction,

r What to do in case of accidental ingestion,

s Development of a treatment plan, and.

s Consult a doctor immediately.

Tailoring the educatioi~aal pproach to the need of the patient is crucial. Using simple language and clear-easy-to-follow instructions/steps and providing written and verbal information will be useful.

4.8 Sports

4.9 Let us sum up

4.10 Glossary

4.11 Check your progress

1. Why is typhoid called an enteric fever'?

2. 'Discuss the adverse effects of typhoid fever on the body.

1. Why is tuberculosis called a wasting disease?

2. Why is it important to complete the treatment of tuberculosis?

UNIT 5 MODIFICATION OF DIETS IN LIFESTYLE DISEASES AND DISORDERS