



**MINISTRY OF HEALTH AND
SOCIAL SERVICES**



**NUTRITION GUIDELINES FOR PREVENTION AND
MANAGEMENT OF
NON-COMMUNICABLE DIET RELATED DISEASES**



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January 2013.



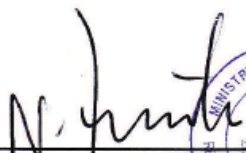
The prevalence of diet- related noncommunicable diseases (NCDs) in Namibia is an emerging problem which requires immediate attention because it is the main cause of disability and mortality among adults. The Ministry of Health and Social Services saw the need to provide guidelines on prevention and management of the NCDs which will be used by all health workers in the health facilities, workplaces, schools, private sectors, Non Governmental Organisation as well as individuals in the community.


Factors that increase the risks of noncommunicable disease include elevated consumption of energy-dense, nutrient-poor foods that are high in fat, sugar and salt; reduced levels of physical activity at home, at school, at work and for recreation and transport; and use of alcohol and tobacco.

The Ministry has a central role, in cooperation with other stakeholders, to create an environment that empowers and encourages behaviour change by individuals, families and communities, to make positive, life-enhancing decisions on healthy diets and patterns of physical activity.

The main purpose of the guidelines is to provide information on actions that are essential in preventing and managing NCDs for individuals who do not have and those already having the disease or disorder respectively. It is therefore imperative that the guidelines were produced and it is the Ministry's hope that they will assist in preventing and managing the situation at all levels.

The Ministry would like to acknowledge the contributions of the PHC Directorate, Regional Management Teams, UNICEF, World Health Organisation, University of Namibia, FANTA-3, CDC and I-TECH.


ANDREW NDISHISHI
PERMANENT SECRETARY



LIST OF ABBREVIATIONS

BMI	Body Mass Index
HIS	Health Information System
IDDM	Insulin dependent diabetes Mellitus
NCDRD	Non Communicable Diet Related Diseases
NCDCs	Non-Communicable Diseases/ Conditions
NDHS	Namibia Demographic and Health Survey
NIDDM	Non-insulin dependent diabetes Mellitus
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)
WHO	World Health Organisation
CVD	Cardiovascular disease
HDL	High Density Lipoprotein
LDL	Lower Density Lipoprotein

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GLOSSARY

Calorie: A unit of measure of the amount of energy supplied by food. It is also known as the “kilocalorie, or the “large calorie”.

Energy: The substance in food that is available to the body from metabolism of carbohydrates, protein, fat and alcohol after digestion and absorption. Energy from food provides the ‘fuel’ for growth, movement, metabolism and physical activity. Energy is measured in kilojoules (kJ) or kilocalories (kcal). One kilocalorie is equivalent to approximately 4.186 kJ.

Fat: The most concentrated form of energy found in foods such as butter, oil, meats, full cream milk and milk products. Fat is a carrier for fat-soluble vitamins (A, D, E, and K) and is the source of essential fatty acids for skin, organ, and brain development.

Macronutrients: The classification of nutrients that make up carbohydrates, proteins, and fats and form the main part of the food. Macronutrients provide energy and give the body the ability to move and work. They are also used to build tissues and cells and to fight infection.

Malabsorption: Occurs when ingested food cannot be broken down into its simplest form and cannot cross the intestinal or bowel walls to enter the blood stream.

Malnutrition: An impairment of health resulting from a deficiency, excess or imbalance of nutrients. It includes under-nutrition, which refers to a deficiency of energy (kJ) and/or one or more essential nutrients. It also refers to over-nutrition, which is excess of one or more nutrients and usually of energy.

Micronutrients: The micronutrients are minerals and vitamins and they are essential for life. Micronutrients are needed to keep up various body functions and they make chemical processes happen, such as energy production and use, immune system function including healing, digestion and secretion of fluids. Examples include vitamin A, E, C, K, and calcium.

Minerals: Inorganic chemical elements in the diet and body. Examples include calcium, potassium, selenium and iron and zinc.

Nutrients: Chemical substances found in food that nourish the body and must be supplied in suitable amounts. These include water, proteins, fats, carbohydrates, minerals and vitamins.

Nutrition Assessment: In-depth review and analysis of a person’s medical and diet history, laboratory values, and anthropometric measurements to verify nutritional risk or malnutrition and identify underlying causes so that appropriate nutrition intervention, tailored to individual needs, can be planned and initiated.

Nutritional Status: The condition of health of the individual as influenced by the utilization of the nutrients. It can be determined only by the correlation of information obtained through a medical evaluation and nutrition assessment including a thorough

physical examination, appropriate laboratory investigations, a dietary history and anthropometric measurements.

Saturated fat: A fat containing mainly saturated fatty acids and is usually hard at room temperatures. Animal foods contain mostly saturated fats (e.g. butter and beef meat, chicken skin and full cream milk and dairy products).

Unsaturated fat: A fat or oil containing mainly unsaturated fatty acids and is liquid at cool temperatures. Unprocessed plant foods contain mainly unsaturated fats (e.g. maize, olive and sunflower oils).

Trans fatty acids / Trans fats: Are fats that have been “hardened”; a process that alters some unsaturated fatty acids so they are harder and store better, but become unhealthy fats.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND RATIONALE

Non-communicable diseases and conditions are illnesses caused by something other than pathogens such as heredity, improper diet, alcohol and drug abuse, smoking and inadequate physical activity. Non Communicable diseases and conditions (NCDCs) that are associated with diet and other eating habits are sometimes called Non Communicable Dietary Related Diseases (NCDRD). Examples of such diseases include **hypertension, diabetes, cardiovascular diseases (CVDs), cancer, atherosclerosis, allergy, gout, arthritis**. These diseases were called diseases of affluence and urban dwellers because they were common among the affluent communities. It is however, currently apparent that the prevalence of NCDRD is also common among low resource communities. Longitudinal studies have revealed that children who were malnourished in the 0-5 age group developed NCDRD in the later life.

The World Health Organization (WHO) (2004) reported that unhealthy diets and physical inactivity are two of the main risk factors for raised blood pressure and glucose, abnormal blood lipids, obesity and overweight. In addition they are also risk factors for the major chronic diseases such as cancer, diabetes mellitus and CVDs. Chronic diseases have been listed as the leading cause of mortality in the world, representing 60% of all deaths. WHO further reports that 75% of all children affected by obesity live in low and middle income countries.

In 2004, WHO developed a Global Strategy on diet, physical activity and health to guide member states in developing national policies, plans and programmes to promote lifestyles that include a healthy diet and physical activity. Healthy diets and physical activity, together with tobacco control, constitute an effective strategy to contain the mounting threat of non-communicable diseases.

Reports from international and national experts and reviews of the current scientific evidence recommend goals for nutrient intake and physical activity in order to prevent major NCDCs.

These recommendations need to be considered when preparing national policies and dietary guidelines, taking into account the local situation.

For diet, recommendations for populations and individuals should include the following:

- achieve energy balance and a healthy weight
- limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated and hydrogenated fats and towards the elimination of trans-fatty acids
- increase consumption of fruits and vegetables, and legumes, whole grains and nuts
- limit the intake of sugars
- Limit salt consumption from all sources and ensure that salt consumed is iodized.

Physical activity is a key determinant of energy expenditure, and thus is fundamental to energy balance and weight control. Physical activity reduces risk for cardiovascular diseases and diabetes and has substantial benefits for many conditions, not only those associated with obesity. For example, physical activity reduces blood pressure, improves the level of high density lipoprotein cholesterol, improves control of blood glucose in overweight people, even without significant weight loss, and reduces the risk for colon cancer and breast cancer among women (World Health Assembly: 2004).

For physical activity, it is recommended that individuals engage in adequate levels throughout their lives. Different types and amounts of physical activity are required for different health outcomes: at least 30 minutes of regular, moderate intensity physical activity for 5 days per week in order to reduce the risk of cardiovascular diseases and diabetes mellitus, colon cancer and breast cancer. Muscle strengthening and balance training can reduce falls and increase functional status among older adults. More activity may be required for weight control.

Namibia as a developing country has not been spared from the prevalence of NCDRD. Although population-based data are lacking, there is concern that NCDs are emerging as important causes of morbidity and mortality in the country.

From Health Information System (HIS) 2005 reports, heart failure, hypertension, and stroke collectively were responsible for 5% of all health facility deaths in 2005. The proportion of these NCDs deaths grew to 6% in 2006 and 8% in 2007. Mental, neurological, substance abuse and psychosocial related disorders are considered a problem, although reliable data are not available. Cancers are also on the increase, constituting 0.6% of hospital deaths between 2005 and 2007 (HIS: 2007). Namibia participated in the 2003 World Health Survey, conducted STEP 2 Survey in 2005, and Namibia Global School-Based Student Health Survey in 2004. The findings from these studies indicate that:

- 41% of study population were physically inactive,
- 31% lead sedentary life,
- 41% of school students did not do any physical exercise.
- Among school children aged 16-18 years, the prevalence of alcohol consumption ranged between 31% and 41%.

The Namibia Demographic Health Survey (NDHS) 2006 shows that tobacco use among men in the 15-19 years age group was 9.1%, with 25% of the group smoking more than 6 cigarettes a day. About 21% of men in the age group 15 – 45 years smoke, with about 45% classified as heavy smokers, taking more than six cigarettes a day. Comparatively, only 2.5% of women in the 15-19 years age group smoke, and 5% of all women use tobacco.

Using the guidelines developed by the World Health Organization (WHO) for standardizing BMI and for classifying the population, it was found out that 11% of individuals are classified as overweight and 7% as obese. People who fall into these categories are more at risk of developing high blood pressure, high blood cholesterol or other lipid disorders, Non-insulin dependent diabetes, heart disease, stroke, and certain types of cancer. A total of 20% of women are classified as either overweight or obese compared to 14% among men. This shows that overweight and obesity is greater among women (Central Bureau of Statistics: 2009).

The above mentioned statistics shows that Namibia is at risk and actions need to be taken to reduce the risk factors for non communicable diseases that stem from unhealthy diets and physical inactivity by means of essential public health action and health-promoting and

disease-preventive measures. The increasing burden of these NCDCs compound the burden on the health system that is already overstretched, with the high prevalence of communicable diseases in the country.

The main purpose of these Nutrition guidelines for prevention and management of NCDs is to: Provide information on actions that are essential in preventing and managing NCDs for individuals who do not have and those already having the disease or disorder respectively. It is therefore imperative that these guidelines were produced and it is the Ministry of Health and Social Services's hope that they will assist in preventing and managing the situation at all levels.

The guidelines may be used by:

- Individuals
- Learning institutions
- Health facilities
- Workplaces

CHAPTER 2

PREVENTION AND MANAGEMENT OF EACH NCDRD

2.1 OVER WEIGHT AND OBESITY

The body requires different nutrients for its normal functions, survival, growth, development and activity. The nutrients are required in specific amounts and proportions. The body's nutrient requirements are expressed on a daily basis and adequate nutrition is achieved when there is a balance between the amount of nutrients taken by the body and the body requirements or expenditure. When there is such a balance, a person is likely to have normal weight for height expressed as Body Mass Index (BMI) ranging between 18.5 and 24.9. When an individual takes more calories than what the body needs it creates an imbalance which results in overnutrition.

The implication is that the body is taking more energy than it is able to spend during physical activity, work and body functions leading to excessive weight gain. In such circumstances a person is likely to become overweight. An individual is overweight when his or her weight is more than 10% of the standard weight BMI 18.5 to 24.9. An overweight person will have BMI ranging between 25.0 and 29.9.

Overweight can be measured by relating one's weight to height from which the Body Mass Index (BMI) is calculated. Take weight in kilogrammes using a scale such as bathroom scale, uni-scale and adult balancing scale; and height in metres using height board.

Obesity is a condition that develops due to prolonged imbalance between energy intake and energy expenditure. A person is said to be obese when the BMI is equal to or greater than thirty (≥ 30). Just like with overweight, obesity occurs when the dietary intake of energy and other nutrients is higher than what the body uses for physical activity, work and body processes leading to an increased amount of stored energy mainly in form of fat. A person becomes obese as a result of the excessive accumulation of body fat.

A person consuming diets high in fat is more likely to become obese.. Just like overweight, the risk of becoming obese is increased by a number of factors such as genetics, food choices and preparation, lack of physical activity and high consumption of energy dense foods. Obesity occurs at all ages affecting the health of infants, adolescents, adults and the elderly.

Calculate BMI using the following formula:

$$\text{BMI} = \frac{\text{Weight in kg}}{\text{Height in m}^2}$$

$$\text{E.g. BMI} = \frac{66\text{kg}}{1.68 \times 1.68}$$

$$\frac{66}{2.82}$$

$$= 23.4 \text{ kg/m}^2$$

Table 2.1: Use the table below to interpret the BMI

BMI	Interpretation
<18.5	Underweight
18.5 to 24.9	Normal
25 to 29.9	Overweight
30 and above	Obese

BMI classification

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m²). For example, an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9.

$$\text{BMI} = 70 \text{ kg} / (1.75 \text{ m}^2) = 70 / 3.06 = 22.9$$

Table 2.2: The International Classification of adult underweight, overweight and obesity according to BMI

Classification	BMI(kg/m²)	
	Principal cut-off points	
Underweight	<18.50	
Severe thinness	<16.00	
Moderate thinness	16.00 - 16.99	
Mild thinness	17.00 - 18.49	
Normal range	18.50 - 24.99	
Overweight	≥25.00	
Pre-obese	25.00 - 29.99	
Obese	≥30.00	
Obese class I	30.00 - 34.99	
Obese class II	35.00 - 39.99	
Obese class III	≥40.00	

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

Waist to hip Ratio

Waist to hip ratio is a simple measure of where fat is stored in your body. Most people store their body fat in two places: around their waist and around their hips. Research shows that storing extra weight around your waist (apple shaped) puts a person at a higher health risk than someone carrying extra weight around their hips and thighs (pear shaped).

The purpose of this test is to determine the ratio of waist circumference to the hip circumference, as this has been shown to be related to the risk of coronary heart disease.

To determine if you have a healthy waist to hip ratio, use a measuring tape to measure the circumference of your hips at the widest part of your buttocks. Then measure your waist at the smaller circumference of your natural waist, usually just above the belly button.

To determine the ratio, divide your waist measurement by your hip measurement.

E.G. Waist to Hip ratio (WHR):

$$\begin{aligned} & \frac{\text{Waist in cm}}{\text{Hip in cm}} \\ = & \frac{75\text{cm (Waist)}}{100\text{cm (Hip)}} \\ = & 0.75 \text{ (Waist/Hip ratio) this is a healthy waist hip ratio.} \end{aligned}$$

Women with waist-to-hip ratios of **more than 0.8** are at increased health risk because of their fat distribution.

Men with waist-to-hip ratios of **more than 1.0** are at increased health risk because of their fat distribution.

A person may be classified as being obese or overweight due to the growth of muscles. The situation may apply to those who are very active such as weight lifters and boxers. A person with oedema (excess water causing swelling in the body) may have increased weight due to the accumulation of water in the body tissues. Such a person may erroneously be classified as obese. Further clinical assessment may be required in such cases.

When a person is obese s/he is more likely to develop many disorders and other types of diet related non communicable diseases and conditions such as:

- i) High Blood Pressure;
- ii) High cholesterol;
- iii) Non-insulin dependent diabetes
- iv) Coronary heart disease;
- v) Stroke;
- vi) Gallstones and other digestive disorders;
- vii) Arthritis of the knees and hip joints;
- viii) Some cancers;
- ix) Respiratory problems;
- x) Backache;
- xi) Ulcers; and

xii) Gout.

These disorders may result in premature deaths or disability. **Overweight children may become overweight adults.**

A number of factors may increase the risk of becoming overweight or obesity. Such factors include:

i) Genetic make up

Naturally some people are more likely to gain weight than others on comparable energy intake. The genetic make-up may also influence the way the body utilises energy in different processes.

ii) Food choices

A person is likely to become overweight when he or she eats too much starchy foods such as mahangu porridge, cassava, rice and potatoes; foods with too much fat (especially saturated fats) such as margarine, butter, cheese, fatty milk; and junk foods like chips, fizzy drinks, sweets. Too much intake of refined carbohydrates such as sugar, sweets, honey, jam, white bread, instant pasta (e.g. 2- minute noodles), cake, tart, pastries, puddings and rich pudding sauces may increase your chance to be overweight.

iii) Cooking methods

Methods of cooking that require a lot of fats like deep frying; stewing of fatty meat or stewing by adding excess oil (using a lot of fat) may also increase the risk of becoming overweight.

iv) Lack of physical activity

Physical activities such as walking, jogging, running, cycling and manual work make the body use more energy. When a person is not physically active and is taking more foods that are rich in energy, he or she is more likely to become overweight.

v) Malnutrition in early stage of life

If a person was malnourished in early childhood, he or she is more likely to become overweight. Children who are stunted (too short for their age) have a much greater risk of becoming overweight and developing chronic disease as adults.

2.1.1 Recommended practices for preventing overweight and obesity

When a person is overweight or obese s/he is more likely to develop different types of dietary related non communicable diseases and other conditions such as: obesity; high blood pressure; high cholesterol; non-insulin dependent diabetes; coronary heart disease; stroke; gallstones and other digestive disorders; arthritis of the knees and hip joints; some cancers; respiratory problems; backache problems; ulcers and gout.

The following practices are therefore recommended to prevent overweight and obesity:

- Eat a variety of vegetables and fruits, preferably fresh and locally available indigenous varieties (at least two serves of fruit – and five serves of vegetables each day). These contain lots of fibre which reduces food energy intake, provides satiety and delayed hunger.
- Eat snacks that are low in energy such as fruits, vegetables, legumes and whole grain foods.
- Take regular and vigorous exercises at least 30- 45 minutes per day for 5 days per week: such as working in the field, pounding mahangu or maize, fast walking, digging, fishing, football, netball, swimming, , volleyball and tennis.
- Reduce the intake of fatty foods.
- Avoid refined foods such as fizzy drinks, chips, crisps, sugar, sweets, cakes, honey, jam, white bread, instant pasta (e.g. 2- minute noodles), tart, pastries, puddings and rich pudding sauces.
- Drink alcohol in moderation (women not more than 1 unit while men not more than 2 units)¹
- Avoid missing breakfast to grant the body enough energy for start of the day and to reduce temptations for junk food
- Drink at least 8 glasses of clean water per day and more in very hot weather.

2.1.2 Nutrition management of overweight and obesity

If a person is already overweight, the guidelines below will help to reduce weight and associated risks if they are all followed.

- Reduce the amount of food taken per meal to minimise energy intake; for example reduce the usual amount at each meal by 1/3
- Reduce fat intake, which has the most energy per gram and replace most saturated fats with unsaturated vegetable oils or soft margarines.
- Increase the intake of fruits and vegetables to reduce calorie intake
- Increase physical activity
- Avoid excessive consumption of alcohol (women not more than 1 unit while men not more than 2 units)¹
- Eat at regular times;
- Eat slowly because this helps the feeling of satiety.
- Do not eat while driving, watching TV, reading or performing any other activity, etc.
- Replace fatty meat and meat products with beans, legumes, lentils, fish, poultry or lean meat.

2.1.3 General guidelines on food groups

Overweight and obese people should follow the guidelines below in order to reduce excess weight and associated disorders and conditions.

¹ One UNIT of Alcohol contains about 10 g of Alcohol and is roughly equivalent to: 1 bottle (340 ml) of ordinary strength beer (4 – 5 % alcohol) or 1 glass (100 ml) of wine or 1 SMALL glass of hot stuff e.g. vodka (25 mg of vodka).

- Eat a variety of low energy foods from the four food groups every day.
- Eat unrefined foods such as whole grain bread, brown bread, traditional/homemade bread instead of white bread
- Eat legumes such as beans, cow peas, ground beans.
- Reduce the intake of oil rich nuts such as ground nuts, soy beans, and cashew nuts.
- Eat low fat animal foods such as lean meat without fat, white meat such as chicken, low fat or skimmed milk, lean fish.
- Reduce the intake of fatty foods including fat rich animal foods such as cheese, fatty beef, fatty pork, full cream milk.
- Eat plenty of vegetables and fruits at each meal (At least 5 a day minimum ie. 3 vegetables and 2 fruits).
- Eat small regular meals to avoid feeling very hungry and eating too much food.
- Cook meals using methods that do not use fats such as roasting, grilling, boiling and steaming.

The Four Food Groups are:

1. Cereals
2. Fruits and vegetables
3. Meat, fish, eggs and milk/milk products
4. Beans, lentils, nuts and peas

1. The **Cereals** group contains foods that are rich in carbohydrates such as maize, mahangu, wheat, sorghum, bread, rice, pasta (macaroni, noodles), or breakfast cereals.

2. The **fruits and vegetables** group is an excellent source of foods rich in vitamins and minerals. Foods in this group also contain carbohydrates in the form of fibre, which help with digestion. Each meal should have either fruits or vegetables.

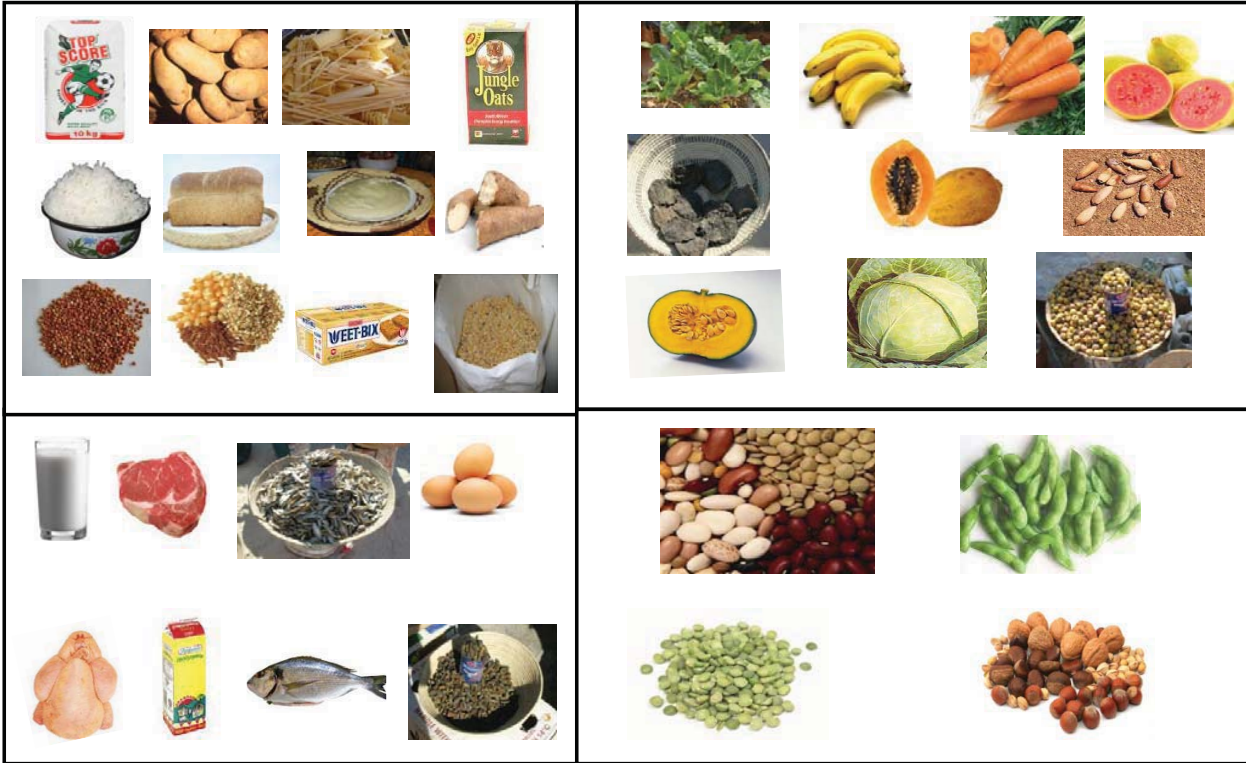
3. The **meat, fish and milk** group contains foods rich in protein. Animal products contain the highest amount of protein and come from foods like beef, chicken, fish, eggs, milk and milk products (like yoghurt). Because meats are generally high in animal fat, it is important to trim visible fat off the meat before cooking it. Milk and milk products are also a good source of calcium.

4. The main plant sources of protein are **beans, peas, lentils, groundnuts, seeds, nuts, soybeans, and soy-products**. These are inexpensive, good quality sources of protein that have little fat and contain micronutrients.

Figure 2: Food Guide for Namibia

CEREALS

FRUIT AND VEGETABLES



MEAT, MILK/ MILK PRODUCTS, EGGS AND FISH

BEANS, PEAS, LENTILS AND NUTS

2.2 DIABETES MELLITUS

Diabetes Mellitus is a chronic metabolic disorder in which blood glucose levels are raised due to the deficiency or diminished effectiveness of insulin. Insulin is a hormone, which controls the movement of glucose from blood into the body cells. In Namibia, diabetes mellitus is diagnosed by testing glucose levels mainly in the urine and blood. Diabetes is classified into two categories. The first category is **Insulin dependent Diabetes Mellitus (IDDM)**. The second type is **Non-insulin dependent Diabetes Mellitus (NIDDM)**. IDDM diabetes mellitus was formerly known as juvenile onset diabetes since its incidence is at a peak between 10 and 12 years of age. A person with this type of diabetes has pancreatic failure. The pancreas fails to produce insulin and hence glucose levels remain high in the blood. In order to clear the glucose, insulin is injected into the body.

NIDDM is the most prevalent type of diabetes that usually occurs later in life. Although currently there is growing evidence that NIDDM is an increasing problem among overweight and obese children and adolescents.

With this type, the activity of insulin is affected as cells become resistant to insulin a situation that worsens with increased body fat.

Diabetes can present itself in the form of high blood glucose (hyperglycaemia) or low blood glucose (hypoglycaemia).

Signs and symptoms of diabetes are:

- Excessive thirst especially at night (Polydipsia)
- Excessive urine production (polyuria)
- Unexplained tiredness
- Numbness (lack of feeling) due to the damage of the nerves
- Ketones in the blood and urine. Ketones are products of incomplete breakdown of fat when glucose is not available in the cells.
- Fruity odour from the breath (acetone breath) because of ketosis.
- Ketosis is an undesirable high concentration of ketone bodies in the blood and urine.
- Elevated blood sugar level because of insufficient or ineffective insulin
- Low blood glucose
- Excessive feeling of hunger (polyphagia) despite eating.
- Recurring itchy skin, skin infections, gum and bladder infections in (NIDDM).
- Blurred vision
- Poor concentration
- Sudden weight loss

Uncontrolled blood glucose levels can result in:

- Diabetic coma (unconsciousness due to elevated blood glucose (hyperglycaemia), dehydration and above normal acidity in the blood and body fluids (acidosis) in uncontrolled IDDM)
- Glucose in urine (glycosuria)
- Low blood sugar (one feels dizziness and loses consciousness (hypoglycaemia))

|

There are a number of complications caused by long term uncontrolled blood glucose levels; high blood glucose levels over a long period of time can contribute to the following;

- Numbness due to nerve disorders (Diabetic neuropathy)
- Disorder of the kidney (nephropathy)
- Disorder of the retina (Diabetic retinopathy)
- Cardiovascular diseases especially heart attacks
- Diabetic coma due to extremely high blood glucose (Non-ketotic coma)
- Weight gain in NIDDM due to overeating.
- Weight loss in IDDM due to loss of glucose and ketone bodies in the urine

2.2.1 Recommendations for control and prevention of diabetes

An individual with diabetes mellitus should have disciplined lifestyle with regard to diet and medicines and adhere to the following:

- Have a well defined, timely and regular pattern for eating, working, recreation, exercise and sleep.
- Where dietary management is inadequate, administer medicines to treat and prevent complications of diabetes.
- Reduce obesity by reducing body weight because obesity induces resistance to the action of insulin.
- Follow recommendations for reducing weight as given in the section for overweight and obesity.
- Eat lots of fibre (unrefined food products) from foods such as whole grain cereals, legumes like soya beans, root crops, fruits (only 3 per day) and vegetables. These slow down digestion and absorption of sugars and the body is able to control blood glucose levels.
- Eat more of boiled or roasted foods rather than fried foods.
- Use less gravy and fats since these contribute to obesity, which is a risk factor for diabetes mellitus.
- Eat frequently in small or modest amounts.
- Avoid eating too much in one sitting and going for longer periods without eating.
- Avoid alcohol intake.
- Go to the hospital regularly for check up
- Restrict your salt intake. Try to limit intake to less than 1 teaspoon of salt a day.
- Exercise regularly (at least 30 – 45 minutes a day for 5 days a week) so that you burn as many calories as you consume to maintain a healthy weight.
- If you are over 45 years get tested for diabetes for early detection to reduce the risk of chronic complications in NIDDM
- An individual with impaired glucose tolerance should begin diet therapy on diabetes.

2.2.2 Management of Insulin dependent Diabetes Mellitus

An individual with IDDM has to take their medicines as prescribed by the Doctor.

In order to manage diabetes mellitus, an individual should observe the following guidelines:

- Take regular medical check-ups to detect any changes in the blood glucose level.

- Follow nutrition therapy explained in the control and prevention of diabetes in order to maintain blood glucose level.
- Be consistent on the intake of carbohydrates.
- Do not take concentrated sweets in the diet
- Take adequate but not excessive proteins.
- Use fat-free or low-fat dairy products, lean meat and unsaturated fats (fats from plant origin such as canola, olive, avocado, marula oil (ondjove) in moderation in the diet.
- Restrict salt intake to one teaspoon per day.
- Take at least a fruit a day. These provide minerals and natural sugar.
- Eat as much leafy vegetables as possible for vitamins and minerals especially green and red. Examples are cassava leaves, (wild) spinach, carrots, tomato and onions among others.
- Avoid alcohol completely because it increases the blood sugars
- Eat meals consistently from day to day to improve glucose control
- Eat an evening snack to help sustain the blood glucose through the night.
- Take precaution when engaging in physical activities. An individual who has mild hyperglycaemia may experience a fall in blood glucose during exercises.
- Refrain from vigorous physical activities or speak to your doctor before doing it.
- Eat before, during and after physical activity especially carbohydrates, readily available fruits such as apples, pineapples and bananas, yoghurt, crackers and other starches like cassava or sweet potatoes.

2.2.3 *Management of Non Insulin dependent Diabetes Mellitus*

An individual with NIDDM should observe the following guidelines in order to manage his/her condition:

- Take carbohydrates consistently throughout the day. Too much carbohydrates at once can raise blood glucose and too little can lead to hypoglycaemia.
- Reduce fat intake because too much fat increases insulin resistance.
- Use non-fat milk, lean meat and unsaturated fats mainly from plant origin in moderation in the diet like sun flower, soya, marula and olive oils are the good choices.
- Restrict salt intake to one teaspoon per day. Take at least a fruit a day. These provide minerals and natural sugar
- Eat as much vegetables as possible for vitamins and minerals especially green and red. Examples are cassava leaves, carrots, tomato and onions among others.
- Avoid alcohol
- Eat meals consistently from day to day to improve glucose control
- Control weight loss and gain to avoid other complications that come due to the increase or reduction in weight
- Take low impact aerobic activities such as walking for 30 minutes at least 3 times a week. Exercise improves blood glucose control and blood lipid levels, contributes to weight loss and lowers blood pressure.

Personal daily energy requirements for people with diabetes mellitus depends on the patient's needs determined by age, sex, actual weight in relation to desirable weight, occupation and physical activity level.

It is recommended that for most diabetic diets, the proportion of energy from carbohydrate should be 50 - 55 percent, from protein should be 10-15 percent and from fat should be less than 35 percent. Consumption of saturated fats can raise blood cholesterol levels in people with diabetes.

However, an individual with diabetes mellitus should eat the following foods in moderation: meats, fish, cheese, eggs, butter, margarine, and vegetable oils.

A person with diabetes can eat any of the following food: skimmed milk, roasted low fat meat, yeast extracts, energy-free aerated drinks, vegetable juice or soup, herbs, seasonings, spices and low carbohydrate vegetables.

Foods which may be avoided:

Completely avoid sugar, glucose, sweets, chocolate, syrup, jam, marmalade, cakes, biscuits (except those specifically prepared for diabetic individuals), pies, fruit tinned in syrup, fruit squash, lemonade or similar aerated drinks and alcohol.

If your blood glucose remains uncontrolled seek advice from a dietitian to assist you to plan an individualised diet that can improve blood glucose.

2.3 HYPERTENSION / HIGH BLOOD PRESSURE

Hypertension is elevated blood pressure over an extended period. High blood pressure is when the Blood pressure (BP) is consistently 140/90 mm Hg (millimeters of mercury) or above (the top one is known as systolic and the lower one is diastolic). Systolic reading is as the heart beats and the diastolic reading is as the heart relaxes between beats. To get accurate reading, take 3 measurements during at least 2 different occasions. Classification is shown in table 2.4.

Note: BP should always be measured at least 5- 10 minutes after rest, using appropriate cuff size and taken at the level of the heart.

An individual with high blood pressure has impaired quality of life and can suddenly die. High blood pressure stresses the heart since it has to pump extra hard to push the blood against resistant arteries. An individual can also become hypersensitive due to other diseases or infections and genetic factors.

The increased incidence of stroke and coronary heart disease is greatly associated with hypertension. Blood pressure is always expressed in two numbers, which are measurements of millimeters of mercury (mm Hg) or an equivalent. ***An adult's normal blood pressure is around 120/80 mmHg.***

Table 2.3: Classification of Hypertension

Classification	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	<120	<80
High Normal – Pre- Hypertension	120 - 139	80 - 89
Mild Hypertension – stage 1	140 - 159	90 - 99
Moderate to severe Hypertension-	>160	>100

Adapted from Ministry of Health and Social services: 2011 Namibia standard treatment Guidelines page 209.

2.3.1 Risk factors of hypertension

There are several factors that predispose a person to hypertension, these include:

- a. Getting little or no exercise
- b. Obesity
- c. Poor food choices or poor diet
- d. Genetic make-up
- e. Old age
- f. High salt intake for those who are susceptible.
- g. Excessive alcohol consumption.
- h. Pregnancy, especially during the last few months
- i. Smoking
- j. Coronary Heart Disease
- k. Kidney inflammation
- l. Use of contraceptive pills when smoking
- m. High Blood lipids
- n. Diabetes

Health problems associated with hypertension

When an individual is hypertensive, he or she has to have frequent and regular check-ups in order to detect early signs and symptoms of:

- a. **Atherosclerosis:** Disease of the artery caused by a build-up of plaque.
- b. **Heart Disease:** Heart failure, ischemic heart disease (heart not getting enough blood) and hypertensive enlarged heart.
- c. **Kidney disease:** Hypertension can damage blood vessels and filters in the kidney and kidneys cannot excrete wastes properly.
- d. **Stroke:** Hypertension can lead to stroke by contributing to the process of atherosclerosis (can lead to blockages or clots) or by weakening the blood vessel wall and causing it to rupture
- e. **Eye disease:** Hypertension can damage blood vessels in the retina.

An individual with hypertension may not know they have the condition until it begins to cause trouble to the heart, brain and kidneys. Therefore be on the lookout for some of the following signs and symptoms:

- Irregular heart beat
- Frequent severe headache
- Fatigue or confusion
- Vision problems
- Weakness and dizziness
- Pounding of the heart and shortness of breath

2.3.2 *Essential actions for preventing and managing hypertension*

Since hypertension is associated with several conditions including atherosclerosis, heart, kidney, stroke and eye diseases a person with hypertension should observe the following guidelines in order to prevent and manage the condition:

- Reduce the intake of saturated fats and animal fat.
- Limit consumption of caffeine beverages (caffeine is found in tea, coffee and some soft drinks). Decaffeinated beverages may be substituted for caffeinated ones
- Reduce the intake of simple sugars e.g. table sugar
- Take complex carbohydrates such as whole grain meal like mahangu and brown bread among others
- Reduce or remove alcohol intake from your diet
- Reduce body weight by engaging in regular physical exercise with the help of a Doctor and reduce the portion size of food during meal times. If overweight reduce the intake of foods such as refined carbohydrates and fatty foods.
- Increase the intake of fruits and vegetables in your diet especially fresh one.
- Include nuts, seeds, or legumes (dried beans or peas) daily.
- Maintain a normal BMI of 18.5 to 24.9 which is within the recommended range.
- Manage stress by give yourself time to meditate
- Avoid or quit smoking of any type
- Monitor or have your blood pressure checked regularly
- Develop the habit of using low salt diet through the use of flavours, aromas like garlic, tasty spices, tomato, and ginger when preparing meals.
- Avoid using cooking methods that retain a lot of fats and oils in the food such as frying.
- Follow the doctor's prescription when on medication.

2.4. **HYPERCHOLESTEROLAEMIA**

Hypercholesterolaemia is a condition where too much cholesterol is produced in the liver and / or absorbed from the gastrointestinal tract, which increases the risk of complications such as strokes and coronary artery diseases.

What is Cholesterol?

Cholesterol is an important substance that one gets from food. It is found in fat within the body. There are different kinds of cholesterol that can hurt or help the heart and the body.

What is Good and what is Bad cholesterol?

- 1) **High Density Lipoprotein (HDL): This is “good” cholesterol.** It helps prevent heart attacks. Without enough HDL, one is more likely to get heart attacks.
- 2) **Lower Density Lipoprotein (LDL): This is “bad” cholesterol.** When there is too much, the cholesterol comes together and forms a thick layer on the walls of blood vessels. Diet control is very important to avoid intake of bad cholesterol.

The effects of High “Bad” Cholesterol

There are 2 main problems which should be worried about:

- 1) **Heart Attacks:** When a thick layer of cholesterol forms it blocks off the veins or arteries that supply blood to the heart from the body. This causes part of heart not to function properly. It also causes chest pain and other body pains.
- 2) **Strokes:** Strokes occur when cholesterol blocks off blood flow to the brain. This leads to loss of movement in one side of the body and makes a person unable to function properly.

2.4.1 Signs and Symptoms of high cholesterol

The only way to know if the cholesterol is high is to have a blood test.

- The symptoms of high cholesterol are the diseases that result, such as stroke and heart attack, so it is important to get tested and take control of cholesterol early.
- Pancreatitis
- Hepatosplenomegaly
- Sudden blindness
- Skin and ligament changes

2.4.2 Prevention

1. Control intake of high cholesterol food such as: eggs, butter, beef, kidney and liver, pork, lamb, cheese, fried foods, cake, ice cream,
2. Eat food that can contains “Good” Cholesterol such as olive/canola oil, oily fish (pilchards), soya bean product which can prevent and lower cholesterol
3. Exercise regularly and be active
4. If overweight, lose weight gradually
5. Avoid drinking alcohol and smoking

Reasons to keep diet under control:

- History of heart problems in the family
- Overweight
- Excessive drinking of alcohol
- Eating foods with a lot of fat or LDL
- Lack of exercise

2.4.3. Treatment and management of high cholesterol

Adhere to the dietary measures as mentioned below and see a Dietician for individual counseling.

- It is important to get enough good cholesterol in the food
- Reduce animal fats e.g. butter, cheese, red meats, organ meat (e.g. liver, kidney, tongue)
- Replace with unsaturated fats e.g. pumpkin seed, canola or olive oils, peanut butter, avocado, marula oil (ondjove), rags melon oil (omagadhi goontanga)
- Use low fat products e.g. reduced fat margarines, low fat / fat free yoghurts, skim milk, low fat cheese
- Eat a moderate portion of lean meat or skinless chicken or fish once a day
- Include legumes such as dried beans, peas, lentils and soya beans often in the diet
- Use alternative cooking methods that do not add fat e.g. grill, bake, steam or microwave

- Reduce processed foods e.g. fatty and processed meats, cakes, biscuits and pastries.
- Increase fruit & vegetable intake at least aim for 5 portions (2 fruits and 3 vegetables) per day minimum, aim to incorporate into every meal and snack.

A portion is:

- 1 apple, orange or banana
- 3 tablespoonfuls of cooked vegetables,
- 1 dessert bowlful of green salad
- 2 plums, kiwis or a cupful of grapes, strawberries or raspberries
- 1 glass of fruit juice (150mls)
- 1 tablespoon of dried fruit such as baobab “*omukwa*”, jackal berry “*oonyandi*”, wild fig “*oonkwiyu*”
- Use fresh, frozen, tinned or dried fruit and vegetables
- Add vegetables to soups, stews, curries and stir-fries, or have green salad with the main meal
- Try snacking on fresh or dried fruit
- Reduce salt intake by:
 - Use small amounts of iodised salt in cooking and try to avoid adding salt at the table
 - Use pepper, herbs and spices, vinegar and lemon juice to flavour food
 - Do not rely too heavily on ready meals, tinned and processed foods, as they contain much higher amounts of salt.
- Take medicine as prescribed.
- Regular medical check up
- ***Consult a health care worker if, eating the recommended food, exercising and have a normal BMI (body weight) but still have high cholesterol.***

2.5 CANCER

Cancer is abnormal multiplication of cells. The affected cells seemingly have no built-in brakes to halt cell division. There are many cancers, with different characteristics and they occur in different locations in the body such as breasts, liver, lungs, ovaries, stomach, prostate, bladder and the skin among others.

Cancer is caused by different factors and requires different treatments. As the abnormal mass of cells grows, blood vessels are formed to supply the tumour with nutrients it requires to support its growth. Eventually, the tumour invades normal (healthy) tissues and may spread. Clinicians describe cancers by their size and extent, specifically if the tumour has spread to surrounding lymph nodes or to distant sites in the body. These guidelines will focus on dietary related cancers.

2.5.1. Dietary Related Cancers

It is estimated that diet may be responsible for a third or more of all cancer cases. Stomach cancers are high in parts of the world where people eat a lot of heavily smoked, pickled or salt cured foods that produce carcinogens.

Alcohol is also associated with cancer of the mouth, bladder and liver. Moreover, fats eaten in excess may promote cancer in part by contributing to obesity (a risk factor for cancer).

Examples of dietary related cancers include:

- Oesophageal cancer
- Stomach or colon cancer
- Colorectal cancer
- Liver cancer
- Breast cancer
- Cervix cancer
- Prostate cancer

2.5.2 *Signs and Symptoms of Cancer*

A person who has cancer may present some or all of the following signs and symptoms:

- Malignant tumour anywhere in the body
- Loss of appetite
- Nausea and vomiting
- consistent pain
- abdominal distension
- changes on your skin or to an existing mole (like itching, bleeding or change in shape and colour)
- ▲ A cough or hoarseness that lasts for more than three weeks.
- ▲ A change in bowel habit that lasts for more than six weeks.
- ▲ Any abnormal bleeding from the vagina, rectum, or blood in urine
- ▲ Unexplained, significant weight loss (5kg in a month or/10kg over the last 6 months).
- ▲ Coughing up blood
- ▲ changes in breast size or shape

2.5.3 *Risk factors of cancer*

There are several factors that put an individual at a higher risk of developing cancer. These include:

- High alcohol use;
- Tobacco use;
- High use of preserved foods;
- High intake of salt-preserved foods such as dried salted fish;
- Low intake of fruits and vegetables;
- High intake of fat particularly saturated fat;
- Obesity;
- Genetic make-up;
- Aging which affects immune function;
- Iron overload;
- Folate deficiency;
- Burnt foods
- A diet high in animal fats and red meat (excessive eaters at higher risk);
- Lack of physical activity
- Excessive hot foods or liquids
- Multiparity
- promiscuity

2.5.4 *Prevention and management of diet related cancer*

- Take a lot of fruits and vegetables especially green (e.g. spinach / “omboga”, apples) and yellow ones (e.g. pumpkin, oranges, mangos, spanspek)
- Take a lot of water per day, it helps to remove waste products (2-3liters/day)
- Control weight and obesity (avoid becoming overweight or obese)
- Reduce the consumption of total saturated and animal fats
- Increase fibre intake per day from whole grain foods like millet, sorghum, brown bread, rye, bran
- Minimize the consumption of salt cured, salt-pickled, and smoked foods
- Reduce alcoholic beverages
- Vary food choices
- Physical exercise
- Breast self- examination
- Regular papsmear and mammogram
- Regular check- up
- Regular oral hygiene and dental check up
- Cervix vaccination

2.5.5 *Treatment of cancer*

Patients with cancer should be referred to the hospital for treatment. Treatment is aimed at preventing further tumour growth and to reduce pain. This includes chemotherapy, radiotherapy, surgery or a combination of the three and can only be done by medical practitioners.

Rehabilitation management

- ⤴ reduction of pain
- ⤴ lymph drainage
- ⤴ stress management

2.6 **ARTHRITIS**

Arthritis is a chronic painful inflammation of joints caused by many conditions including infections, metabolic disturbances or injury; joints structures are usually altered, with loss of function. Arthritis mainly affects the elderly.

The breakdown of the cartilage causes bones to rub against each other, resulting into stiffness, pain and loss of movement in the joint. It can also affect children.

2.6.1 *Causes of arthritis*

- A weakened immune system due to poor nutrition such as deficiency of some nutrients especially calcium.
- Consumption of foods that aggravate arthritis e.g. processed and canned foods.
- Compounds that may cause arthritis include;
 - Overweight; because the joints are stressed and irritated by having to support excess weight especially in hips and knees.
 - Genetics

- Age: the cartilage becomes more brittle with age and has less capacity to repair itself.
- Occupational hazards: Workers in some specific occupations seem to have a higher risk e.g. heavy construction work
- Previous injury: joint damages can cause irregularities in the normal smooth joint surface.

2.6.2 *Signs and symptoms*

- Pain and limited function of joints
- Inflammation of the joints from arthritis is characterized by joint stiffness, swelling, redness, and warmth.
- Tenderness of the inflamed joint can be present.
- Many of the forms of arthritis, because they are rheumatic diseases, can cause symptoms affecting various organs of the body that do not directly involve the joints. Therefore, symptoms in some patients with certain forms of arthritis can also include fever, gland swelling (swollen lymph nodes), weight loss, fatigue, feeling unwell, and even symptoms from abnormalities of organs such as the lungs, heart, or kidneys.

2.6.3 *Prevention of arthritis*

- Reducing the intake of processed and canned foods.
- Maintaining optimal body weight
- Ensure intake of a balanced diet
- Exercises
- Arthritis that follows joint injury could be prevented by adhering to safety regulations and trying to avoid becoming injured

2.6.4 *Treatment of arthritis*

Treatment of arthritis is very dependent on the precise type of arthritis present.

Medicines that treat arthritis affect appetite and alter the body's use of nutrients.

Nutrition support and treatment helps to relieve the situation. Among the practices to treat arthritis are;

- Relaxation
- Exercise
- Salicylates (e.g. unguent)
- Selected medicine like steroids, anti-inflammatory and cortisone.
- Neuromuscular stimulation
- Maintain a healthy weight and protect your joints

2.7 **GOUT**

Gout is a metabolic hereditary disorder, which leads to inflammation of the joints as a result of accumulation of uric acid crystals. Gout occurs due to genetic defect common among males after the age of 35 and occasionally in postmenopausal women. An individual has gout when the body has difficulties in excreting excess uric acid due to kidney problems or when there is excessive production of uric acid above normal levels. **Normal values range**

between 3.5 and 7.2 mg/dL. Normal value ranges may vary slightly among different laboratories. Health care worker should discuss the test results with their clients.

Uric acid accumulates in the blood and form crystals that are deposited in the joints, particularly the big toe and cause gout. Gout can affect other joints such as knee, ankle, wrist, foot and small joints of the hands. An individual with high levels of uric acid is at risk of having uric acid stones in the urinary tract, which can lead to renal failure.

2.7.1 *Signs and symptoms of gout*

- Persistent joint pain.
- Pain or tenderness in a joint which is aggravated by movement or activity, such as walking, getting up from a chair, writing, typing, holding an object, throwing a ball, turning a key, or any other activity of daily living.
- Inflammation indicated by joint swelling, stiffness, redness, and/or warmth.
- Joint deformity.
- Loss of range of motion or flexibility in a joint.
- Elevated blood uric acid without symptoms of gout

2.7.2 *Prevention and management of gout*

- Avoid purine rich foods to reduce purine load of the body such as liver, kidneys, sweet breads, sardines, shellfish and meat extracts.
- Maintain optimal weight
- If overweight and having gout, reduce weight gradually.
- Drink lots of fluid especially water up to 3 litres per day to dissolve and wash away the uric acid crystals.
- Seek medical treatment for prescription of medicines, which either reduce synthesis of uric acid or increase excretion of urinary uric acid
- Avoid alcohol or alcohol intake
- Take a glass of water / coffee / tea before going to bed. Caffeine is not converted into uric acid in the body.

2.8 **PEPTIC ULCERS**

An ulcer is the damage to the inner lining (the mucosa) of the stomach or the upper part of the intestine (duodenum). Ulcers are sores that occur on the lining of the digestive tract which is made up of the stomach, oesophagus, duodenum (the starting point of the intestines) and the intestines. The vast majority of ulcers are located in the duodenum, but they occur in other places as well. The peptic ulcer is the ulceration of any part of the alimentary canal which comes in contact with gastric juice. The term peptic ulcers is used because evidence showed that it develops from a loss of the ability of the gastric mucosal to with stand the effects (action) of the gastric juices such as pepsin, and hydrochloric acid. Peptic ulceration is often associated with emotional stress.

2.8.1 *The important causes of peptic ulcers*

- The most common cause is infection of the stomach with bacteria called Helicobacter pylori (H. pylori). This infection is quite common; about half of the world's population is infected. These bacteria cause the stomach to make too much acid, which damages the lining of the stomach or duodenum and can cause the ulcer.
- Some medicines, called non-steroidal anti-inflammatory drugs (NSAIDs), can cause peptic ulcers. Examples of these medicines include aspirin, ibuprofen, naproxen and diclofenac. However most people can take these safely.
- Smoking and drinking excessive alcohol increase the chances of developing a peptic ulcer.

2.8.2 *Symptoms of peptic ulcers*

Some people with a peptic ulcer have no specific symptoms. However, many people have upper abdominal pain usually just below the sternum (breastbone).

You may sometimes feel a pain in your back. The pain usually comes an hour or two after eating and can be relieved by more food or antacid medicine. It may also wake you at night.

Other symptoms may include:

- Excessive Belching
- Heartburn
- General discomfort or pain in the upper central abdomen. The pain comes and goes and is normally associated or related to meal.
- Bloating or fullness after eating
- Difficulty swallowing or regurgitation
- Persistent nausea and vomiting
- Vomiting blood or vomit with the appearance of coffee grounds,
- Maelena (blood in stools)
- Black or tar-like stools
- Unintended weight loss
- Gastrointestinal bleeding
- Anaemia (paleness and fatigue)
- Sudden, severe and incapacitating abdominal pains

2.8.3 *Types of peptic ulcers*

There are two types of peptic ulcers

- 1) Gastric ulcers (stomach ulcers)
- 2) Duodenal ulcers

1. Gastric Ulcers

A gastric ulcer, also called a stomach ulcer, is a raw, eroded area in the lining of the stomach. A gastric ulcer develops when stomach acids and digestive juices injure the stomach's lining of protective mucus.

Gastric ulcers may also develop from the presence of bacteria called Helicobacter pylori (H. pylori), decreased resistance of the lining of the stomach to gastric acids, increased

production of gastric acids and infection, certain types of medication, and disorders that cause over secretion of stomach juices.

Gastric ulcers occur in people who take anti-inflammatory drugs, such as aspirin, ibuprofen, and naproxen; drink alcohol; smoke tobacco; have a high caffeine intake and often feel stressed.

Signs and Symptoms of gastric ulcers

- ^ indigestion and heartburn in the middle of the upper abdomen
- ^ nausea and loss of appetite
- ^ weight loss
- ^ repeated episodes of gastrointestinal bleeding
- ^ pain at night
- ^ gastric ulcer bleeding, the patient may vomit bright red blood or digested blood that looks like brown coffee grounds and have black, tarry stool.

About 30% of patients with gastric ulcers are awakened by pain at night. Many patients have periods of chronic ulcer pain alternating with symptom-free periods that last for several weeks or months. The pain may be relieved by eating or taking antacids, and may get worse a couple of hours after meals or before meals.

2. Duodenal ulcers

Ulceration of the duodenum occurs when that part is in contact with the gastric juice. With duodenal ulcers the pain occurs when the stomach is empty and it relieves when the person eats. But the meal should not be too large or spicy. It is believed that duodenal ulcers is associated with higher acid output, so when the stomach is empty (hungry), gastric juice is still produced higher than normal.

2.8.4 Prevention of peptic ulcer

You can greatly reduce the chance that you will get a peptic ulcer if you:

- Manage stress
- Don't start smoking. If you smoke, quit. Smokers are much more likely to develop ulcers than nonsmokers.
- Avoid taking certain medicines such as anticoagulant like aspirin, ibuprofen, and other non-steroidal anti-inflammatory drugs (NSAIDs) for longer than a few days at a time. If you are taking aspirin regularly for heart problems, ask your doctor about taking another medicine to help protect your stomach and intestines from ulcers.
- Limit alcohol to 2 units drinks a day for men and 1 unit drink a day for women. Never drink alcohol on an empty stomach. **One UNIT of Alcohol contains about 10 g of Alcohol and is roughly equivalent to: 1 bottle (340 ml) of ordinary strength beer (4 – 5 % alcohol), 1 glass (120 ml) of wine, 1 SMALL glass (25ml) of hot stuff e.g. vodka (25 ml of vodka).**
- Encourage physical exercise
- Avoid spicy food
- Avoid gas forming drinks or food

2.8.5 *Principles for treatment and management of peptic ulcers*

The following are the basic principles for treatment or management:

- 1) Promote physical and psychological rest
- 2) Advice related to diet;
 - Eat 5 to 6 small meals a day instead of 3 large meals. Frequent, smaller meals will be more comfortable and easier on the stomach than two or three large meals a day. Avoid overeating.
 - Eat a diet rich in fibre, especially fruits and vegetables
 - Rest and relax a few minutes before and after each meal, as well as remaining relaxed during meals.
 - Eat slowly and chew food well
 - Avoid eating within 3 hours before bedtime
 - Eat foods that are in low fat
 - Avoid fried and spicy foods
 - Cut down on the following foods: coffee, cola drinks, carbonated beverages, citrus fruits, tomato-based products, chocolate,
 - Avoid alcohol
 - Quit smoking
- 3) Milk may also be used as part of the treatment for ulcers because milk proteins and other protein help in neutralising the gastric acid and assist in the treatment.

Recommended food for people suffering from ulcers

- ^ boiled and roasted low fat meat (lean meat)
- ^ bread (brown or white)
- ^ boiled potatoes, rice,
- ^ boiled fish
- ^ low fat milk and milk product
- ^ eggs,
- ^ chicken (without skin)
- ^ all kinds of fruit except those containing citric acid like lemons and oranges,

Foods to be limited:

- ^ Barbecue sauce
- ^ Chili sauce
- ^ Black pepper
- ^ Vegetables: raw vegetables, broccoli, cabbage, onions, cucumber, green peppers and vegetables prepared with added fat and tomato products.

Rehabilitation management:

- Stress management

2.9 **ASTHMA**

Asthma is a chronic disease characterized by recurrent attacks of breathlessness and wheezing. The severity of symptoms may be different from person to person. The attacks can occur several times in a day or over a week. For some people the symptoms become worse when they exercise or at night but they can occur at any time of the day. When a

person is having an asthma attack the lining in their lungs swell up closing the airway and making it difficult to breathe. Asthma has a relatively low fatality rate when compared to other chronic diseases. Asthma is a disease that affects 235 million people worldwide.

2.9.1 Sign and Symptoms

There are generally no signs of an asthma attack until it occurs but people who have frequent attacks may experience the following symptoms:

- Fatigue during the day
- Sleeplessness
- Reduced activity levels
- School and work absenteeism

2.9.2 Cause of Asthma

The exact cause of asthma is not known yet but it is understood that it is a combination of both inheritance from parents and an irritant in the surrounding environment. Triggers for attacks may be any of the following:

- Indoor allergens (dust mites in bedding, pet hair and carpets)
- Outdoor allergens such as mould and flower/grass pollen
- Tobacco smoke
- Chemical used in working environment
- Pollutants in the air
- Very cold air
- Physical exercise
- Strong emotions
- Medicines such as aspirin, beta blockers and non-steroid anti-inflammatory drugs (NAIDS)

2.9.3 Treatment of Asthma

- Asthma can be controlled through a variety of drugs, such as inhalers and other drugs.
- Each person should seek an appropriate treatment from their health care provider as one treatment may not suit all people.
- It is also important to avoid the trigger that causes the attack so as to reduce any number of attacks and improve quality of life.
- Take their medications as prescribed to prevent a fatal attack.

2.10 ALLERGIES

Allergies are an overreaction of the body's immune system to specific substances that it misidentifies as harmful. This overreaction of the body's immune system is known as an allergic reaction and the substances that cause it are called allergens.

A **food allergy** is an adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food. Food allergens are the parts of food or ingredients within food (usually proteins) that are recognized by immune cells. When an immune cell binds to a food allergen, a reaction occurs that causes the symptoms of food allergy.

2.10.1 Sign and Symptoms

Mild Symptoms:

- Itching, tingling or swelling of the lips, mouth, tongue, or throat
- Tightness in the throat
- Difficulty swallowing or speaking
- Nausea
- Abdominal cramps and indigestion
- Diarrhea and vomiting
- Skin rashes
- Congestion, coughing, sneezing, or wheezing
- Stuffy, itchy, or runny nose

Severe Symptoms:

- Difficulty breathing
- Dizziness, sweating, and faintness
- Rapid increase in heart rate
- Sudden hoarseness or inability to speak
- Immediate and extreme facial swelling and itching
- Anaphylaxis

2.10.2 Cause of food allergies

The foods most commonly causing serious allergic reactions are: Cereals containing gluten; milk; egg; tree nuts including walnuts, almonds, and pecans; peanuts; soy; fish and wheat. Food additives such as dyes, thickeners, and preservatives. Monosodium glutamate (MSG) is a common food allergy in this category.

2.10.3 Prevention of food allergies

- Read all package ingredients carefully (many foods are processed with peanuts, eggs, or milk products, such as whey).
- Call ahead when eating out.
- Take your own food with you on trips
- Although you should avoid foods that provoke an allergic reaction, you do not need to restrict variety in your diet. Studies show that the vast majority of people are allergic to only one or two foods. However, you should be aware of the families of foods to which you are allergic.
- To reduce chance of the child to develop food allergy and other allergies:
 - mothers has to avoid common allergenic foods, in particular peanuts during pregnancy and while nursing -- peanut protein, are secreted into breast milk.
 - mothers have to breast-feed exclusively -- give your baby only breast milk for the first 6 months of life.
- The latest and largest study investigating the relationship between breastfeeding and allergies, particularly asthma, suggests that breastfeeding in the early months of life can prevent allergies until your child is 2 years old.

- Since delaying foods allows the child's gastrointestinal tract to mature, the following strategies may be helpful:
 - Delay giving your infant solid food until 6 months of age.
 - Delay giving your child common allergenic foods as follows: dairy until age 1 year; eggs until age 2 years; peanuts, nuts, and fish until 3 years.
 - If an allergy develops, carefully avoid the offending food.

Note: Children may outgrow food allergies (particularly to milk or soy), but adults are unlikely to lose their allergies.

2.10.4 Treatment and management of Food allergies

- Treatment at the time of a reaction varies according to the severity and type of symptoms.
- Mild symptoms may go away without treatment.
- Doctors generally recommend over-the-counter or prescription of antihistamines to relieve mild itching, swelling, rash, runny nose, or headache.
- Soothing skin creams may provide some relief of rashes.
- Severe allergic reactions (anaphylactic shock) can come on suddenly and accelerate quickly; in this case, emergency treatment is needed
- It is recommended that if you have been diagnosed food allergy, you should avoid the allergenic food.

Following these nutritional tips may help reduce symptoms:

- Eliminate all suspected food allergens, including dairy, wheat (gluten), soy, chocolate, corn, preservatives and food additives.
- Eat more antioxidant rich foods (such as green leafy vegetables) and fruits (such as blueberries and cherries).
- Avoid refined foods, such as white breads, pastas, and sugar.
- Eat more lean meats and cold water fish.
- Use healthy cooking oils, such as olive oil.
- Reduce or eliminate trans fatty acids, found in commercially baked goods such as cookies, crackers, cakes, French fries, onion rings, donuts, processed foods and margarine.
- Avoid excessive use of coffee and avoid other stimulants, alcohol and tobacco.
- Drink 6 - 8 glasses of filtered water daily.
- Exercise moderately at least 30- 45 minutes daily 5 days a week.

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