PIONEER
ACADEMIC PUBLISHING LIMITED

Current Research in Medical Sciences
ISSN 2958-0390
www.pioneerpublisher.com/crms
Volume 3 Number 2 June 2024

Environment and Life Style Related Diseases

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doi:10.56397/CRMS.2024.06.02

Abstract

Environment is the established and fundamental support of human being existence and their sustainable survival. We will use the term environment for all external components like living & non-living, material & nonmaterial etc., those surrounds humans. In the modern concept environment comprise apart from air, water and soil forms of environment it includes physical, biological, socioeconomic and cultural conditions under which we reside. Inside the human environment there exist environmental hazards which threatens human beings-causes sickness, reduce our life span and contribute in several ways to human misfortune. This research paper highlights the environment and life style related diseases.

Keywords: epidemiological, unhealthy, eating habits, weight gain and bad practices of lifestyle

1. Environment and Life Style of People

In the first instance we will observe the dimension of environment on human health. There is an intimate relationship among environment and quality of human life. Human health is mainly affected by their physical environment. Hence environmental quality is a decisive factor in human wellbeing. The purpose of linkage between environment and health is to achieve the definition of health given World Health Organization (WHO)— that says "A state of complete mental, physical and social wellbeing and not merely the absence of disease or infirmity". An enhancement in standards of life is the main objective of sustainable development and is appraised by executing many criterion and indicators.

The environmental aspect is one of the significant aspect on standards of life, and can be assessed by applying the indicators such as environmental quality, responsible environmental behavior and exhaustion of environmental services. The first indicator, environmental quality is concerned, it comprises several environmental channels like air, water and soil and their individual evidence-based indicators. For example, quality of air is indicated through PM10& PM 2.5, CO2 emissions and ground level ozone. More than half of the population are living in urban areas and exposed to atmospheric ozone that exceeds the target value. Epidemiological evidence shows that PM10 particles are easily inhalable and cannot be filtered because of their smaller size directly reach to the upper part of the lungs. The PM2.5 can easily penetrate to lower part of the lungs and mix up with the blood stream that allows all harmful chemicals enter in to different organs of the body and cause adverse health

effects such as cancer, brain damage, cardiovascular & respiratory disease and finally leads to premature mortality. Access to clean drinking water is a fundamental right but water management to meet the needs of people is a growing challenge because of insufficient quality and quantity. Water pollution from point sources like industries, waste water treatment plants, agricultural runoff continues to become a challenge and reduction in water pollution is not easy to anticipate. Biochemical Oxygen Demand (BOD) is one of the major indicators of water quality in water bodies. One of the major concerns of soil is solid waste management. It is evident that treating and disposing of solid waste without damaging the environment is quite challenging. Environmental quality with regard to soil in particular region is concerned the municipal waste produced per capita that indicates the rate of aggregation. Increase in all of these indicators entail adverse effects on the quality of environment and the quality of humans as well.

The second indicator, responsible environmental behavior, which is associated with use of natural resources and energy savings. The responsibility of humans towards environment is the use of renewable energy resources rather than fossil fuels, recycling, management and disposal practices of waste water. Domestic Material Consumption (DMC) is a measure to know the total quantity of materials directly used by an economy and that is calculated by dividing GDP in terms of resource productivity by DMC. This is also defined as the amount of natural resources withdraw from the political frontiers of the principal economy, and all physical imports and deducted all physical exports annually in the frame work of material flow accounts and resource productivity.

The third indicator, exhaustion of environmental services is concerned, more than 80% of population till today are in urban areas. The quality of life and the health of people living urban areas is depends on the urban environment quality, because it is associated with the complex network interaction of social, economic and cultural factors. Fresh water withdrawals, access to green areas, clean air is challenging because it reflects the mental wellbeing.

In the modern day, apart from air, water and soil, our environment includes physical, biological and social components involved. Human environment is mainly focused on the environmental hazards which threaten human beings. To avoid environmental hazards, we have to sanitize the environment. If you look in to the word sanitation in dictionary, it says 'the science of safeguarding health'. According to WHO, the word 'Environmental Sanitation' is defined as "the control of all those factors in man's physical environment which exercise or may exercise a deleterious effect in his physical development, health and survival". The environmental sanitation covers broad areas of controlling the environment in terms of averting diseases and promoting health. Humans have already controlled most of these factors such as food, water, clothing, housing and sanitation for improvement of health of people but still new problems are arising due to the demographic growth and swift urbanization resulting in intense social and environmental changes. Now the term environmental sanitation is being reinstate to environmental health. To achieve this there is an urgent change needed with an aim of healthy environment and healthy lifestyles that are initiated by human beings, families and the communities.

1.1 Lifestyles and Environment

Lifestyles are various patterns of activities that demarcate people. Lifestyles are group of procedures and approaches which make impression in particular situation. For example, established practices situated in certain locations, areas and timings. Lifestyles measure in the direction of standard social groups of a person's class, revenue, age, gender and race, but also surpass them. It also reflects about identity of choices, such as how a person desire to be, and be recognized by others. This normal behavior is Frequently communicated through creative & symbolic aspects, consumption of goods & materials. Environmental lifestyle choices are frequently carried out through consolidated identities like stewardship for environmental illnesses. For example, driving a car, is not just important as a symbol of consumption, but as a space that includes safety and enhances personal mobility. Liaising between lifestyle choices and environmental concerns are a sequence of established relations and hypothetical knowledge concerns are associated with and focus on risk communication, the behavioral science of scientific knowledge and the apprehension of science.

Issues of environment confirm the significance

of position like a basis for perceiving the environment and standards of issues of life and the rate at which the people can execute the modifications. Environmental identity can be established logically and consistently by changing the behavior in various value systems with regard to various outcomes and the magnitude of the social alliances. Propagating environmental messages in the environment of uncertain utilization of the data and representation is highly dominant to the different sectors of the economy and to the self-recognition. Out of these possibilities, maintaining of environmentally intentional behavior is the only option out of various possible lifestyles. To acquire environmental knowledge and communication is required to understand the environmental values and frame the policy frame works for human lifestyle changes to address the future alternatives to enact for environmental sustainability. The linkage between environment and the human lifestyle has been studies by new spaces that are important to understand the environmental lifestyle choices

2. Consequences of Lifestyle on Health of Individuals

Life style of the people is the approach followed by the people, groups, nations which includes particular geographical, economic, religious, and cultural domains. Lifestyles of people are nothing but characteristic features of population of given place and time. According to WHO, more than sixty percent of associated aspects of lifestyle of the people can be correlated to personal health and standards of life. Today, millions of people adopted unhealthy lifestyles and experience various diseases, disabilities, cardiovascular diseases, metabolic diseases, joint and skeletal disorders, hypertension, obesity mental disorders, violence and sometimes death. Modern day life of most of the present generation resulted in unhealthy eating habits, consuming alcohol, stress, and drug abuse etc., under the umbrella of modernization. With these new habits people come across with new challenges. The people working in corporate sector, working throughout the day on the internet, various virtual communication methods using networks, overusing and misusing, facing major physical and mental health. There are some variables of lifestyles which have an impact on our health such as body mass index, exercise, sleep, sex, drug abuse, over use of technology, recreation and education.

2.1 Obesity

Obesity is defined as an unusual growth of the adipose tissue in the body due to an increase in the size of the fat cell or increase in the number of fat cells. The former is known as hypertrophic obesity and the latter is known as hyperplasic obesity. The obesity is expressed by Body Mass Index (BMI). Overweight will be caused by obesity, abnormal muscle growth and liquid retention. People those who are suffering from obesity varies in the quantity of stored surplus fat and the distribution of fat in all parts of the body. The fat induced obesity will result in various types of diseases and to understand the increased risk of diseases with the result of abdominal fat distribution or android obesity and less serious gynoid obesity in which fat distribution the body is more even and peripheral.

The fundamental cause of obesity is over nutrition. Intake food contains more energy than required may result in extended post-prandial hyperlipidaemia and accumulation of triglycerides in adipose tissue leads to obesity. American College of Endocrinology (ACE) proposed a new name for obesity known as adiposity-based chronic disease (ABCD).

Perhaps obesity is the most prevalent form of malnutrition and most important contributors for health ailments. In developed and developing countries the obesity is caused by lack of physical activity rather than other habits. Obesity is the key factor for chronic diseases like hypertension, hyper lipidaemia, glucose intolerance and diabetes and kidney ailments.

Some of the epidemiological factors which are associated with obesity are as follows.

Age: Obesity can happen at any age, there is no age limit but commonly increase with increase of age. The research facts show that majority of adipose cells are begin to form in the early stages of life and the obese children have a greater number of these cells which is hyperplastic obesity than the normal child. Approximately, one third of obese adults have been obese since their childhood.

Gender: Even though men have greater rates of overweight, but women have high rate of obesity than men. Research studies says men will gain weight between the age of 29-35yrs

while women will gain between the age of 45-49 years, that shows at the age of menopausal stage. It is also state that in women BMI increases with consecutive pregnancies.

Genetic reasons: Genetics plays an important role in the aetiology of obesity. The fat distribution profile is distinguished by an important heritable level of the sequence of fifty percent of total human difference. The fat in the abdominal region is influenced by the genetic factor considering for fifty to sixty percent of the differences in the individual persons.

Physical Inactivity: Systematic physical activity protects our body against unhealthy weight gain. Sedentary lifestyles where people in desk-bound occupations and sedentary recreations like watching movies in TV will stimulate unhealthy obesity. Physical fitness and physical activities are the moderators of morbidity and mortality associated to obesity. As we discussed earlier that physical inactivity or considerable reduction in the activity without decrease in energy intake in the form of food is the main reason for obesity. Reduction in the physical activity results in obesity which eventually limit the physical activity, that is a vicious cycle.

Socio-economic status: Over nutrition is the outcome of ignorance, inadequate education and insufficient knowledge of nutritive values of food, food production, food habits, customs, beliefs, traditions and attitudes. Socio-economic status and the obesity are inversely proportional to each other.

Eating habits: Eating habits such as eating in between regular meals preference to more sweets, refined& fatty foods. The complicated process in the obesity is the composition of the food we consume, frequency, and the quantity of energy obtained from it are involved. In the present-day print media and television are take part in crucial role and the root cause for making people obese by huge advertisements of fast foods, outlets of fatty eateries, micronutrient poor foods and beverages that heavily influence the regular eating habits. The demand by the consumer may be affected by advertising, marketing, culture, fashion, and convenience. It has been already calculated that a child whose daily energy requirement is 2000 kcal/day and consumes extra 100k.cal/day will gain five kg/year. The deposition of 1 kg of fat amounts to energy of 7,700kcal. Along with these, the other factors contribute obesity are psychosocial, family tendency, endocrine, alcohol, education, smoking, ethnicity and drugs.

Health Hazards of obesity: Obesity itself a health hazard and cause damage to a person's health and welfare. The associated health risks are as follows.

1) Increased Morbidity: Obesity is a considerable risk factor in the occurrence of diabetes, hypertension, coronary heart disease, gallbladder disease and particular types of cancers particularly cancers related to hormonal and bowel. In addition to these fatal diseases some non-fatal diseases such as varicose veins, abdominal hernia, osteoarthritis, flat feet and psychological stress can also occur. Obese people are prone to have surgeries and decrease in fertility.

2) Increased Mortality: There is an increase in the rate of mortality with obesity Related Diseases associated health risks like hypertension, renal failure and coronary heart disease. It also reduces the life expectancy.

2.2 Prevention and Control

Prevention of obesity must start in the beginning of childhood. Obesity will be controlled by maintaining the body weight with in the healthy limits of Body Mass Index prescribed by WHO, that is the range in between 18.5-24.9 kg/m2 throughout the life. Obesity is easier to cure in children than in adults. The obesity can be attained by the combination of both dietary changes and increased physical activities.

Dietary Changes: The following are the dietary principles for prevention and the treatment of obesity.

The quantity of heavy energy foods like simple carbohydrates and fatty food should be reduced.

The fiber component should be incorporated in the diet such as unrefined foods and essential nutrient foods.

Examine that the food energy intake should not be exceeded than required energy expenditure.

Increased Physical activity: Earlier in this unit we have discussed about physical inactivity and those can be avoided. Physical activity is an important activity in the weight reduction training. Continuous physical exercise is the only way to an increased energy expenditure.

2.3 Other Measures

The treatment for severely obese people, it is prescribed to try some appetite suppressing

drugs.

Surgical treatments, such as gastric bypass, gastroplasty and jaw- wiring can be tried.

Providing health education and identify the obese children for early treatment are the productive approaches to overcome the obesity.

2.4 Cardiovascular Diseases

Cardiovascular diseases are group of ailments of heart and vascular systems. The important conditions in these diseases are a) ischaemic heart disease (IHD), b) hypertension, c) cerebrovascular disease d) congenital heart disease. Approximately 32 million people are dying because of non-communicable diseases and half of them are dying because of CVD. In developed and developing countries the 1st and 2nd causes of deaths are because of CVD. The prevalence of CVD is higher in urban regions than in rural that indicates the addition of various risk criteria like consumption of tobacco, absence of physical activity, unhealthy diet & food habits and finally obesity.

In addition to these, overweight, central obesity, high blood pressure, dyslipidemia, diabetes and low cardio respiratory fitness is some of the biological factors which increase the risk of CVD. We are presenting here some of the dietary measures on the research evidence on lifestyle factors and probability of developing cardio vascular diseases. (Table 1)

Table 1. Strength and evidence on lifestyle factors and risk of developing CVD

Evidence	Decreased Risk	No relationship	Increased Risk
Convincing	Regular Physical Activity Linoleic acid Fish and Fish oils Vegetables & fruits (including berries) Potassium Low to moderate alcohol intake (for coronary heart disease)	Vitamin E Supplements	Myristic acid Palmitic acid Trans fatty acids High sodium intake Overweight & high alcohol intake
Probable	Linolenic acid, Oleic acid, Nan-starch Polysaccharides, Whole grain cereals, unsalted nuts, Plant sterols/ stanols & Folate	Stearic acid	Dietary cholesterol, Unfiltered boiled coffee
Possible	Flavonoids Soy products		Fats rich in lauric acid Impaired fetal nutrition Beta Carotene supplements
Insufficient	Calcium, Magnesium, Vitamin C		Carbohydrates and Iron

Source: Rose, G. A. (1973). In chronic diseases, Public Health in Europe No.2, Regional Office of WHO, Copenhagen.

On the basis of above factors, approximately 75-85% of cases, the main CVD probable Related Diseases risk factors are tobacco use, unhealthy diet, and physical inactivity.

2.5 Hypertension

Hypertension is a chronic situation of because of its role in the risk of coronary heart diseases, stroke, myocardial infraction, stroke and other vascular ailments. It is also known as silent killer. Defining hypertension is difficult but there is a direct relationship between hypertension and the risk of cardiovascular disease. The higher the blood pressure, the higher the risk of both coronary episodes and strokes. On this basis, there is a difference between ranges in high

blood pressure and normal in operational ways.

Intervention trials indicates that adult persons at the age of 18yrs onwards, those who are not taking any antihypertensive medicines are not sick and on the basis of the average of 2 or more readings of blood pressure on 2 or more different times after initial examination. Classification of individuals hypertension by measuring blood pressure are presented in Table 2.

Table 2. Diagnostic Values of Hypertension

Category	Systolic Blood Pressure (mm of Hg)	Diastolic Blood Pressure (mm of Hg)
Normal	< 130	< 85
High Normal	130-139	85-90
Hypertension Stage 1(mild)	140-159	90-99
Stage 2 (Moderate)	160-179	100-109
Stage 3 (Severe)	>180	>110

Source: WHO (1980). Techn. Rep. Ser., No.646.

2.6 Risk Factors for Hypertension

Hypertension is one of the main dangerous factors for cardiovascular disease. According to WHO, the essential risk factors for hypertension is classified in to non-modifiable (age, sex, genetic factors & ethnicity) and modifiable risk factor. Dear learner, in this unit we are discussing about modifiable risk factors which are of concern.

2.7 Modifiable Risk Factors

Obesity: Observations from the epidemiological studies shows that high risk for hypertension is obesity. The higher the weight gain higher the risk of hypertension. The medical research data on central obesity indicated by an enhanced waist to hip ratio is positively correlated with higher degree of hypertension in most of the population.

Intake of Salt: The research evidence shows that people with high intake of salt (7-8g/day) proportionately suffering from increased blood pressure, where as low intake of sodium lowers the blood pressure.

For Example: In Japan, it is observed that the people suffering from high blood pressure have overall intake of sodium per day is 400mmol, whereas some of the primitive societies have overall sodium intake is 60mmol/day, it is observed that they have no hypertension.

The postulations suggesting that essential hypertensions have a genetic abnormality of the kidney function difficult where the process of salt excretion takes place except at higher levels of arterial pressure.

Other than sodium intake, other mineral elements such as potassium also decide the blood pressure. In case of potassium, it will antagonize the biological effects of sodium and reduce blood pressure of moderate hypertension persons. Cations like magnesium, calcium and cadmium also plays crucial role in reducing the levels of blood pressure.

Saturated Fat: The research evidence shows that saturated fats increase the blood pressure levels and serum cholesterol.

Dietary Fiber: Research Studies indicates that the CHD and blood pressure are inversely proportional to the dietary fiber intake in the health risk point of view. The fiber content plays significant role in the reduction of total plasma and LDL Cholesterol.

Alcohol: Research studies provided sufficient evidences for the intake of high alcohol with an increase in the high blood pressure. Consumption of alcohol increases systolic blood pressure than diastolic blood pressure.

Environmental Stress: Hypertension itself indicates an abnormality which introduced in the body by tension or stress. The psychological factors perform through cognitive processes consciously or unconsciously to cause hypertension.

Socio-economic status: The countries which are in post-transitional changes of epidemiological

and economic phases shows constantly high levels of blood pressure when compared to lower socioeconomic groups and identified the reasons as education, income and occupational status plays a significant role. The groups which are in the transitional/pre-transitional changes have greater prevalence of high blood pressure in upper socioeconomic groups.

Other factors: The most common reason for secondary hypertension is oral contraception because it contains oestrogen component present in their preparation.

The other factors like noise, vibration, temperature and humidity also contribute for this but requires further research investigations to confirm it.

Preventive measures: According to World Health Organization (WHO), the preventive approach of hypertension are as follows.

1) Primary Prevention

2) Secondary Prevention

Primary Prevention: Primary Prevention is the prevention in which "all measures to reduce the incidence of disease in a population by reducing the risk of onset". In Primary Prevention WHO recommends the following strategies.

i. Population Strategy: Population strategy is the strategy which is supervised at the entire population irrespective of independent risk levels. The idea of population approach is established on the fact that even a slight decline in the average hypertension of a population will cause a huge decline in the occurrence of cardiovascular complications like stroke and CHD. The aim of the population strategy is to move the community distribution of blood pressure towards lower levels or 'biological normality'. This require multi factorial approach on the basis of the nonpharmacotherapeutic interventions.

a. Nutrition: The following dietary changes are required to implement.

Salt intake should not be more than 5g/day.

Fat consumption should be moderate.

Reduction in the high alcohol intake.

Avoidance of energy consumption relevant to body needs.

b. Weight Reduction: Weight management by preventing and correcting the obesity by monitoring BMI > 25 is the only judicious way of reducing the probability of hypertension and CHD.

c. Promotion of exercise: Regular physical activity provides in reduction in the body weight, blood lipids and blood pressure. It shows that continuous physical activity should be required as a part at the approach for probability control.

d. Behavioral Changes: A person has to adopt healthy lifestyle changes such as reduction in stress and smoking, modifications in personal lifestyles, yoga and supernatural meditation.

e. Health Education: Health education is essential in individual and community health. It will help to enhance the knowledge and to augment required behavioral patterns. According to John M. Last, health education is "the process by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance or restoration of health". It is an essential part of the health care which is concerned with healthy behavioral promotion. The social community needs preventive direction on all probable factors and associated health benefits. The entire community must organize awareness campaigns about the primary prevention.

f. Self-Care: Patient participation is more important in any of the community based health programmes. The patient is equipped with self-care that is maintaining the one's own blood pressure by recording in the log book to reduce the burden on the health officials and also useful for statistical data for the long term follow up of the cases.

ii. High Risk Strategy: The goal of this strategy is "to prevent the attainment of levels of blood pressure at which the institution of treatment would be considered".

This strategy is useful if the probability factors prevail with low occurrences in the community.

Secondary Prevention: The aim of secondary prevention is to diagnose and control high blood pressure in affected population. The contemporary antihypertensive drug therapy can successfully reduce high blood pressure and subsequently the high risk of morbidity and mortality from Coronary, Cerebrovascular and kidney disease. The prevention and control measures like early case detection, treatment and patient compliance are the best possible ways.

2.8 Diabetes

Diabetes is the disease where impaired glucose metabolism in the body, that leads to excess of glucose in blood and urine. The basic cause of diabetes is the insulin production due to malfunctioning or action of insulin, a hormone made by the pancreas which controls and coordinates glucose, fat, and amino acid metabolism.

According to the adoption by WHO, the classification of diabetes mellitus is presented in the Table 3.

Table 3. Classification of Diabetes Mellitus

S. No	Classification
1.	Diabetes Mellitus (DM)
	i. Insulin-dependent diabetes mellitus (IDDM, Type 1)
	ii. Non-insulin-dependent diabetes mellitus (NIDDM, Type 2)
	iii. Malnutrition-related diabetes mellitus (MRDM)
	iv. Other types (secondary to pancreatic, hormonal, drug-induced, genetic and other abnormalities)
2.	Impaired Glucose Tolerance (IGT)
3.	Gestational diabetes mellitus (GDM)

Source: WHO (1985). Techn. Rep. Ser., No.727.

Out of type 1 and type 2 diabetes, type 1 diabetes is the critical form, immune mediated and occur in the age group of less than 30yrs. Type 1 diabetes is ketosis associated and seen among 10-14 years age group. It is a catabolic disorder in which circulating insulin is virtually not present with elevated plasma glucagon hence the cells present in the pancreas unable to respond the stimuli of insulinogenic. Hence, external insulin is Statement of Problem: Commonly diabetes is an iceberg disease. Globally it is increasing in the newly industrialized and developing countries. More than 1.3 million people died from high levels of blood sugar, out of which approximately 80% deaths are from countries with low and middle-income groups. The estimations show that the diabetic prevalence is higher in the regions of Eastern Mediterranean and America, where as in the WHO Western Pacific and European regions. The estimated diabetes prevalence referred that lowest prevalence in low income countries and highest prevalence in upper-middle income countries. The identified factors for these estimations are hostile lifestyle change and food habits which are associated and influenced by urbanization. It is also observed that diabetes prevalence is doubled in urban than in rural regions. If the diabetes is not diagnosed and treated on time that leads to multiple chronic complications like diabetic retinopathy, diabetic renal disease and neuropathy can occur that ends in irreversible disability and death. The environmental risk factor is one of the significant factors for epidemiological determinant for diabetes. Some of these factors include the following.

i. Sedentary Lifestyle: Sedentary lifestyle is the foremost cause for the development of type 2 diabetes. Insufficient or in the absence of physical exercise modifies the synergy between insulin and its receptors that eventually lead to type 2 diabetes.

ii. Diet: A high dose of saturated fat intake has higher risk of reduction in in glucose intolerance resulted in higher fasting and insulin levels. Greater unsaturated fatty acids form the vegetable origin and polysaturated fatty acids are related with reduction in type 2 diabetes and reduce the fasting and two-hour glucose levels in the body. Hence replacement of saturated by unsaturated fatty acids favor the enhanced glucose tolerance and insulin sensitivity.

iii. Dietary Fiber: The bulk of evidences manifested that intake dietary fiber leads to reduction in blood glucose and insulin levels and glucose intolerance in type 2 diabetic persons. The enhanced intake of wholegrain cereals, vegetables and fruits rich in NSP levels shows encouraging results and recommended a minimum daily intake of 20grams of dietary

fiber. Lifestyle and dietary criteria related to diabetes is presented in Table 4.

iv. Malnutrition: Protein-energy malnutrition (PEM) in the initial stages of childhood diminishes the cell function, that associated with impaired carbohydrate tolerance.

v. Alcohol: Higher intake of alcohol will promote the obesity and damage the liver and pancreas.

vi. Viral Infection: The implicated viruses in diabetes are viruses like mumps, human coxsackie virus B4 and rubella. These viruses infect people those who are immunogenetically susceptible which leads to destruction in cells.

vii. Chemical Agents: The toxic chemical agents that destroy cells are alloxan, rodentialvalcor and Streptozotocin. An excess intake of foods that produce cyanide like cassava and some varieties of beans will also have significant toxic effects on cells.

viii. Stress: The resulting stress from the surgery, trauma, internal and external stress may emphasize the disease.

ix. Other Factors: Fluctuating levels of diabetes are connected to various social factors like occupation, marital status, religion, economic status, education, urbanization and lifestyle changes collectively known as 'Social Class'.

Table 4. Strength and evidence on lifestyle factors and risk of developing type 2 diabetes

Evidence	Decreased Risk	Increased Risk
Convincing	i. Voluntary weight loss in overweight and obese people ii. Physical activity	Overweight and obesity Abnormal obesity Physical inactivity Maternal diabetes
Probable	Non-starch polysaccharides (NSP)	Saturated fats Intrauterine growth retardation
Possible	- 3 fatty acids Low glycemic index foods Exclusive breast feeding	
		Total fat in take Trans-fatty Acids
Insufficient	Vitamin E Chromium Magnesium Moderate alcohol	Excess alcohol

Source: WHO (2003), Tech. Rep. Ser., N., N 916.

Prevention and Care: There are two strategies for primary prevention. i. Population Strategy, ii. High Risk Strategy.

1) Primary Prevention

i. Population Strategy: Type 2 diabetes prevention programme is based on eliminating possible environmental factors and promoting primordial prevention. In this prevention appearance of risk factors and the preventive measures contains maintenance of body weight by adopting healthy nutritional habits and physical exercise. The healthy nutritional habits include the intake of sufficient protein, dietary fiber and by avoiding sweets.

ii. High Risk Strategy: So far there is no specific high-risk strategy for type 1 diabetes but non insulin dependent diabetes mellitus (NIDDM) has evidences with reasons like sedentary lifestyle, excess nutrition and obesity. Modifications of these will reduce the risk of diabetes and its associated complications. The people those who are at risk should avoid diabetogenic drugs like oral contraceptives and eliminate factors which promote atherosclerosis such as smoking, high blood pressure & high

levels of cholesterol and high triglyceride levels.

2) Secondary Prevention

Once diabetes is diagnosed it will be sufficiently treated. The main objectives of treatment are as follows.

i. To maintain blood glucose levels as close as possible to the normal limits.

ii. To maintain a person's body weight (BMI) self-care and medication are important factors in diabetes controlling.

Follow up of urine test, self-administration of insulin, self-control from alcohol intake, maintenance of BMI, take part in periodic medical checkups, strict monitoring of symptoms related with glycosuria and hypoglycaemiaetc.

The diabetic patient must carry ID proof with his/her personal details including contact number and the particulars of treatment.

3) Tertiary prevention

Diabetes is main reason for various disabilities like blindness, kidney failure, gangrene and coronary thrombosis. The main aim at tertiary level is to establish specialized diabetic clinics/units, possessing higher order of expertise for providing diabetic diagnosis and management. It also involved in basic, clinical and epidemiological research to treat and manage the diabetes at local and regional levels.

2.9 Contaminated and Packaged Food Items

Contaminated food leads to food poisoning that is an acute gastroenteritis produced by having food contaminated either with bacteria or toxins of bacteria or inorganic chemicals and toxins from plants and animal origin. The food contamination is of two types, non-bacterial &bacterial. Non bacterial contamination is occurred by toxic chemicals like arsenic, cadmium, mercury, pesticides some seeds and sea foods. Bacterial contamination occurred due to consumption of foods adulterated by living bacteria or toxic substances of bacteria. Dear learner, in this unit we will learn more about various bacterial contaminated food.

a. Salmonella food contamination: It is one of the most common food contaminations because of the following 5 reasons.

i. Enhancing in community feeding

ii. Rise in international trade in human food

iii. Major prevalence of salmonellosis in farm cattle

iv. Extensive use of detergents which interfere the sewage treatment

v. Large scale distribution of cooked food.

b. Staphylococcal food contamination: The staphylococcal food contamination is caused by its toxicants present everywhere in nature and present on the skin, throat and nose of humans and animals. They are more common agents for causing infections like boils and pyogenic infections of humans and animals.

Cattle suffering from mastitis are responsible for outburst of food contamination of milk and milk products. The other food products that are contaminated by staphylococcal bacteria are salads, milk, milk products and custards. Once the toxins entered in to the body, they act mainly on the intestine and central nervous system. The symptoms for the consumption of this bacterial contaminated food are vomiting, cramps in the abdomen and diarrhoea.

c. Botulism: It is caused by the contamination of exotoxin of *Clostridium botulinum,* with type A, B or E. The bacteria are present and scattered in dust, soil and inside the intestine of animals. The foods that are responsible for botulism are preserved food items at home like canned vegetables, smoked or pickled fish and homemade cheese. The symptoms for this are dysphagia, diplopia, ptosis, dysarthria, blurring of vision, quadriplegia and muscle weakness.

d. *Cl. Perfringens:* This bacterium is present in faecal matter of animals and humans, soil, water and air. The contamination is spread through consumption of contaminated meat, meat dishes and poultry food. The food prepared 24 hrs before consumption and the gradual cooled food heated quickly before consumption is the reason behind this infection. This bacterium spores between 30-500C multiply and generate various toxic substance like alpha and theta toxins. The symptoms for this contamination are diarrhoea and crams in abdomen. To prevent this bacterial contamination is either food is cooked before consumption or the food has to be sufficiently cooled before reheating.

2.10 Prevention and Control

i. Sanitation of Food: The preventive measures like meat inspection by veterinary staff before and after slaughter. Standards of personal hygiene should be maintained in the people those who are involved in preparation, handling

and cooking process. Those who are suffering from diarrhoea, dysentery, throat infection and infected wounds should be avoided. Ready to eat foods should be properly handled, milk & milk products, foods contain egg should be pasteurized. Sanitary measures like sanitization of food preparation surfaces, equipment, utensils, mice, rats, dust and flies should be kept away from the cooking areas should be maintained properly. The people who involved in cooking and handling food products should be well equipped with health education regarding personal hygiene, thorough hand washing and clean habits.

ii. Refrigeration: Prevention of bacterial food contamination can be avoided by maintaining proper temperatures where the food is preserved. Food should not be left behind in the warm pantries because the bacteria and other germs will proliferate in millions by next day. The left-over food should be refrigerated at appropriate temperature to avoid multiplication of bacteria and their toxin production. Golden rule like 'cook and eat the same day' should be followed.

The other type of contaminants are mycotoxins which are also known as mold toxins. Mycotoxins are organic molecules with relatively lesser molecular weight and generate acute and chronic toxic effects in livestock and humans as well on exposure. These mycotoxins enter food substances and feed not only supply at production stage, process, transport and storage levels. Mold growth and mycotoxin production is higher in various factors of environment such as temperature, pH, substrate, moisture, and crop stress. Once it enters the body it creates tremors, immunological suppression, hemorrhaging, fetal toxicity, kidney toxicity, and finally leads to death.

Staphylococcal bacteria are salads, milk, milk products and custards. Once the toxins entered in to the body, they act mainly on the intestine and central nervous system. The symptoms for the consumption of this bacterial contaminated food are vomiting, cramps in the abdomen and diarrhoea.

Packaged food items: Packing the food products is one of the steps involved in food storage and transportation. The fundamental function of the packaging is to protect the food substances from contamination and spoilage. If the packaging material is not selected suitably, the evidence shows that packaging materials are the significant source of chemicals and alters the taste and flavors which leads to health of humans which ultimately changes the quality of life. Food packaging process depends on the factors of food quality such as storage temperature, exposure to UV light, and duration of storage. There is a migration of chemicals from the package material to food under particular conditions and contaminate the food products. The interaction of the migrating chemicals to food products plays a crucial role in affecting the quality, texture, appearance and shelf life of food. This interaction also triggers the oxidation reaction and flavor transition. The migration process involves diffusion and alters the organoleptic properties of the packaged food.

There are various following possible ways of migration of contaminants.

i. Contact migration: Whenever food contacts directly the surface of packing material the packaging material will directly transfer the contact surface and contaminate. For ex: Pizza in cardboard box, Plastic trays, pouches and food wrapping foil.

ii. Gas phase migration: In this migration of volatile substances through the airspace present between the packet and food and enters into food product by the process of diffusion. For example, diffusion of mineral oil into dry solid food products from either cartons or recycled paper board through the airspace or inner plastic pouch.

iii. Penetration Migration: It involves the movement of substances from surfaces of nonfood contact such as printed or coated surfaces of the of the food product packaging through the substrate and reach the food contact side either by direct contact or by gas phase diffusion.

iv. Distillation or Condensation migration: During heating or sterilization or boiling of food in packets or trays or cartons the migration will occur. These processes consist of evaporation of volatile substances present in the packages and during steam distillation in the food items contain moisture or semisolid foods.

v. Migration in plastic-based food packing: The plastic packaging materials consist of number of chemicals such as polyethylene, polypropylene, polycarbonate and polyvinylchloride enter the food substances during the course of time and

has an adverse health effect. The additives like antioxidants, plasticizers, light stabilizers lubricants, thermal stabilizers slip additives and antistatic agents. The liquid components include toluene, adipic acid, butanone-2, hexane and ethyl acetate and pigments like molybdate orange. The evidences show that chemicals present in the lining of inner surfaces and sealants of ceramic or glass containers and stainless steel that contains plasticizers and other chemicals that have direct contact with the food resulted in contamination. Some decomposition products from monomers in additives under proper conditions transfer into the food. Some chemical residues such as diphenyl thiourea in PVC films, dioxins and benzene, Bisphenol A, processing agents like hydrogen peroxide and many volatile compounds.

3. Sum up

The study of lifestyle diseases is related with the study of human beings and the surrounded environment. Millions of people are suffering from preventable diseases creating in the environment where they live. Humans are surrounded and influenced by physical, biological and psychosocial environments, which are more complicated. The influential trend makes the humans decrease in the quality of life. The psychosocial factors like poverty, urbanization, migration and stressful situations like bereavement, loss of employment, desertion handicapped child births produce anxiety, depression and palpitation. These emotional feelings produce several changes in endocrine, autonomic and motor systems that leads in structural and functional changes in in bodily organs. Proper conventional public health interventions are required to bring changes in the lifestyle, behavior and habits of people.

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