



Short Review Paper

Lifestyle disorders: An emerging health problem (causes and prevention from nutritional perspective)

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Abstract

Lifestyle disorders are the major health issues observed all over the world. They can be defined as diseases linked to one's lifestyle. These are chronic and are not transmitted from one person to another, also known as non-communicable diseases (NCDs). The major causes for dealing with NCDs are poor dietary intake, lack of physical activity, sleep variations, chronic stress, undesirable behaviour and addictions of different types. Most countries are facing this problem with increased death rates in the population. The major lifestyle diseases include diabetes, cardiovascular disorders, respiratory disorders, and cancer. With increased modernization, the prevalence of NCDs has increased, and the quality of life has been affected. Treating these diseases is both time-consuming and expensive. Lifestyle disorders are preventable if the proper nutrition is followed. The review focuses on ways to prevent the risk of developing NCDs in adults and improve the quality of life of patients with the help of modern nutrition.

Keywords: Non communicable diseases, diabetes, cardiovascular diseases, respiratory diseases, cancers.

Introduction

Background: Lifestyle disorders are the major health issues found all over the world. The world is shifting from infectious diseases to non-communicable diseases (NCDs)¹. Increased modernization and industrialization, has impacted the lifestyle. According to World Health Organization (WHO) report, mortality rate has increased in the countries with low economic status and poverty due to NCDs². Prevalence of communicable and non-communicable diseases has increased in India. With the increased industrialization jobs and professions has changed the lifestyle of an individual and adults are more susceptible to the risk of chronic diseases. Also the quality of food has been decreased due to poor soil mineralization and increased processing techniques. A recent study from various locations in India shows that people with lower socioeconomic status are more likely to develop coronary heart disease and have a higher death rate³. To combat this growing health crisis, a comprehensive understanding of the causes and prevention of lifestyle disorders from a nutritional perspective is essential. Research focused on identifying the specific dietary factors contributing to these disorders, elucidating the underlying mechanisms linking nutrition and disease development, and exploring effective nutritional interventions is crucial. By promoting nutrition education, encouraging healthy lifestyle choices, and fostering a supportive environment, we can mitigate the impact of lifestyle disorders and pave the way for a healthier future. The review was conducted for the identification of risk factors that leads to lifestyle disorders and ways to

prevent and improve the quality of life through modern nutrition.

What are Lifestyle Disorders?

Diseases that are associated with the lifestyle of an individual or the way of living are known as lifestyle disorders. Also termed as non-communicable diseases (NCDs) as they do not transmit from one person to another when diagnosed. These are chronic in nature and are often caused due to unhealthy lifestyle, undesirable behaviour, chronic stress, poor dietary habits, physical inactivity and addiction to alcohol, smoking and social media. Most of them are not curable but can be controlled and prevented if proper nutrition and necessary changes were made into the lifestyle. They are the most leading cause of death all around the world. NCDs require prolonged course of treatment and has multiple risk factors and complex etiology⁴. NCDs like diabetes, cancer, CVDs and respiratory diseases are closely linked with the choices in lifestyle and hence they are termed as lifestyle disorders. Following chart shows increased mortality rate due to NCDs in recent years. Following chart depicts % of proportional mortality rate in India due to NCDs.

Characteristics of NCDs: Lifestyle diseases are characterised by the following – i. Complex etiology: Non-communicable diseases have multiple risk factors. It is impossible to determine the exact cause of lifestyle diseases. The etiology of NCDs can be divided into two subcategories: uncontrollable causes (rapid unplanned modernization, globalisation of unhealthy lifestyles and population aging) and controllable causes (raised blood

pressure, increased blood sugar levels, elevation of blood lipid levels and central obesity). ii. Non-contagious (non-communicable): Lifestyle disorders are non- infectious diseases that are related to one’s lifestyle. iii. Prolonged course of illness: NCDs require long-term course of medical treatment as they are chronic in nature. iv. Functional impairment or disability: NCDs cause functional impairment or disability and makes difficult for the patient to live a normal life. Patients with chronic disorders are unable to participate in regular physical activities and eat normally².

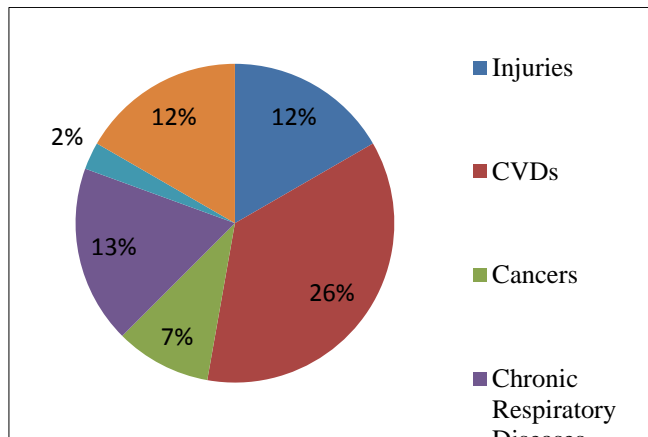


Figure-1: Proportional Mortality Rate- India (% of mortality in all ages and both sexes)¹⁰.

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Causes of NCDs

Factors that contribute to the development of NCDs are classified into the following categories – i. Modifiable risk

factors: Factors that are related to one’s behaviour are known as modifiable behavioural risk factors. It includes excessive consumption of alcohol, addiction to smoking and tobacco, physical inactivity, wrong body posture and disturbed biological clock. Sedentary lifestyle as table work and stress related work also increases the occurrence of NCDs. ii. Non- Modifiable risk factors: Factors that cannot be controlled or modified with the application of intervention are known as non- modifiable risk factors. These include age, race, gender and genetics. iii. Metabolic risk factors: Factors that increase the possibility of NCDs by causing certain changes in the metabolism are known as metabolic risk factors. These include increased blood pressure, obesity, hyperglycaemia, and hyperlipidemia⁴.

Three major lifestyle disorders

There are various types of non communicable diseases which cannot be cured but can be controlled and prevented. These include obesity, insomnia, diabetes mellitus, cardiovascular disorders, respiratory diseases and cancers. Three major lifestyle disorders are the most leading cause of death are diabetes mellitus, cancer and CVDs.

CVDs (Cardiovascular Diseases)

CVDs are a group of disorders that are related to the heart and blood vessels. These include atherosclerosis, hypertension, stroke, and cardiac arrest. These are caused by excessive consumption of fatty foods, increased sodium levels in the body, physical inactivity, poor diet, tobacco use, smoking, and harmful use of alcohol. CVDs are one of the major cause of death and disability in the world. These are 90% preventable if proper care and behaviour changes are made to one’s lifestyle. Management of CVD includes a healthy diet, physical activity, certain medications, and behavioural changes². Please refer the graph no. 1 for percentage of mortality rate in different regions of India.

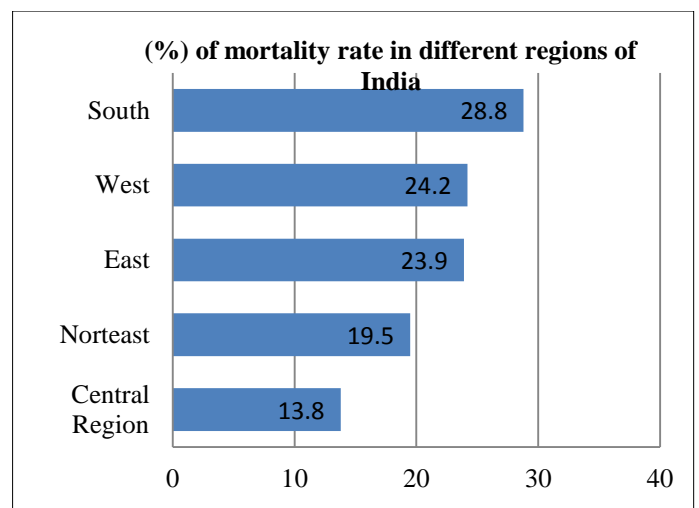


Figure-1: Proportionate of Mortality rate in different regions of India¹².

Prevention and Control through Nutrition

Prevention and control of CVDs include dietary management and lifestyle modifications. Dietary management suggests some foods that can reduce the risk of CVDs in adults. Foods rich in antioxidants, vitamin C, vitamin E, vitamin A, selenium, PUFA, and MUFA helps to reduce the risk of CHDs⁸. Maintaining a weight lower than the standard is a key of preventing CHDs in obese patients. Patients should avoid foods that are high in trans and saturated fats. Consumption of almonds and walnuts reduces cholesterol levels and are a good source of antioxidants. Vegetable oils like safflower and sunflower oil contain polyunsaturated fatty acids, which protect against increasing LDL levels in the blood. The intake of carbonated drinks and sugars should be minimized. The consumption of processed food items with added preservatives should be restricted. Diet should consist of variety of fruits and vegetables.

Maintaining hydration status is also important to control the occurrence of CVDs. Foods should be boiled and steamed before eating. In cases of hypertension, sodium must be restricted. Regular exercise improves cardiac health by reducing adipose tissue fat accumulation and maintaining a healthy body weight. It increases the HDL levels in the blood and decreases the rate of depression and anxiety. Physical activity must include aerobic exercises like cycling, brisk walking, running, swimming, and slow jogging. Consumption of alcohol must be completely avoided⁷. A regular checkup of cholesterol and blood pressure should be carried out to know the status of cholesterol and sodium in the blood. Relaxation through sleep minimizes the level of stress and anger, as they have a negative effect on the heart. To reduce the risk of developing CHD, preventive care should begin in early adulthood. Please refer the [graph no. 2 & 3](#) for gender wise estimated proportion of leading sites of cancer in India.

Cancers: Cancer is one of the most leading cause of death in the world. It is a condition in which body tissues are damaged due to uncontrollable division of abnormal cells. This is caused by imbalance between antioxidants and free radicals (ROS) known as oxidative stress. Various types of cancers are observed among the people such as, breast cancer, melanoma, lung cancer, colon cancer, leukemia and lymphoma. It is caused due to immune deficiencies, genetics, poverty, unhealthy diet, consumption of processed foods, foods with preservatives and additives, physical inactivity, exposure to pollution and undesirable behavior². Treatment includes radiation therapy, chemotherapy, immunotherapy, hormonal transplant, and surgery. Nutritional management includes weight management, parenteral feeding, oral supplementation, and reduce inflammation by soothing diet⁸.

Prevention and Control of Cancer through Nutrition

Cancer can be prevented and controlled by a healthy and nutritious diet, exercise, and certain lifestyle modifications. Consumption of citrus fruits and vegetables was found to have a 20% reduction in cancer incidences. About 400gm/day is recommended to eat fruits and vegetables in the form of salads. Antioxidants play an important role in the prevention of cancer by destroying free radicals generated during energy production. Maintaining a balance between reactive oxygen species and antioxidants is crucial. The goal of treatment includes detoxification of the liver, weight management, and correcting nutritional deficiencies.

Phytochemicals such as terpenes, lycopene, limonoids, organosulfuric compounds, and polyphenols are found to be the most effective in minimizing the risk of developing cancer. Care should be taken during childhood. After diagnosis, the goal of treatment is to control the progression of cancer cells through medications and therapies. A soothing diet is advised for the patients to reduce the side effects of chemo drugs. Inflammation is observed in patients who are on radiation therapy. Fiber-rich foods should be consumed in adequate amounts, as they dilute bile acids and prevents abnormal cell proliferation. Carotenoids present in foods like tomatoes, parsley, spinach, and oranges inhibit tumor growth. Limonoids are also known as chemo preventive agents as they help in the detoxification of the liver. Phenol-containing foods like apples, grape juice, chocolate, and tea scavenge free radical compounds and decrease the risk of cancer. Thiols such as organosulfuric compounds found in allium, onion, and garlic which increase the production of glutathione S transferase (a phase II enzyme in liver detoxification), inhibit mutagenesis, and increase the activity of macrophages and T lymphocytes. Recent studies show that potentially carcinogenic agents like aflatoxin, pesticides, nitrites, and food dyes are activated by the enzyme systems in the gut micro biota. To minimize the rate of harmful enzymatic actions, intervention with probiotics and prebiotics is necessary. Foods such as honey, onions, bananas, oats, and dietary fibre are good sources of prebiotics, whereas curd and yoghurt are good sources of probiotics. Moderate-intensity workouts have been shown to reduce the risk of breast cancer in women and colorectal cancer in men⁷. Also increases the longevity of patients suffering from tumors. Processed and preserved foods, as well as artificially colored foods, must be avoided as they increase the risk of cancer in the future.

Diabetes Mellitus (Type II DM)

It is a metabolic disorder in which elevations of blood glucose levels are observed. It is largely preventable and manageable, but difficult to cure. It is caused by irregular exercise habits, unhealthy food habits, disturbed sleeping patterns, etc. Symptoms like polyuria (frequent urination) and polydipsia (excessive thirst), weight loss, and blurred vision may be observed. The goal in this case is to concentrate on maintaining the blood sugar levels as close to normal. Management includes proper dietary practices, exercise, and use of appropriate

medications (insulin and oral drugs). Patient monitoring and counseling are vital to minimize the risk of further complications related to diabetes⁶.

Prevention and Control of Diabetes through Nutrition

Diabetes mellitus is the third major lifestyle disorder in the community. It is associated with the elevation of blood glucose levels in the body. High blood glucose levels indicate hyperglycemia, and low blood glucose levels indicate hypoglycemia.

The goal of treatment includes management of blood glucose levels. Blood glucose levels are well managed by proper dietary modifications and changes in lifestyle. It can be prevented by creating awareness about diabetes through mass media, organizing screening programs for diabetes, and identifying high-risk groups. Moderate-intensity and vigorous exercise improve insulin sensitivity and reduces the risk of Type 2 DM⁹. Consumption of whole grains and dietary fibre has been associated with improved insulin levels. Alcohol and tobacco consumption must be avoided in cases of diabetes to minimize the risk of complications. In the case of dehydration, maintaining fluid balance is crucial. Sudden imbalances in fluids and electrolytes might increase the risk of further complications. Among the minerals, chromium has shown a positive effect in the management of blood glucose levels. It prevents lean muscles, promotes weight loss, and lowers cholesterol and triglycerides. Soluble fibres such as pectin, gums, and hemicelluloses (in fruits) delay gastric emptying, slows glucose absorption and lowers serum cholesterol. About 20–30 grams of soluble fibre is recommended. Dietary supplements like fenugreek seeds which contain saponins, glycosides and chemical constituents improve the absorption of carbohydrate and decrease the insulin resistance. It also delays gastric emptying, inhibits glucose transport and has anticoagulant activity. Cinnamon as an active ingredient reduces fasting sugar, lipid levels and promotes glycogen synthesis. Bitter guard (natural insulin) is another dietary supplement which has potential benefit in promoting glucose uptake and inhibits enzymes that are involved in glucose production, and enhances glucose oxidation. A tablespoon of aloe vera juice is recommended for diabetic patients as it immediately lowers the blood glucose levels. These supplements are considered as adjunctive agents to prescription treatment for hyperglycemia but not be used instead of medications⁷.

Conclusion

Lifestyle disorders were found to be the major cause of death among the community. Due to complex etiology the exact cause

of lifestyle diseases has not been specified. Diet and lifestyle are the only cause and prevention for non-communicable diseases. It is necessary to incorporate physical activity in daily routine with proper intake of nutritious diet and avoidance of alcohol, tobacco and smoking. The review can be served as a guide to healthy lifestyle by the elimination of NCDs. This article may help the individual to make healthy choices and reduce the risk of developing lifestyle diseases. Furthermore it was concluded that nutrition is an effective way to prevent and control the cause of non-communicable diseases among the community.

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