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Rajat Kumar
Motherhood University,
Roorkee, Uttarakhand, India

Priyanka Bisht
Motherhood University,
Roorkee, Uttarakhand, India

Harsh Agarwal
Motherhood University,
Roorkee, Uttarakhand, India

Sanjay Kumar Verma
Motherhood University,
Roorkee, Uttarakhand, India

Corresponding Author:
Rajat Kumar
Motherhood University,
Roorkee, Uttarakhand, India

A comprehensive review on the prevalence of metabolic diseases due to unhealthy lifestyle & food habits

Rajat Kumar, Priyanka Bisht, Harsh Agarwal and Sanjay Kumar Verma

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Abstract
Metabolic diseases such as cancer, diabetes, hypertension, obesity, hypertension, diabetes and cholesterol are result of unhealthy lifestyle choices and diet in the depths. Our literature study incorporates a global perspective, highlighting the alarming occurrence of metabolic diseases and the strong evidence linking it to unhealthy eating habits, sedentary lifestyles, and other lifestyle factors. Various Research confirm that the decisions people make about their diet and daily activities have a profound effect on metabolic health, leading to worryingly high levels of these diseases worldwide Furthermore, this study highlights the urgent need for multilateral intervention, which requires strong collaboration between individuals, health professionals and policy makers. A proactive approach including awareness campaigns, educational programs and behavior change strategies can reduce the growing burden of metabolic diseases Providing a comprehensive overview of the empirical evidence, this study not only highlights the significant impact of lifestyle and dietary choices on physical health but is a valuable if they are used to shape public health policies and guide future research efforts. Ultimately, these comprehensive insights highlight the need to address these interrelated issues together to pave the way for healthier and more resilient communities in the future.

Keywords: Lifestyle, food, habits, metabolic disease, cancer, obesity, hypertension, diabetes

Introduction
Health is the most important & fundamental right of every human being. Health is often described as the absence of diseases, but it is the state of absolute mental, social & physical well-being [1]. Health plays an important role in achieving happiness [2]. Health helps an individual to live a life of purpose and meaning. A healthy lifestyle allows individuals to perform their functions in society [3]. A person's lifestyle is directly related to the health condition of that individual. Life and health are intertwined, as the existence of a living entity depends on a certain level of functional well-being, and sometimes, even active operation. The significance of life's value fluctuates not only throughout an individual's lifetime, across various stages or potential circumstances but also when comparing different individuals. Lives that differ in duration, health status, or physical development do not all experience the same level of fulfilment [4]. The ancient Greek perspective on health revolved around the idea of a harmonious equilibrium between an individual and their environment. This encompassed the interconnectedness of both the physical and spiritual aspects, emphasizing a seamless unity between the body and soul. Additionally, the belief in the inherent connection between disease and natural factors was a fundamental pillar of this health paradigm. Analogous notions were also prevalent in ancient Indian and Chinese medicinal traditions [4]. Health research holds immense significance for society, as it offers vital insights into various aspects of well-being. It provides information concerning the trends and factors related to diseases, risks involved, the effectiveness of treatments, the impact of public health initiatives, functional capacities, care patterns, and the utilization and financial aspects of healthcare services [5]. Lifestyle is a manner of living adopted by individuals, groups, and even entire nations, moulded by distinct geographical, economic, political, cultural, and religious contexts. It encapsulates the distinctive attributes of the populace within a particular location and era. This encompasses the everyday habits and actions of individuals within their work,

leisure activities, recreation, and dietary choices [6]. Over the past few decades, scientists have found the lifestyle as a significant factor of health. "According to WHO the lifestyle is a 60% factor of a person's vitality and overall quality of life" [7].

A considerable number of individuals adhere to an unhealthy lifestyle, resulting in the onset of ailments, disabilities, and in some cases, even mortality. Conditions such as metabolic disorders, issues related to joints and skeletal structure, cardiovascular diseases, hypertension, obesity, and incidents of violence are often attributed to an unfavourable lifestyle. The connection between one's lifestyle choices and their overall health status demands significant attention and consideration [6].

This review discusses prevalence of metabolic diseases due to unhealthy lifestyle & food habits and how they are connected to a wide range of diseases

Relation of Food Habits to Diseases

An ancient Chinese proverb states, 'he that takes treatment and neglects diet, wastes the skills of a doctor [8] The connection between food and health is intricate. While food is essential for survival, consuming too little, excessive amounts, or inappropriate types of food can have adverse effects on one's well-being [9]. The food we eat has a significant impact on how we live, and it directly affects our health. In urban areas, a common health issue is obesity, often caused by poor eating habits. We can measure an unhealthy lifestyle by looking at something called the Body Mass Index (BMI). City living often leads to nutrition-related problems because people tend to eat a lot of fast food and meals that lack proper nutrients. This can contribute to heart and blood vessel problems [10]. The act of consuming food goes beyond a mere requirement for the proper functioning of the human body. The elements found in our diet become integrated within us, engaging with our gut microbiota, immune defences, and metabolic processes. For many years, it has been recognized that the development and progression of various common illnesses like cancer, stroke, and heart attacks are influenced by the way we eat [11-14]. The prevalent Western diet is characterized by a substantial heavily processed foods consumption and it tends to be abundant in animal-based proteins, trans-fatty acids, and added sugars [15, 16] Contemporary studies reveal that a diet abundant in processed meat and red meat substantially increase the risks of development of various cancers, particularly colorectal cancer [17, 18].

Obesity

In the last 20 to 30 years, obesity cases have steadily risen and emerged as a contributor to global mortality. The World Health Organization indicates that in 2016, 650 million fell into the category of obesity while, 1.9 billion people were classified as overweight [19]. This trend signifies a critical health concern on a global scale.

As per data from the Center for Disease Control, obesity rates in the United States were 30.5% in 1999, which saw a significant rise to 42.4% by 2017 [20]. This escalation is paralleled by a surge in chronic conditions linked to obesity, like diabetes and cardiovascular disease, which have climbed the ranks to become leading causes of death in the country [21]. To emphasize the economic impact, in 2008, the medical expenditure related to obesity reached $147 billion, surpassing costs for non-obese patients by $1,429. These figures underline the substantial burden that obesity places on both public health and the economy [20].

Obesity and its consequences represent a significant contributor to health issues, diminishing quality of life, and its associated complications can profoundly impact life expectancy [22]. Obesity is measured by BMI. The World Health Organization has categories for BMI: obesity is over 30 kg/m², overweight is 25.0-29.9 kg/m² and normal is 18.5-24.9 kg/m² [23].

Table 1: WHO's classification for obesity using BMI [23]

BMI (kg/m2)	Type	Class
<18.5		Underweight
18.5-24.9		Normal
25.0-29.9		Overweight
30.0-34.9	I	Obesity
35.0-39.9	II	Severe obesity
40.0-49.9	III	Morbid obesity
$>$50	III	Severe morbid obesity

In 2017-2018, when accounting for age differences, around 42.4% of adults in the U.S. were identified as obese. Among those aged 60 and above, it was 42.8%, for individuals aged 40-59, it was 44.8%, and aged 20-39, the rate was 40.0%, and Interestingly, there weren't any significant variations in obesity prevalence based on age groups [24].

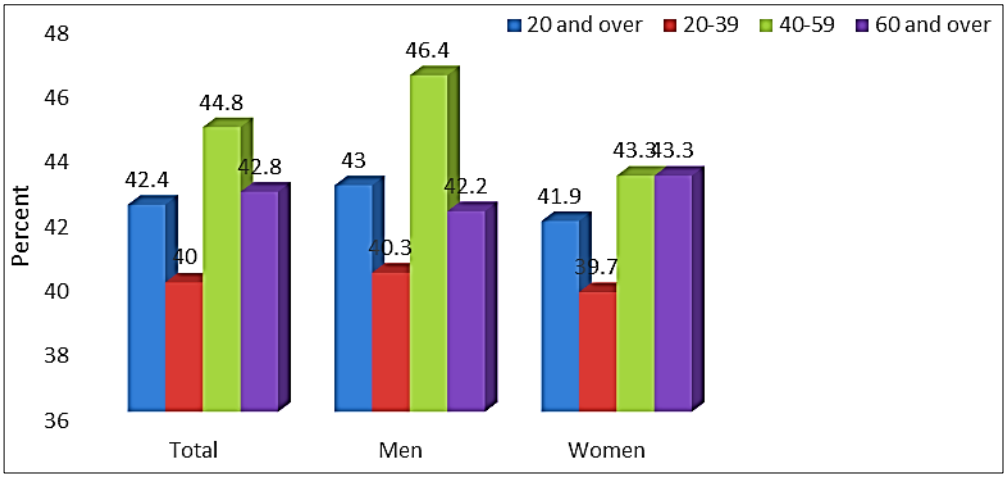

Fig 1: Obesity rates among individuals aged 20 and above, categorized by sex and age groups, in the United States during 2017-2018 [24]

In India, 2019-21- National Family Health Survey, a comprehensive government-conducted household survey focusing on health and social markers, percentage of overweight children under 5 years old is increased to 3.4%, an increase from 2.1% in 2015-16 [25].

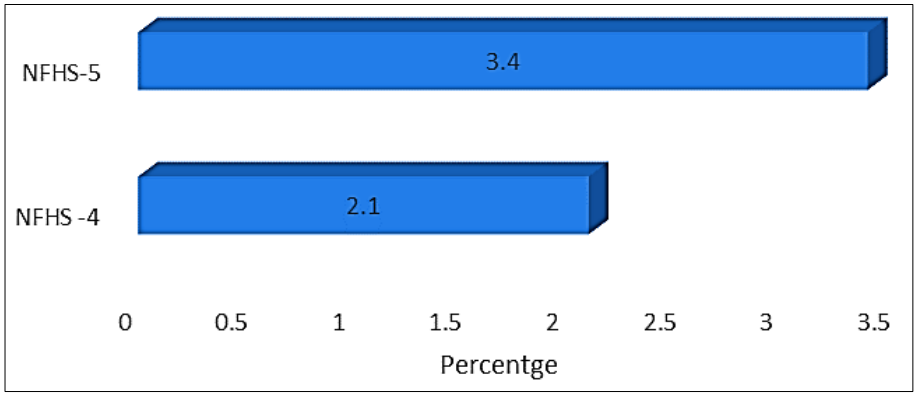

Fig 2: Comparison between NFHS-4 & NFHS-5 for children under 5 who are overweight [26, 26].

As per Unicef's 2022 World Obesity Atlas, it is projected that India will have over 27 million obese children, accounting for one out of every ten children worldwide, by the year 2030. India's ranking stands at 99th among 183 countries in terms of its readiness to address obesity-related challenges. Furthermore, the economic consequences of overweight and obesity are forecasted to escalate from $23 billion in 2019 to a staggering $479 billion by 2060 [27].

The proportion of calories derived from fast food has surged by five times among adolescents in the past three decades [28, 29]. Concurrently, the global prevalence of obesity has escalated dramatically, emerging as a severe social health concern, mostly affecting adolescents and children in the current century [30]. This surge in fast food consumption can be attributed to factors such as palatability, menu variety, affordability and convenience [31]. Remarkably, between 30% of children and over 50% of college students are resorting to fast food on a daily basis [29, 32] Furthermore, in the US, more than 17% of children and teenagers and 33% of adults are grappling with obesity [33]. This obesity epidemic has been largely triggered by increased food consumption and significant shifts in dietary habits [34], compounded by poor dietary choices among young individuals [35].

Obesity and overweight stem from a diverse range of factors, spanning from genetic predisposition to environmental influences [30, 34]. Our surroundings also play a role in propelling the rapid growth of global obesity epidemic [24]. The consumption of fast food has demonstrated a robust association with weight gain and obesity. This, in turn, elevates the risk of obesity-related ailments, assuming the status of a significant public health predicament [36, 37]. Notably, obesity and overweight stand out as primary drivers of non-communicable diseases, influencing the years of life lost due to conditions like cardiovascular diseases [38, 39].

Nowadays, obesity is associated with several elements that contribute to heightened cortisol production. These factors include the consumption of food with a high glycaemic index, chronic stress, and alterations in sleep patterns [40, 41]. As per the findings, over a third of adults consume junk food multiple times each week [42]. A direct correlation between the consumption of junk food and the onset of obesity, particularly central adiposity is also established. This presents a significant risk factor for conditions like heart diseases and other non-communicable ailments [43, 44].

The rates of overweight and obesity have experienced a significant surge in recent decades, evolving into a health crisis across most regions of the globe [45-47]. The substantial consumption of junk foods has played a substantial role in contributing to the increase in overweight cases among school-aged children in India, escalating from 9.7% to 13.9% within a decade [48]. These trends harbor potential adverse consequences for the weight status of the younger population, encompassing physical inactivity and unhealthy eating habits, ultimately influencing the future health of adults [47, 49].

Moreover, there's a direct association between high consumption of fried foods and artificially sweetened beverages with elevated body mass index and obesity in children. Adding to the concern, diets rich in junk foods tend to lack adequate nutrients [50, 51].

There is substantial evidence confirming that obesity (varying based on the extent, duration, and distribution of excess weight or adipose tissue) can gradually contribute to or worsen a diverse range of associated health conditions. These encompass type 2 diabetes mellitus, hypertension, dyslipidaemia, cardiovascular disorders, non-alcoholic fatty liver disease, reproductive dysfunction, respiratory anomalies, psychiatric ailments, and even elevate susceptibility to specific types of cancer. This section offers a comprehensive overview of these connections, with a spotlight on the prevalent co-morbidities associated with obesity [52].

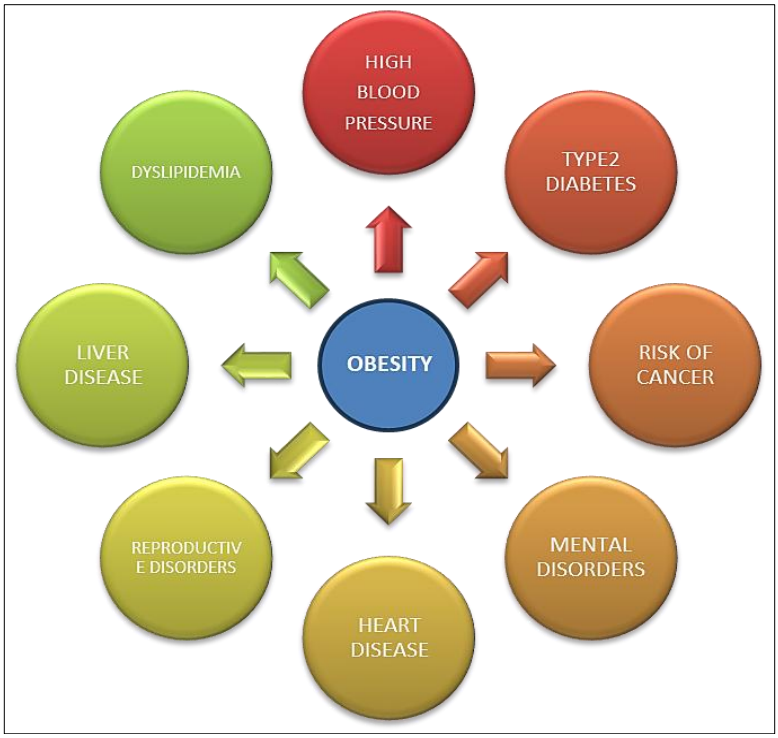

Fig 3: Co-Morbidities Associated with Overweight and Obesity [52]

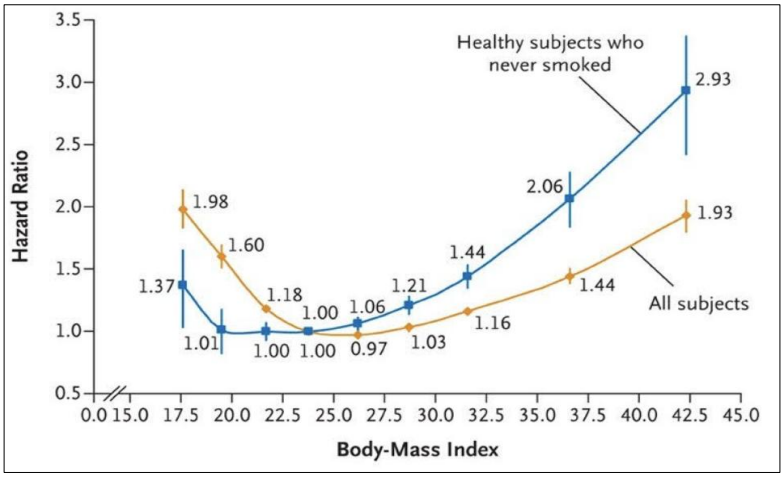

Fig 4: Relationship Between Body Mass Index (BMI) and Mortality (data from Calle *et al*. NEJM 1999

Diabetes

Diabetes mellitus represents a metabolic disorder, with recognized etiological factors encompassing lifestyle choices, such as dietary patterns, physical activity, unhealthy habits, and stress. Its escalating prevalence in developing nations like India correlates closely with demographic structures, age-related factors, and urbanized lifestyles [53, 54].

Despite significant advancements in global research and treatment facilities, the precise etiology of diabetes mellitus remains elusive. High-risk factors contributing to the development of diabetes include genetics, age, exercise, physical fitness, dietary patterns, medications, obesity, and waist circumference, which collectively lead to reduced insulin absorption and beta-cell destruction [55].

The connection between diet and the origin of Type 2 Diabetes (T2DM) was first put forth by Indian researchers. They noted that this condition was primarily prevalent among wealthier individuals who consumed high quantities of oil, flour, and sugar [56]. Several studies have discovered compelling links between Type 2 Diabetes (T2DM) and the consumption of carbohydrates and fats. Notably, various research investigations have indicated a positive connection between elevated sugar intake and the onset of T2DM [57]. For example, a study led by Ludwig involved over 500 culturally diverse schoolchildren for a span of 19 months. It revealed that with each additional serving of sugary beverages, the likelihood of obesity heightened, even after accounting for factors like diet, demographics, body measurements, and lifestyle [58].

Another study encompassed diabetic patients exhibiting differing levels of glycemic control. In this case, there were no disparities noted in average daily plasma glucose levels or daily glucose patterns. Similar to carbohydrates, the association between dietary fats and T2DM exhibited inconsistencies [59]. Multiple prospective studies have found correlations between fat consumption and the subsequent risk of T2DM. For instance, a research endeavor conducted in San Luis Valley encompassed over a thousand subjects without prior diabetes diagnoses, and their progression was

tracked over a span of 4 years. The outcomes indicated an interplay between fat intake, T2DM, and impaired glucose tolerance [60, 61]. On the other hand, another study assessing diet components, such as fat, fiber, and sucrose, found no significant associations with diabetes risk after adjusting for variables [62].

Recent evidence underscores a connection between soft drink consumption and obesity and diabetes, attributed to the excessive presence of high fructose corn syrup in these beverages. This syrup elevates blood glucose levels and BMI to precarious levels[63]. Additionally, diet sodas have been implicated in exacerbating insulin resistance due to the presence of glycated chemicals [64]. Food consumption is closely linked to obesity, not solely in terms of quantity, but also in terms of diet composition and quality [65]. Increased intake of red meat, sweets, and fried foods heightens the risk of insulin resistance and T2DM. Conversely, a negative correlation has been noted between vegetable consumption and T2DM [66]. The consumption of fruits and vegetables is believed to guard against T2DM due to their richness in nutrients, fiber, and antioxidants [67].

A study report involving Japanese women demonstrated an increased risk of T2DM associated with higher white rice consumption [68]. This underscores the urgent need for lifestyle changes across the general population and heightened awareness regarding healthy dietary patterns across all demographic groups.

A comprehensive review study [69] emphasizes that the quality of one's diet plays a pivotal role in insulin absorption, rather than the specific components of the diet. Contrary to conventional wisdom linking milk products, known for higher cholesterol, saturated fat, and protein content, to cardiovascular disease (CVD) risk factors, evidence suggests that increased milk product consumption isn't inherently linked to reduced insulin absorption. However, it's important to note that the study's findings were inconclusive, and factors like the type of milk products consumed, their fat and mineral content, and genetic variations within populations could impact insulin absorption [70].

A separate study conducted in Sweden examined the relationship between dietary habits and the risk of metabolic syndrome, specifically comparing a diet rich in milk fat to regular milk and cheese consumption. The results indicated that excessive intake of glucose, bakery products, and alcohol was associated with metabolic syndrome risk. Interestingly, in women, high milk product consumption appeared to have a protective effect against type 2 diabetes. Furthermore, a diet rich in milk fat was associated with a reduced risk of hyperinsulinemia in women, but not in men. This suggests a potential gender-based difference in how various foods influence metabolic outcomes with respect to diabetes [71].

In a prospective analysis spanning 15 years and involving 7,731 individuals, Brunner *et al*. [72] discovered that a "healthy" dietary pattern, characterized by high fruit and vegetable intake, wholemeal bread, breakfast cereals, low-fat dairy, and limited alcohol consumption, reduced the risk of diabetes and coronary events compared to an "unhealthy" pattern consisting of white bread, processed meat, fries, and full-cream milk. The "healthy" pattern was nearly twice as rich in fruits and vegetables and three times higher in bakery and dairy product consumption compared to the "unhealthy" pattern.

Numerous studies have explored the relationship between milk products and their negative associations with the risk of type 2 diabetes [73]. These studies have delved into several aspects, including the insulinotropic effects of milk products in single meals, the potential for fatty acids to improve insulin sensitivity, and the impact of diets rich in protein, calcium, and minerals on blood pressure, body weight/fat, and blood cholesterol.

A previous systematic review focusing on glucose homeostasis outcomes concluded that lower intakes of vitamin D and calcium might contribute to hyperglycemia, while diets rich in these nutrients could help regulate glucose metabolism [74]. Observational studies examining milk product consumption and insulin absorption have consistently revealed an inverse relationship [75, 76].

Additionally, a prospective study established a link between excessive red meat consumption and an elevated risk of developing type 2 diabetes in middle-aged and older individuals. Notably, there were significantly positive associations between cholesterol, protein, and iron-rich foods, such as red meat, and the risk of diabetes [76, 77].

In a latest randomized study in India by Nagarathna *et al*. 2020 reported that Dietary choices involving high consumption of milk and meat, along with lower intake of vegetables, fruits, and excessive junk food, have been shown to exert a substantial influence on glycemic control, cholesterol levels, and the prevalence of known conditions like diabetes and hypertension, as well as the development of peripheral neuropathy [78].

An Another study has suggested that increased consumption of meat, especially red meat, may contribute to insulin resistance and the development of chronic diseases like obesity, diabetes, and cardiovascular conditions. This higher consumption of red meat often aligns with what's considered a "Westernized" diet [79].

Hypertension

Systemic arterial hypertension stands as a paramount modifiable risk element for the prevalence of all-encompassing morbidity and mortality on a global scale. It is closely linked with an escalated likelihood of developing cardiovascular disease (CVD). Alarmingly, less than half of individuals with hypertension are cognizant of their condition, and a substantial portion of those who are aware either go untreated or receive inadequate treatment. However, it's crucial to note that effectively managing hypertension can significantly alleviate the worldwide health burden and reduce mortality rates. The origins of hypertension involve a multifaceted interplay between environmental and pathophysiological factors that impact various bodily systems, alongside a genetic predisposition [80].

On a worldwide scale, a staggering 3.5 billion adults currently exhibit suboptimal systolic blood pressure levels, typically exceeding 110-115 mmHg, with a striking 874 million adults registering systolic blood pressure readings of 140 mmHg or higher. Consequently, approximately one in four adults grapples with hypertension [81]. The period spanning from 1990 to 2015 witnessed a 43% surge in the cumulative global loss of healthy life years attributable to suboptimal blood pressure, driven by factors such as population growth, demographic aging, and a 10% surge in the standardized prevalence of hypertension. Notably, findings from the Global Burden of Disease study

underscore that suboptimal blood pressure remains the most substantial single risk factor contributing to the global disease burden and all-encompassing mortality, culminating in a staggering 9.4 million annual deaths and the forfeiture of 212 million healthy life years, which accounts for 8.5% of the global total [82].

Several nonpharmacological approaches have demonstrated their efficacy in reducing blood pressure (BP) and averting the onset of hypertension. Among these interventions, the most impactful include weight loss[83-85], diminished sodium (Na+) intake [83-86], increased potassium consumption [87, 88], heightened physical activity [89], limited alcohol consumption [90, 91], and diets like the Dietary Approaches to Stop Hypertension (DASH) diet [92], which amalgamates multiple elements that positively influence BP [93, 94]. Notably, the DASH diet achieves remarkable results, especially when combined with other proven BP-lowering strategies such as reducing dietary sodium intake [86]. It is imperative for individuals to embrace lifestyle changes as the primary means of implementing these interventions. Even minor enhancements in one's lifestyle can yield substantial benefits. Government agencies and professional organizations offer valuable guidance on lifestyle modifications and BP monitoring. Vigilant BP monitoring remains crucial, as the benefits of lifestyle adjustments hinge on the consistent maintenance of these interventions [95].

Excess adiposity generally raises BP in susceptible individuals, and patients with hypertension who also have obesity require more antihypertensive medications to control their BP and are more likely to be treatment resistant [96].

Dyslipidemia

In Dyslipidemia, an abnormal amount of lipid levels is found in the bloodstream, including high-density lipoprotein (HDL), cholesterol, triglycerides, low-density lipoprotein cholesterol (LDL-C). This condition may occur due to various reasons, including genetic predisposition, tobacco exposure and dietary choices. Dyslipidemia can be the precursor for several heart diseases, potentially leading to seriousc omplications [97].

Dietary choices and other aspects of one's lifestyle have been documented as factors that can contribute to the onset of dyslipidemia in diverse populations. In a study of Coronary Artery Risk Development, subjects who consumed 2.5 meals or more fast food per week exhibited notable differences compared to those who consumed less than 0.5 meals per week. Over a 13-year follow-up period, individuals with higher fast-food consumption had low levels of (HDL-C) (52.0±0.7 mg/dl vs. 57.5±1.1 mg/dl) and had elevated serum triglyceride levels (117±3.6 mg/dl vs. 95±5.2 mg/dl) when examining the longitudinal associations, denoted as β coefficients ± standard error (SE), between weekly fast food consumption and changes in lipid profiles over 13 years, it was found that increased fast food intake was linked to higher triglycerides (TG) (β=0.24±0.40), lower HDL-C (β=0.08±0.06) and low-density lipoprotein cholesterol (LDL-C) (β=0.16±0.14) [98].

In another study took place in Tehran (TLGS), fast food consuming participants who ate more baseline experienced a more significant increase in triglyceride levels over a 3-year period (10.6% increase in the fourth quartile vs. 4.4% in the first) Additionally, the serum triglycerides to HDL-C ratio, increased in people with frequent fast-food consumption compared to those with less consumption (3.7% increase in the fourth quartile vs. -5.5% in the first) [99].

Within the TLGS study, it was also found that the weekly consumption of fast food (measured in grams) exhibited significant associations with specific lipid parameters exclusively among middle-aged adults. Notably, higher fast-food consumption was linked to elevated serum triglyceride levels (β=0.07, P<0.05), indicating an increase in triglycerides with greater fast-food intake, while also showing a negative association with HDL-C levels (β= -0.05, P<0.05), implying reduced HDL-C levels with increased fast-food consumption. Additionally, fast food intake demonstrated a positive association (β=0.06, P<0.05), a marker of atherosclerosis risk. Furthermore, a higher prevalence of hypertriglyceridemia was observed in the highest tertile of fast-food consumers compared to the lowest tertile (42.3% vs. 34.2%), highlighting the potential adverse effects of frequent fast food consumption, particularly concerning triglyceride levels, in middle-aged adults [100].

After consuming a fast food meal, as opposed to a healthier meal, there was an observed rise in post-meal lipemia and lipid peroxidation. Specifically, levels of triglycerides, malondialdehyde, and thiobarbituric acid reactive substances (TBARS) showed significant increases, while concurrently, high-density lipoprotein cholesterol (HDL-C) levels exhibited a noteworthy decrease. This highlights the contrast in post-meal effects on lipid profiles and oxidative stress between fast food consumption and the intake of a healthier meal [101].

This study involved data collection from adults aged 20 and above who had not been previously diagnosed with diabetes. It followed a cross-sectional design, capturing demographic, anthropometric, and clinical characteristics, as well as lifestyle and dietary habits through a predefined questionnaire. Fasting blood samples were used to assess the participants' serum lipid profiles. Among the 1385 individuals studied, 62% (858 individuals, comprising 491 men and 367 women) had dyslipidemia. After adjusting for age, body mass index, and waist circumference through regression analysis, the findings revealed that in men, an intake of ≥5 cups per week of Turkish coffee or carbonated drinks was associated with an increased risk of dyslipidemia, whereas the same intake of American coffee had a protective effect. Short sleep duration (<6 hours) and smoking were also linked to an increased risk of dyslipidemia in men. In women, a higher intake of fresh vegetables was associated with an increased risk, potentially due to the influence of added salad dressing [102].

In this cross-sectional investigation involving 38,233 men aged 20-39 years, the objective was to explore the relationship between self-reported eating behaviors and the occurrence of dyslipidemia. Among this demographic, there is a prevalence of unhealthy eating practices, such as rapid eating, overeating beyond satiety, breakfast skipping, and frequent dining out. Dyslipidemia was defined based on specific lipid profile criteria. The findings indicated that several of these unhealthy eating habits were associated with a heightened prevalence of dyslipidemia in this age group. Notably, fast eating was linked to a 26-27% higher likelihood of reduced levels of high-density lipoprotein cholesterol (HDL-C). Consuming meals beyond the point of satiety was correlated with an increased prevalence of elevated total cholesterol (TC), triglycerides (TG), and low-

density lipoprotein cholesterol (LDL-C). Furthermore, infrequent breakfast consumption, particularly less than once a week, was associated with higher rates of elevated TC and LDL-C. Lastly, frequent dining out, defined as five or more times a week, was associated with a 13% increased likelihood of elevated TG levels. In summary, all four of these unhealthy eating habits were independently associated with a heightened prevalence of dyslipidaemia among men aged 20-39 years [103].

Cancer

For decades, researchers have harbored suspicions regarding the significant impact of nutrition on the susceptibility to cancer. As far back as the 1960s, epidemiological investigations unveiled considerable variations in cancer rates among different populations. Remarkably, when individuals migrated from countries with low cancer risk to those with high risk, their cancer rates often equaled or even surpassed those of the local population.[104,105] These findings strongly suggested the presence of influential environmental factors contributing to cancer. Furthermore, numerous studies established substantial relation between various cancers and dietary choices; for instance, nations with meat consumption tended to exhibit elevated rates of colorectal cancer.[106] Additionally, animal experiments provided compelling evidence that altering diet could modify cancer rates, particularly through energy intake restriction, leading to a general reduction in cancer development.[107,108]

It's noteworthy that cancer is projected to become the primary cause of mortality globally by the close of this century.[109] While dietary factors are recognized as pivotal in shaping cancer risk, delineating the precise impacts of diet on cancer susceptibility has presented substantial challenges. In this context, we will delineate the limited dietary factors that demonstrably influence the risk of cancers along the digestive tract, from the upper to lower regions, as well as affecting other prevalent forms of cancer.[110,111] We will also outline the impending challenges and prospects in the field of cancer research related to diet.

Oesophageal & Stomach cancer

Adenocarcinoma is proven to be associated with obesity, potentially due to the entry of stomach contents into the esophagus[112,113]. The risk of squamous cell carcinoma elevates by alcohol consumption but does not appear to have the same impact on adenocarcinoma. Smoking, on the other hand, increases the risk of adenocarcinoma as well as squamous cell carcinoma, although it has a more pronounced effect on squamous cell carcinoma.[114] Numerous studies also indicated that an increased risk of esophageal cancer has been associated with the ingestion of tea and mate at excessively high temperatures [115-117]. The IARC (International Agency for Research on Cancer) classifies the consumption of beverages exceeding 65 °C as potentially cancer-causing for humans.[118]

The consumption of excessive salty foods, including preserved fish in salt, has been linked with an elevated risk of stomach cancer. [119] This increased risk may stem from the salt content itself or from the presence of carcinogens come from the nitrites found in many foods that are preserved in salt. Helicobacter pylori infection, a known cause of esophageal cancer may also come from salted foods. [120] H. Pylori might promote the development of the disease.[121]

Furthermore, there is evidence suggesting that the consumption of substantial quantities of pickled vegetables can increase the risk of esophageal cancer. This elevated risk might be attributed to N-nitroso compounds produced by molds or fungi that might be present in these preserved vegetables [122, 123].

Colorectal Cancer

Being obese or overweight is a known risk factor for colorectal cancer [124, 125]. Consumption of alcohol[126-129] and smoking[130-133] are also a major risk factor. When examining larger-scale data, ecological analyses have revealed that meat consumption and direct correlation with and colorectal cancer rates [134, 135]. The International Agency for Research on Cancer (IARC) declared in 2015 that unprocessed red meat was most likely to cause cancer in humans, whereas processed meat was a recognized carcinogen [136, 137]. Another study indicates that the risk increases by 17% for every 50 g increase in processed meat consumption per day and by 18% for every 100 g increase in red meat consumption [138]. Risks are slightly lower when it comes to unprocessed red meat [139].

Liver Cancer & Pancreatic Cancer

The main dietary risk factor for liver cancer is alcohol, potentially contributing to its development through alcoholic hepatitis and cirrhosis [111]. Obesity & being overweight also heightened the risk of liver & pancreatic Cancer [110]. The Aspergillus fungus produces aflatoxin, a carcinogenic substance, in some foods that are kept in hot, humid environments, poses a significant risk, particularly in low-income countries, especially among individuals with active hepatitis virus infections [140].

Diabetes is linked to an elevated risk of certain health conditions, and a Mendelian randomization analysis suggests that this heightened risk of pancreatic cancer is attributable to elevated insulin levels rather than the presence of diabetes itself [141].

Table 2: Different types of cancers & their probable risk factors

S. No.	Cancers	Probable Risk Factors
1	Liver	Alcohol, Obesity, Aflatoxin
2	Colorectum	Alcohol, Smoking, Red Meat
3	Stomach	Salted foods, Pickled Vegetable
4	Esophagus	Obesity, Alcohol, Smoking, Scalding Hot Tea & Mate
5	Oral cavity and pharynx	Obesity
7	Endometrium	Glycaemic load
8	Pancreas	Obesity
9	Prostate, aggressive disease	Obesity
10	Lung	-

Lung Cancer

Tobacco consumption, predominantly linked to cigarette smoking, stands as the foremost preventable contributor to cancer-related deaths, accounting for roughly one-third of all fatalities attributed to this disease. Approximately 85% of lung cancer cases are directly linked to smoking, with a portion of additional cases arising from exposure to secondhand smoke among non-smokers. The likelihood of developing lung cancer is influenced by the quantity of tobacco consumed, but quitting smoking, particularly at an early stage of life, can significantly diminish this risk. The rise in lung cancer incidence across various countries worldwide mirrors alterations in cigarette consumption patterns. It's important to note that transitioning to filtered or low-nicotine/ low-tar cigarettes show minimal effect on the risk of bronchogenic carcinoma.

In individuals diagnosed with cancer, persisting with tobacco use post-diagnosis is associated with unfavorable treatment outcomes, including heightened treatment-related complications, an increased likelihood of developing a second primary cancer, a decrease in overall quality of life, and diminished survival rates. The cessation of tobacco use in cancer patients has the potential to enhance the outcomes of cancer treatment, yet support for quitting is frequently lacking within oncology care.

Reducing tobacco exposure is one part of a coordinated strategy to lessen the negative health effects of tobacco use, accurate assessment of tobacco uses in clinical settings, and the expansion of access to tobacco cessation assistance. Lung cancer screening and synchronized international endeavors in tobacco control hold the promise of substantially decreasing lung cancer mortality in the forthcoming decades [142].

Tobacco smoking continues to stand as the well-documented primary instigator of lung cancer and various other health-related ailments. In the past half-century, advancements in tobacco processing and the introduction of filtration mechanisms have resulted in shifts in lung cancer histology, with adenocarcinoma now being the most widespread subtype. In the past decade, smoking has also emerged as a significant prognostic and predictive factor alongside other variables in assessing patient outcomes [143].

Approximately one-third of the global adult population, equivalent to roughly 1.1 billion individuals, engage in tobacco smoking, making it a habit for every sixth person on the planet [144]. Smoking-related diseases are responsible for an estimated annual death toll of around 5 million people worldwide, despite being a primary preventable cause of mortality [145]. In developed nations, smoking rates have either stabilized or declined, but in developing countries, smoking-related fatalities are on the rise, with the highest incidence observed among individuals with lower levels of education. Initially, the prevalence of cigarette smoking was higher among males, but since the 1980s, the gender disparity in smoking rates has diminished and reached a plateau [146].

Conclusion

This review article highlights the undeniable association between unhealthy lifestyles and dietary practices and the increasing incidence of metabolic diseases, including obesity, hypertension, diabetes, dyslipidemia and cancer. Individuals need to make informed choices in order to adopt healthy lifestyles. Health professionals should prioritize disease prevention and education, and policymakers should use strategies to create an environment for healthy choices. By collectively addressing the root causes of these diseases, we can strive for a future in which the burden of physical illnesses is greatly reduced and the overall well-being of society is greatly improved.

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