

# A COMPREHENSIVE REVIEW OF THE ROLE OF FAMILY PHYSICIANS IN PREVENTION OF CHRONIC DISEASES

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## Abstract:

In spite of its high prevalence, chronic diseases disproportionately afflict low-resource areas. Many academics and public health practitioners believe that the links between chronic illnesses and social, behavioral, and societal issues must be adequately addressed. Coronary artery disease (CAD), ischemic stroke, diabetes, and certain malignancies, which were formerly only seen in high-income nations, are now the leading causes of morbidity and mortality globally. Many dramatic fluctuations in incidence within nations and across migratory groups suggest that environmental variables, such as nutrition and lifestyle, are the key drivers of these illnesses, rather than hereditary ones. Cigarettes are smoked by about 23% of the world's population. Several studies have connected tobacco use to a variety of deadly diseases. Within 12 months of quitting smoking, the excess risk of heart attack caused by smoking drops by half. Obesity is a complicated illness with a complex etiology. After smoking, it is the second most prevalent avoidable cause of death. In this review we will look at two of the most contributing factors of chronic disease, which are smoking and obesity, methods to approach them, as well as the impact of treating them

## INTRODUCTION:

Coronary artery disease (CAD), ischemic stroke, diabetes, and certain malignancies, which were formerly only seen in high-income nations, are now the leading causes of morbidity and mortality globally. Furthermore, cancer and cardiovascular disease (CVD) rates nearly invariably rise rapidly as migrants move from low-risk to high-risk nations. CAD is essentially non-existent in traditional African communities, although rates among African Americans are comparable to those of Caucasians. Many dramatic fluctuations in incidence within nations and across migratory groups suggest that environmental variables, such as nutrition and lifestyle, are the key drivers of these illnesses, rather than hereditary ones. As a result, much research has been conducted in order to find modifiable factors of chronic illnesses. [1]

The fast development of a variety of important scientific domains, particularly the quantity of population-based epidemiological research, has helped to clarify the function of nutrition in preventing and regulating noncommunicable disease morbidity and premature death during the last decade (NCDs). Some of the precise dietary components that enhance the risk of certain illnesses in people have also been discovered, as well as therapies to reduce their influence. [2] Lack of physical exercise, poor diet, cigarette use, and excessive alcohol intake are four modifiable risk factors that contribute to chronic illness, related disability, and early mortality. Even if obesity rates are not growing at prior levels, one-third of adult Americans are overweight, another third are obese, and over one-fifth of young individuals aged 6 to 19 are fat. Despite the fact that smoking has decreased significantly in recent decades, roughly 20% of Americans still smoke. Smoking rates fluctuate significantly across socioeconomic categories, with economically disadvantaged persons smoking at far greater rates. Smoking-related mortality are predicted to rise considerably in low-income nations across the world. Tobacco consumption killed over 100 million individuals globally throughout the twentieth century. One billion people will die prematurely in the twenty-first century, a tenfold increase. By 2030, low-income nations will account for more than 80% of tobacco-related fatalities. [3]

The COVID-19 pandemic, which began in 2020, contributed to the reality that chronic diseases disproportionately afflict low-resource areas, which are home to many Black and Brown people. COVID-19 revealed that chronic illness inequalities in Black and Brown populations, who are disproportionately affected by COVID-19 outcomes, are truly preexisting problems. Many academics and public health practitioners believe that the links between chronic illnesses and social, behavioural, and societal issues must be adequately addressed. As a result, global lessons in the prevention

and treatment of chronic illnesses can assist researchers and practitioners in gaining access to common lessons and experience obtained from research and interventions undertaken in many regions of the world. [4-7]

### **Tobacco Usage:**

Tobacco smoking is the act of inhaling tobacco smoke in order to taste it and absorb it into one's circulation. Cigarettes are smoked by about 23% of the world's population. Several studies have connected tobacco use to a variety of deadly diseases, including coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), malignancies of every human organ system, and poor reproductive health. This exercise explains how to assess and manage tobacco smoking, as well as the importance of the interprofessional team in providing better treatment to patients with this condition. [8]

Avoidance of smoking by preventing initiation or by cessation for those who already smoke is the single most important way to prevent CVD and cancer. Avoiding the use of smokeless tobacco will also prevent a good deal of oral cancer. [1]

Several possible pathways have been proposed to link tobacco smoking to coronary artery disease. Tobacco smoking causes an increase in external and endogenous free radicals in the body, resulting in increased oxidative stress. Vasomotor dysfunction, increased pro-thrombotic and reduced fibrinolytic factors, leukocyte and platelet activation, increased lipid peroxidation, enhanced adhesion and inflammatory molecules, and smooth muscle proliferation are all caused by increased oxidative stress. The development of CAD among cigarette users is thought to be caused by a combination of these variables, according to researchers. [8,9]

Cancers (mostly lung cancer), respiratory illness (mostly chronic obstructive pulmonary disease – COPD), and cardiovascular disease account for the majority of smoking-related fatalities (mainly coronary heart disease). Stroke, blindness, deafness, back pain, osteoporosis, and peripheral vascular disease are all linked to smoking. Smokers have greater levels of pain and impairment beyond the age of 40 than non-smokers. Both women and men who smoke have lower fertility. Smoking during pregnancy stunts the foetus' development and increases the chance of miscarriage, neonatal mortality, and respiratory illness in the offspring, as well as being a likely cause of mental health issues in the children. [10]

### **Smoking Cessation:**

Daily cigarette users continue to smoke because nicotine, a chemical found naturally in tobacco leaves, is physiologically addictive. Because nicotine is one of the most addictive compounds known to man, stopping tobacco smoking may be extremely difficult, necessitating several efforts using various cessation strategies. Long-term smoking cessation can be aided by five nicotine-based drugs (gum, lozenges, inhaler, nasal spray, patch) and two non-nicotine-based pharmaceuticals (varenicline and bupropion SR). Recent data suggests that cytisine and naltrexone may have a role. A combination of therapy and one or more drugs has been shown to be more helpful than either counselling or medication alone in helping individuals quit smoking. [8,11-13]

Smoking cessation has varying consequences on various smoking-related disorders. Within 12 months of quitting smoking, the excess risk of heart attack caused by smoking drops by half. Stopping smoking slows down the pace of deterioration in lung function, but not reverses it; it does, however, lessen the number of 'exacerbations' in COPD patients. Smoking cessation 'freezes' the risk of smoking-related malignancies at the current level, but it does not reduce it in absolute terms. Those who quit smoking have lower levels of stress and mood disorders than those who continue to smoke. In addition, they report better levels of happiness and life satisfaction than those who continue. This shows that smoking may be harmful to one's mental health, while alternative possibilities cannot be ruled out based on the available data. [10].

### **Overweight Impact on Overall Health:**

Obesity is defined as an abnormal or excessive accumulation of fat or adipose tissue in the body that negatively impacts health by increasing the risk of diabetes, cardiovascular disease, hypertension, and hyperlipidemia. It is a huge public health crisis that has gotten worse during the last 50 years. Obesity is a complicated illness with a complex etiology. After smoking, it is the second most prevalent avoidable cause of death. Obesity requires multifaceted treatment techniques and may necessitate therapy for the rest of one's life. A 5% to 10% weight loss can greatly improve an individual's health, quality of life, and economic burden, as well as a country's overall economic burden. [14-19]

Obesity is on the rise all across the world. Obesity (a BMI of 30 or over) has gotten more attention than overweight (a BMI of 25 to 30), however overweight (a BMI of 25 to 30) is more common and has a higher risk of numerous illnesses. When compared to lean persons, overweight people have a two- to threefold increased risk of coronary artery disease and hypertension, as well as a tenfold increased risk of type 2 diabetes (BMI less than 23). Cancers of the colon, breast (postmenopausal), kidney, endometrial, and other sites have higher death rates in both overweight and obese patients. [1]

Leptin is an adipocyte hormone that helps people lose weight and eat less. Obesity is linked to cellular leptin resistance. Adipokines and free fatty acids secreted by adipose tissue generate systemic inflammation, which leads to insulin

resistance and elevated triglyceride levels, which contributes to obesity. Obesity can induce left ventricular dysfunction by increasing fatty acid buildup in the myocardium. It's also been demonstrated to affect the renin-angiotensin system, which leads to increased salt retention and blood pressure. [14]

Obesity has a negative impact on young people's metabolic health, resulting in decreased glucose tolerance, T2D, and early onset metabolic syndrome. The evidence also shows substantial links between pediatric obesity and asthma, poor dental health (caries), nonalcoholic fatty liver disease (NAFLD), and gastroesophageal reflux syndrome. Obesity can impact growth and sexual development, and it can cause puberty to be delayed in boys and advanced in certain girls. In girls, childhood obesity is linked to hyperandrogenism and polycystic ovarian syndrome (PCOS). Obesity is also linked to psychological issues in adolescents, such as attention deficit hyperactivity disorder (ADHD), anxiety, sadness, low self-esteem, and sleeping issues. [20]

The distribution of body fat is crucial in determining the risk of cardiometabolic disease. Excess visceral fat is believed to raise the risk of cardiovascular disease due to its distribution. Ruderman et al. proposed the notion of metabolic obese normal weight (MONW) persons, who have a normal BMI but suffer from metabolic problems seen in obese people. [14,21-23] Individuals who are metabolically healthy obese (MHO) have a BMI more than 30 kg/m<sup>2</sup> but do not have insulin resistance or dyslipidemia. Adipocytes have been proven to exhibit prothrombotic and inflammatory properties, which can raise the risk of stroke. Adipokines are cytokines generated mostly by adipocytes and preadipocytes, although they are also created by macrophages invading the tissue in obesity. [14, 24-28]

### **Obesity Management and Maintaining a Healthy Weight:**

Low-fat, high-carbohydrate diets were thought to naturally restrict calorie intake and so manage adiposity, however such diets failed to reduce bodyweight in trials lasting a year or more. Some researchers have proposed that high-energy-density diets, which relate to the amount of energy per unit of volume, might explain the reported increases in obesity, however long-term studies have not looked into this notion. Sugar-sweetened drinks contribute greatly to calorie overconsumption, owing to the body's apparent inability to manage calories in fluid form. In youngsters, a one-serving increase in soda consumption per day was related with an odds ratio of 1.6 for obesity, while replacing a regular soda with a zero-calorie diet drink was associated with considerable weight reduction in a randomised experiment. [1]

A patient's assessment of their possible weight reduction may be unrealistic from the start. Misinformation from a number of sources, including friends, the media, and other healthcare experts, makes setting realistic weight reduction goals difficult. Many people who are obese or overweight have unrealistic weight reduction goals of 20%–30%, although a more reasonable objective would be a loss of 5%–15 percent of their starting body weight. For nurse practitioners, primary care nurses, dieticians, and mental health workers, promoting realistic weight reduction aspirations for patients has been noted as a major challenge. Visual tools that demonstrate the health and wellbeing benefits of minor weight loss may be useful in this regard. Healthcare providers should focus on having open discussions about and reinforcing reasonable weight reduction goals, as well as evaluating outcomes routinely in relation to those objectives. [20]

Antiobesity drugs can be utilised if your BMI is more than or equal to 30 or if the person have comorbidities and your BMI is greater than or equal to 27. Medications can be used in conjunction with dietary, exercise, and behavioural changes. Phentermine, orlistat, lorcaserin, liraglutide, diethylpropion, phentermine/topiramate, naltrexone/bupropion, and phendimetrazine are some of the FDA-approved antiobesity drugs. All of the compounds are used to help people lose weight over time. Because of its limited absorption, orlistat is typically the first option because to its lack of systemic effects. Because of the danger of serotonin syndrome, lorcaserin should not be used with other serotonergic drugs. In the first three months, high responders often lose more than 5% of their body weight. [14]

Significant weight loss linked with bariatric surgery has been demonstrated to improve asthma symptoms and reduce medication use by 48 percent to 100 percent; however, there is a possible threshold effect, so even minor weight loss of 5 percent to 10% may contribute to clinical benefit. Similarly, losing 5–10 percent of one's body weight improves GERD and liver function. A research that used MRI scanning to look at the impact of weight loss on NAFLD found that liver fat decreased from 18.3 percent to 13.6 percent, a 25 percent drop. Obesity can lessen depressive symptoms, improve urine incontinence in men and women, and enhance reproductive results in women if they take an active part in resolving it through behavioural changes or exercise. Weight loss can also help with the symptoms of weight-related osteoarthritis, such as joint discomfort and impairment. [20]

### **Excessive Alcohol intake, Lack of physical activity and Other Factors:**

More than 30 illnesses in the WHO's International Classification of Diseases, 10th Edition (ICD–10) (WHO 2007) have the term "alcohol" in their name or definition, implying that alcohol drinking is an essential cause of these conditions. Alcohol use disorders (AUDs), which include alcohol dependence and hazardous use or abuse, are the most common illness problems in this population. AUDs are less deadly than other chronic diseases, but they are associated with significant impairment. AUDs are the fourth most debilitating illness category in low- to middle-income nations and the third most disabling disease category in high-income countries, despite the fact that they are

not a leading cause of mortality globally (WHO 2008). In low- and middle-income nations, AUDs account for 18.4 million years of life lost to disability (YLDs), or 3.5 percent of all YLDs, whereas in high-income countries, AUDs account for 3.9 million YLDs, or 5.7 percent of all YLDs. AUDs, on the other hand, do not impact all demographic segments equally; for example, they mostly affect males, and they are the second-most debilitating illness and injury condition for men worldwide. AUDs, on the other hand, are not among the top ten causes of debilitating disease and damage in women. [29]

Physical inactivity is a modifiable risk factor for heart disease, diabetes, cancer (colon and breast), obesity, hypertension, bone and joint illnesses (osteoporosis and osteoarthritis), and depression, among other chronic diseases. Physical inactivity is more common than all other modifiable risk factors (it affects 51 percent of adult Canadians). [30]

Men and women who reported higher levels of physical activity and fitness were shown to have a lower relative risk of mortality (by around 20%–35 percent). In a study of healthy middle-aged men and women followed for eight years, the lowest quintiles of physical fitness, as evaluated on an exercise treadmill, were linked to a higher risk of mortality from any cause than the top quintile of fitness. Recent research has found even higher decreases in the chance of mortality from any cause, as well as from cardiovascular disease. Being fit or active, for example, was linked to a higher than 50% reduction in risk. Furthermore, an increase in energy expenditure from physical activity of 1000 kcal (4200 kJ) per week or a 1 MET (metabolic equivalent) increase in physical fitness was linked to a 20% reduction in mortality. In comparison to physically active women, physically inactive middle-aged women (who get less than 1 hour of exercise per week) had a 52 percent increase in all-cause mortality, a doubling of cardiovascular-related mortality, and a 29 percent increase in cancer-related mortality. [30–34]

## CONCLUSION:

We can see that there's a lot of factors that contribute of prevalence of chronic disease, low-income communities seem to have liability for such disease more than rich ones due to their unhealthy lifestyles. In this article we've seen how two modifiable factors can contribute to massive health gains and disease prevention. After 12 months of smoking cessation, probability of the CVD is reduced by half. Obesity is the second most contributing factor to chronic disease after smoking, its reduction is linked to massive reduction in CVDs, respiratory diseases, even some sexual reproduction improvements. Physical inactivity can almost double the mortality rates in middle aged men and women. In fact, exercising regularly along with healthy diet, reduction of tobacco and alcohol consumption can be the most effective measurements to reduce chance of developing a chronic disease.

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