Healthy Diet leads to Healthy Body and Healthy Mind

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Abstract

Nutrition and Health are the most important contributory factors for human resource development in the country. Unhealthy diet and poor nutrition have been associated with poor mental and physical health. Evidence from dietary intervention studies indicates an improvement of both physical and mental health through healthy diet. This article comprehensively reviews literature on this subject.

Keywords

Healthy diet, Nutrition, Mental Health

Introduction

Nutrition and Health are the most important contributory factors for human resource development in the country. Unhealthy diet and poor nutrition have been associated with poor mental and physical health. Evidence from dietary intervention studies indicates an improvement of both physical and mental health through healthy diet (Munoz et al., 2008). Positive lifestyle behaviours, including healthy eating pattern and regular exercise promote physical and mental health (Askow et al., 2020). An adequate, well balanced diet combined with regular physical activity is a cornerstone of good health, both physical and mental. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity (National Health Portal of India, 2016).

Rapid urbanization, aggressive advertising and sedentary lifestyle has led to shift in dietary patterns including increased consumption of processed and junk foods, high in refined carbohydrates, saturated and trans fats and sodium content; and reduced consumption of fruits, vegetables and dietary fibres. This pattern of unhealthy diet is responsible for increasing trend of physical and mental illnesses (National Health Portal of India, 2016).

Objectives

The main objective of this project is to study the association of healthy diet and nutrition with physical health and mental health represented by health body and healthy mind.

Methodology

We searched for relevant literature on google scholar for combination of keywords "healthy diet", "healthy body" and "healthy mind". In addition, we searched for combinations of keywords "healthy nutrition", "physical health" and "mental health". We selected 20 articles most relevant to our study project for review. We reviewed and analysed selected articles for relevant information and review of literature was complied.

Review of Literature

We reviewed literature on concepts of healthy and balanced diet, along with association of healthy diet with physical and mental health. We also reviewed literature on interrelationship of healthy diet, physical health and mental health. Following is the narrative review of literature studied.

Concept of Healthy Diet

A balanced and healthy diet will vary depending on the needs of the individual like age, gender, lifestyle, degree of physical activity, cultural context, locally available foods and dietary customs but the basic principles of what constitute a healthy diet remain the same. According to WHO balanced diet is defined as "A balanced diet is one which contains variety of foods in such quantities and proportion that the need of all nutrients is adequately met for maintaining health, vitality and general wellbeing and makes a small provision for extra nutrients to with stand short duration of leanness" (National Health Portal of India, 2016).

Healthy dietary practices begin early in life. Research has found that under nutrition in utero may set the pace for diet related chronic diseases in later life. Breastfeeding is important as it promotes healthy growth and improves cognitive development, and found to be associated with longer-term health benefits, like reducing the risk of becoming overweight or obese and developing NCDs later in life (National Health Portal of India, 2016).

Dietary requirements during different stages of Life:

Diet varies from person to person depending upon various factors like age, gender, physical activity, nutritional requirement during different physiological stages of the body and other various factors. Dietary requirement is different for infant, growing child, pregnant/lactating women and elderly people. (National Health Portal of India, 2016).

Mediterranean diet

A Mediterranean-style diet includes lots of vegetables, berries, nuts, seafood, fresh herbs, garlic, olive oil, cereal and grains, moderate consumption of red wine and low consumption of meat. (Mental Health Foundation, 2015). It also includes Mediterranean lifestyle such as eating at home, spending time buying groceries and self-cooking, sharing lunchtime with family & friends, using lunchtime for social communication and regeneration within family structures. Mediterranean diet has been found to be associated with better self-perceived mental and physical health (Munoz et al., 2008). It has been also found to decrease markers of inflammation (Firth et al., 2020).

Food fads and habits formed in early childhood sometimes can lead to unhealthy dietary patterns. Exaggerated beneficial or harmful claims in respect of some foods, without scientific basis constitute food fads. Unscientific beliefs of heat producing and cold inducing foods is widely prevalent (National Health Portal of India, 2016). Communication of advice for healthy diets is also hampered by information released by diet gurus on the internet (de Ridder et al., 2017). Hence, dietary and nutrition advice should always be sought from a professional.

Relationship of Healthy Diet with Healthy Body

One of the most common nutritional problems of public health importance in India are low birth weight, protein energy malnutrition in children, chronic energy deficiency in adults,

micronutrient malnutrition and diet related non-communicable diseases (National Health Portal of India, 2016).

In the past forty years, there has been a remarkable increase in worldwide obesity including India, which has been associated with an increase in type-2 diabetes, hypertension, metabolic syndrome and cardiovascular disease. The increase in obesity is due to increased consumption of the Western diet, which includes higher amounts refined carbohydrates in place of naturally occurring carbohydrates from cereals fruits and vegetables, and saturated fats and trans fats in form of processed foods. There has been an increase in perceived stress and a shift from manual labour to sedentary lifestyles, which have also contributed to overeating, binge eating and obesity. Obesity is associated with a 44% increase in risk for coronary artery disease, with an even more important association with abdominal fat that further contributes to systemic inflammation (Bremner et al., 2020). Diets such as DASH (Dietary Approaches to Stop Hypertension) or the Mediterranean diet have been associated with relief of hypertension and reduced inflammatory markers (Zhao et al., 2021).

Consumption of highly refined carbohydrates and sugars (high glycaemic index and load) can increase the risk of physical disorders like obesity, diabetes, hypertension, cardiac disorders, metabolic syndrome, and mental disorders like depression. Many plausible mechanisms are proposed including, effect of mood itself on our food choices, repeated and rapid increases and decreases in blood glucose levels. It has been postulated that high glycemic load lead to compensatory responses to lower blood glucose levels, which in turn trigger secretion of autonomic counter regulatory hormones like cortisol, adrenaline, growth hormone and glucagon; which are associated with hunger, irritability and anxiety. Furthermore, high glycaemic index foods have been found to be associated with inflammatory response (Firth et al., 2020).

Maternal nutrition is also very important. Foetal origins hypothesis proposes that the foetus adapts to a limited supply of nutrients, which permanently alters its physiology and metabolism, leading to increased vulnerability to various physical and mental health problems in adulthood. Studies have shown, severe malnutrition (like during famines during the first trimester and second trimester associated with increased risk of schizophrenia and affective disorders, respectively (Casper, 2011).

Relationship of Healthy Diet with Healthy Mind

Vitamin deficiencies has been found to be associated with neurocognitive and psychological symptoms like depression, apathy, irritability, insomnia, poor concentration, poor short-term memory, and learning impairments. As majority of neurotransmitters are synthesized in the brain, deficits of nutrients required as cofactors in metabolic pathways leading to neurotransmitter synthesis or in membrane integrity adversely impact neurotransmission and normal brain function (Casper, 2011).

Several studies on Alzheimer disease have shown benefits from diet with higher intakes of nuts, fish, fruits, green leafy & other vegetables and a lower intake of high fat dairy products, red meat, and butter (Casper, 2011). Studies have found that physical activity and diet affects brain functioning and mental health through neurotrophic signalling, neurogenesis, inflammation, stress response, and antioxidant defence (Phillips, 2017).

Western diets rich in saturated fats, trans fats and refined carbohydrates with high glycaemic index heightens inflammation and immune activation, consequently have detrimental effects on brain health, including cognitive decline, hippocampal dysfunction, and damage to the blood-brain barrier. Adopting healthy or Mediterranean dietary patterns including high consumption of fruits, vegetables, nuts, and legumes; moderate consumption of poultry, eggs, and dairy products; and only occasional consumption of red meat and wine has been found to be associated with a reduced risk of depression and other stress related disorders. Mediterranean diets rich in omega-3 fats, polyunsaturated fats, polyphenols have anti-inflammatory properties (Firth et al., 2020).

Sharing meals with other people has many psychological, social and biological benefits. This gives us a sense of rhythm and regularity in our lives, feel connected to others an opportunity to reflect on the day, having conversation slows us down so we don't eat too fast. Moreover, eating in upright chairs helps with our digestion. Television must be kept off while eating. We must set aside at least one day a week to prepare meals and eat with family and friends (Mental Health Foundation, 2015).

Vegetarian diet has been studied for its influence on mental health. Vegetarian diet may affect neuronal function and synaptic plasticity, influencing brain processes associated with onset and maintenance of mental disorders. Different studies have found decreased or increased association; which may be explained through direct biological effects, psychological characteristics independently influence the probability of choosing a vegetarian diet pattern (Michalak et al., 2012).

Interrelationship of Relationship of Healthy Diet with Healthy Body and Health Mind

There is a complex relationship between diet, physical health and mental health. Diet and obesity can affect mood through direct effects, or stress-related mental disorders could lead to changes in diet habits that affect weight. Alternatively, common factors such as stress or predisposition could lead to both obesity and stress-related mental disorders, such as depression. Stress affects eating behaviours through brain and causes stress-related psychiatric disorders including posttraumatic stress disorder (PTSD) and depression, both of which can lead to changes in metabolism, metabolic syndrome and obesity. Unhealthy eating can result in diets high in saturated fat that can lead to depression as well as leakiness of the intestinal wall, lead to changes in the gut microbiome which modulate obesity, Metabolic syndrome and metabolism. Physical disorders including cardiovascular disease (CVD) and diabetes and physical factors such as intra-abdominal fat are affected by stress and related to PTSD and depression. A complex system of neurotransmitters (norepinephrine, serotonin, dopamine), inflammatory markers and neuropeptides (ghrelin, somatostatin, galanin) present in the gut and brain are also influenced by stress via the brain, influence the gut microbiota and physical disorders and factors in a binary fashion and in turn regulate both feeding behavior and psychiatric disorders (Bremner et al., 2020).

The brain-gut axis

Gut microbiome, including millions of bacteria, viruses, and archaea, living in the human gut; interacts with the brain in bidirectional ways using neural, inflammatory, and hormonal signalling pathways. Animal models of mental health disorders significantly points towards role of gut microbiome in emotional regulation and mental health. Western diets rich in saturated fats, trans fats and refined carbohydrates with high glycaemic index and low in fibres, leads to increased permeability of gut epithelium along with compromised mucus layer,

decreasing the function of gut barrier known as “leaky gut”. This in turn gives rise to unhealthy gut microbiome. On the other hand, diet rich in fibres, polyphenols, and unsaturated fatty acids promote “healthy” gut microbiome which synthesize anti-inflammatory metabolites, also lowering production of secondary bile acids. Probiotics and prebiotics are also being investigated in this regard. (Firth et al., 2020).

Summary

Healthy diet is intricately interrelated to healthy body and health mind through complex multidirectional pathways. Physical health and mental health cannot exist in isolation and is fundamental influenced by our dietary habits and patterns. Healthy diets, rich in vegetables, fruits, whole grains, dairy products; with moderate consumption of fish; and reduced consumption of meat, saturated and trans fats, highly refined carbohydrates, excessive salt, processed and junk foods; is associated with improvement in both physical and mental health.

Conclusions

By reviewing the published scientific literature, we can definitely conclude “Healthy diet reflects healthy body and mind”.

Public health both physical and mental can be improved by developing public health initiatives that effectively tackle the established risk factors of physical and mental comorbidities. More interventional research is needed to establish if, how, and when dietary interventions can be used to prevent physical and mental illness. Creating environments and developing measures that promote healthy, nutritious diets, while decreasing the consumption of highly processed and refined “junk” foods; will lead improvement of both physical and mental health of the people of our country.

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