

Role of Mediterranean Diet and Physical Activity in the Prevention and Treatment of Depression: Review

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Abstract:

Depression is a debilitating disorder and one of the major causes of disability in the developing countries. It can have major consequences- personal, professional and social dysfunction, premature mortality and most important-suicide. Depression has a strong relationship with fatigue, increased appetite with cravings or a reduced interest in food as well as with other common diseases with dietary aetiology – heart disease, obesity and diabetes. Recent research has focussed on the role of nutrition in the management of depression. Mediterranean diet characterized by an abundance of whole grains, plant foods, olive oil and moderate intake of fish has been associated with a variety of disease outcomes. The Mediterranean diet is recognised as a healthful dietary pattern and has been extensively associated with chronic disease risk reduction. Consumption of food groups in the Mediterranean-based diet has anti-inflammatory and antioxidant properties which improves endothelial function and neuronal membranes composition. Engagement in physical activity, on the other hand has anti-inflammatory and neurochemical effects that sustains cerebral blood flow, improves aerobic capacity and cerebral nutrient supply, improved secretion of encephalins and endorphins secreted during exercise.

Keywords: Mediterranean Diet, Depression, Physical Activity, Prevention, Diet, Physical activity, Fitness, Mental disorder

Introduction:

Depression is highly prevalent and leading cause of disease burden in people of all age groups worldwide. Around 300 million individuals across the globe have been diagnosed with depression. National reports indicated that 21% of Iranian adults witnesses depressive symptoms. The World Health Organization reported that depression is the primary reason for disability. Approximately 256 million adults (5.02%) worldwide suffer from depression in 2019, and the prevalence of depression has increased three fold during the COVID-19 pandemic. (Walder K, 2021)

The aetiology of depression involves genetic, biological, psychological, behavioural and environmental factors. As per International Society for Nutritional Psychiatry Research, lifestyle factors such as diet are risk modifiers for depression as well as for common mental disorders (Galea, S. 2020)

Several epidemiological studies have examined the relationship between nutritional factors and depression. Lifestyle modifications, such as dietary advice or exercise coaching are equally important in preventing depression. Recent systematic reviews and meta-analyses indicated that adhering to a healthy

and balanced diet can reduce the risk of clinical depression or depressive symptoms. The special emphasis on quality of diet is very important since it is reported to influence several biological processes associated with depression special mention to the production of monoamine neurotransmitters namely serotonin and dopamine, levels of oxidative stress, brain-derived neurotrophic factor (BDNF), and hypothalamic-pituitary-adrenal (HPA) activity. Studies have also shown the association of depression with single nutrients like B vitamins and omega-3 fatty acids, foods such as fish, food groups like fruits and vegetables, and dietary patterns such as DASH (Dietary Approaches to Stop Hypertension) and the Mediterranean diet. Diet is a multidimensional exposure that includes combinations and interactions between dietary components; therefore, it seems that studying dietary patterns is a more comprehensive and useful approach for finding diet–disease relationships. (Trichopoulos D, 2003)

The Mediterranean diet is a healthy diet in which consumption of vegetables and fruits, nuts and seeds, whole grains, dairy products, olive oil, fish, and fresh seafood is encouraged, while consumption of red and processed meats is confined. This dietary pattern has been extensively examined relative to several health conditions. Some investigators have also reported an association between this eating pattern and depression, but such findings are contradictory. In a French cohort, an inverse relationship was seen between adherence to the Mediterranean diet in middle-aged person and risk of incident depressive symptoms. At the same time, one cross-sectional study showed an inverse association between the Mediterranean diet and depression in patients with bronchiectasis. (Park CI, 2023)

Physical activity on the other hand, is consistently reported as having antidepressant effects. It is aware that physical activity refers to any bodily movement by the skeletal muscles that require energy expenditure. A recent meta-analysis of 49 prospective cohort studies found that people with optimum levels of physical activity had 17% lower odds of depression (OR = 0.83, CI = 0.79, 0.88) than people with low physical activity. Other meta-analyses have shown that low physical activity is associated with a greater risk of depression. Other meta-analyses found that low cardiorespiratory fitness (CRF) which is an indicator of physical inactivity, was associated with a 64% higher risk of depression (HR = 1.64, CI = 1.29, 2.08). (Kumar R, 2017)

The benefits of physical activity for depression are many beyond risk reduction. Exercise refers to a subset of physical activity that is planned and structured towards improving and encouraging physical fitness, such as running or weight training. Various systematic reviews have found that exercise can reduce the symptoms of depression with a moderate-to-large effect size and can be a useful addition to pharmacotherapy and psychotherapy.

Aims and Objectives of the study:

Enormous studies have been conducted on Mediterranean Diet and Physical activity as an effective treatment methods for depression but lack of study is seen when these two effective methods are combined together to treat the same. Hence, the aim of this study is to identify and understand the combination of physical activity and Mediterranean Diet in the prevention and management of Depression

Materials and methods:

Scientific literature research was performed via Medline (PubMed version) and Google Scholar employing the combination of keywords “Mediterranean Diet” “Health”, “Mental Health”,

“Depression”, “Anxiety”, “Physical Activity”. Full-text articles, cohort, case-control or Randomized Clinical Trial study projects were mainly used and selected for the purpose of the study.

Findings:

Diet is not just associated with mood fluctuations but also several mental diseases and behavioural problems such as autism, attention-deficit/hyperactivity disorder, schizophrenia, dementia, antisocial behaviour or depression.

The Mediterranean diet is the focus of many epidemiological studies. It was originated inauspiciously during the early to mid-20th century (de Gaetano G., 2017) The Mediterranean Diet is mainly based on the regular consumption of extra virgin olive oil as the main source of fats and plant-based food such as whole grains, vegetables, legumes, fresh fruits, nuts, seeds, herbs and spices, moderate amount of fish, seafood, dairy and poultry and a low consumption of red and processed meat, sugars, alcohol (mostly red wine). Individuals are benefitted with this dietary pattern including reduced rates of cardiac diseases. Recently, cohort studies showed that adherence to the Mediterranean diet is associated with up to 50% reduced risk of developing the metabolic syndrome, an increase in levels of biomarkers associated with healthy aging and a reduced risk of mortality over 20 years (Park CI, 2023).

Physical activity on the other hand, is positively associated with certain mental health traits. In non-clinical investigations, the most significant effects of physical exercise have been on self-concept and body image. Regular physical activity improves the functioning of the axis that connects hypothalamus-pituitary-adrenal. Physical activities help with sleep and improve various psychiatric disorders (Kumar R 2017). Exercise generally is associated with better mood and improved quality of life. Increased physical activity helps to attenuate some psychotic symptoms and treat medical comorbidities that accompany psychotic disorders. Depression is one such major health problem in the today's world- a chronic mental illness (Lee et al., 2014). Depression is characterized by a loss of capacity to experience pleasure, increased sense of feeling worthlessness, fatigue, and preoccupation with death and suicide (Neugebauer et al. 1999). Depressive symptoms are common in modern era and hence physical activities or exercise might endow as supportive treatment to reduce depression or depressive symptoms.

Physical activities are shown effectively to reduce the depressive symptoms among patients with mild to moderate depression (Martinsen, 1994). King et al. (1993) stated that an aerobic exercise reduces depressive symptoms to a greater extent. Further, Lampinen et al. (2010) asserted that older women are not much engaged in physical activity program than the male counterparts and that result in increase depressive symptoms. Additionally, physical inactivity is one key risk factor in the non-communicable diseases- cardio-vascular disease, Type II diabetes, as well as in mental health problems, especially depression (Blair and Brodney, 1999). Blumenthal et al. (1989) stated that yoga and aerobic exercise helps to reduce depressive symptoms.

The health benefits of the Mediterranean diet (MedDiet) and of physical activity (PA) have been widely documented separately. There is an association between physical activity and adherence to the MD, while they also have an inverse correlation with sedentary behaviour. As such no longitudinal studies have investigated their combined effect on mortality.

Conclusion

Depression is one major cause of disability in the developing countries. It is of different forms- unipolar, bipolar or clinical as well which ultimately shows major consequences professionally, personally,

socially and premature mortality. Sedentary lifestyle with little or no physical activity is one factor which is a modifiable factor to treat and manage depression. This study provides evidence that Mediterranean diet along with physical activity if done optimally and balanced is crucial in preventing symptoms and supporting positive mental health.

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