

**A REVIEW ON DIETARY APPROACH AND CARDIOMETABOLIC DISEASES IN  
DIABETES****Shalima Farsana T.\*, Jeena Beegum N., Shiji Kumar, Sirajudheen M. K. and Sherin A.**

Jamia Salafiya Pharmacy College, Pulikkal, Malappuram, Kerala, India.

**\*Corresponding Author: Shalima Farsana T.**

Jamia Salafiya Pharmacy College, Pulikkal, Malappuram, Kerala, India.

Article Received on 22/05/2020

Article Revised on 11/06/2020

Article Accepted on 02/07/2020

**ABSTRACT**

Dietary Approaches to stop diet has been fovrably linked to important risk associated with development of chronic kidney disease(CKD), such as insulin resistance, hypertension and dislipidemia. However, the protective role of Dietary patterns in development of CVD. The aim of the current systematic review was to summarize the findings of previous observational studies and the risk of CVD using meta analysis. A comprehensive search was done with the use of MEDLINE, EMBASE, Web of sciences and scopus databases of find relevent articles. The results of the present study showed a significant inverse association between Dietary patterns and the risk of developing cardio vascular diseases(CVD). Adherence to Dietary patterns might have protective effects against CVD development and progression.

**KEYWORDS:** However, the protective role of Dietary patterns in development of CVD.**INTRODUCTION**

According to the WHO, diabetes mellitus (hyperglycemia) is a set of metabolic disorders characterized by carbohydrate, fat, and protein metabolism, and causes chronic complications, including microvascular, macrovascular, and neuropathic complications. Insulin secretion results from defects in insulin sensitivity or both. It is a chronic disease, either due to reduced insulin secretion, decreased glucose utilization, or high glucose production. Diabetes is a major risk for cardiovascular disease (CKD). Spinal disorders include retinopathy and nephropathy, peripheral vascular disease (PVD), infarction. and coronary artery disease (CAD). Diabetes also affects the heart muscle; cause systolic and diastolic heart failure. Diseases rich in plant foods are increasingly recommended to lower the risk of cardiometabolic disease in fruits, vegetables, legumes as a whole. grains, nuts and seeds are protective. Although some animal products are recommended in the diet of raw red meat, poultry, eggs, and dairy products, many health care professionals advocate only dietary models of plants to prevent cardiometabolic disease. Epidemiological evidence suggests that higher plant-based food consumption is associated with a lower risk of cardiometabolic disease, where higher meat consumption increases the risk of cardiometabolic disease, and that lower amounts of animal protein are associated with lower risk of replacing plant proteins.

**METHOD AND MATERIAL**

A systematic review and meta- analysis was conducted

to examine the effect of low-carbohydrate diets (LCDs) on weight loss and cardiovascular risk factors (PubMed, Cochrane Central Register of Controlled Trials and Scopus databases). There were 23 reports that met the previously defined criteria, 17 for clinical research. A meta-analysis of data from 1,141 obese patients reported that a low-carbohydrate diet correlated with significant decreases in body weight, abdominal body circumference, systolic blood pressure, diastolic blood pressure, plasma triglycerides, fasting plasma glucose, glucose. hemoglobin, plasma insulin and plasma C-reactive protein, as well as high-density cholesterol lipoproteins. Low-density lipoprotein cholesterol and creatinine did not change significantly; There are limited data on uric acid plasma, however, which have been shown to have significant effects on body weight and cardiovascular risk factors; Although the effects on long-term health are unknown.<sup>[1]</sup>

Limited data are available regarding the association of major dietary patterns and risk of cardiovascular disease (CVD) in Middle Eastern countries. aimed to evaluate the association of major dietary patterns, using factor analysis, with the risk of CVD. Participants without CVD (n = 2284) were recruited from the tehran lipid and glucose Study and were followed for a mean of 4.7 years. Dietary intake of participants was assessed at baseline (2006–2008); biochemical variables were evaluated at baseline and follow-up examination. Multivariate cox proportional hazard regression models adjusted for potential confounders were used to estimate risk of CVD across tertiles of dietary pattern scores.

Linear regression models were used to indicate association of dietary pattern scores with changes of CVD risk factors over the study period. Two major dietary patterns, western and traditional, were identified. During a mean  $4.7 \pm 1.4$  years of follow-up, 57 participants experienced CVD related events. In the fully adjusted model observed an increased risk of CVD related events in the highest compared to the lowest tertile category of Western dietary pattern score. Traditional dietary pattern was not associated with incidence of CVD or CVD risk factors. A significant association was observed between the Western dietary pattern and changes in serum insulin. Findings confirm that the Western dietary pattern characterized by higher loads of processed meats, salty snacks, sweets and soft drinks is a dietary risk factor for CVD in the Iranian population.<sup>[2]</sup>

In all patients with diabetes cardiovascular risk factors should be systematically assessed at least annually. These risk factors include dyslipidemia, hypertension, smoking, a family history of premature coronary disease and the presence of albuminuria. Abnormal risk factors should be treated as described elsewhere in these guidelines. Atherosclerotic cardiovascular disease (ASCVD) defined as acute coronary syndromes (ACSs), a history of myocardial infarction (MI), stable or unstable angina, coronary or other arterial revascularization, stroke, transient ischemic attack or peripheral arterial disease presumed to be of atherosclerotic origin is the leading cause of morbidity and mortality for individuals with diabetes and is the largest contributor to the direct and indirect costs of diabetes. The common conditions coexisting with type 2 diabetes (e.g., hypertension and dyslipidemia) are clear risk factors for ASCVD, and diabetes it self confers independent risk. Numerous studies have shown the efficacy of controlling individual cardiovascular risk factors in preventing or slowing ASCVD in people with diabetes. Large benefits are seen when multiple risk factors are addressed simultaneously. There is evidence that measures of 10-year coronary heart disease (CHD) risk among U.S. adults with diabetes have improved significantly over the past decade and that ASCVD morbidity and mortality have decreased.<sup>[3]</sup>

## DISCUSSION

Synthesis of systematic reviews and meta-analyses demonstrates that the DASH dietary pattern as a well-accepted blood pressure-lowering diet has associated CVD benefit supported by reductions in blood pressure, HbA1c, LDL-C and other established CVD risk factors in people with and without diabetes. The certainty of the evidence based on the GRADE approach was very low to low for associations with cardiometabolic disease incidence and low to moderate for effects on cardiometabolic risk factors. More research is needed to improve the estimates and confirm that these benefits do translate into reductions. In this regard there remains a need for large randomized trials of the effect of the

DASH dietary pattern on clinical CVD outcomes in those with and without diabetes. The available evidence does support a potential opportunity for those with and without diabetes to adopt the DASH dietary pattern to improve cardiometabolic health. World wide epidemic of diabetes that is associated with changes in lifestyle, increased longevity and development of obesity. The metabolic syndrome and IGT are more prevalent than diabetes and are high risk conditions for the development of both type 2 diabetes and CVD. There are now several randomized controlled trials that have demonstrated that lifestyle modifications focusing on dietary modification, weight loss and increased physical activity are effective in reducing the progression from IGT to type 2 diabetes and in reducing several CVD risk factors. However, the effectiveness of lifestyle modification programs to reduce CVD events has not yet been adequately determined. A major challenge is to successfully implement lifestyle modification programs into clinical practice. Although short term results are encouraging long term outcomes are still uncertain. However, current evidence strongly suggests that increased physical activity and weight control should be the cornerstones of diabetes and CVD prevention strategies.<sup>[4]</sup>

Vegetarian diets represent an effective means for the prevention and treatment of cardio-metabolic diseases.

Properly planned vegetarian diets are healthful and effective for weight and glycemic control and provide metabolic and cardiovascular benefits including reversing atherosclerosis and decreasing blood lipids and blood pressure. The cardio-metabolic benefits seem to be greater with vegan than lacto-ovo-vegetarian diets. The use of plant-based diets as a means of prevention and treatment of cardio-metabolic disease deserves to be promoted through dietary guidelines and recommendations.<sup>[5]</sup> Present the effect of four different dietary patterns on secondary prevention in HF. DASH diet demonstrated to contribute positively to secondary prevention in HF mainly in relation to cardiac function, functional capacity, oxidative stress, BP and mortality. The Mediterranean diet had a correlation with inflammation, quality of life and cardiac function but just on cross-sectional studies. Hyperproteic and Low-carb diets demonstrate benefits over functional capacity.<sup>[6]</sup>

## CONCLUSION

The diabetic patient, fast food and refined grains /poultry dietary patterns were associated with high prevalence of CVD risk factor among adults. Maximally beneficial diet pattern should concurrently emphasize reductions in refined (not all) carbohydrates, processed meats, and foods high in sodium and trans-fat, moderation in unprocessed red meats, poultry, eggs, and milk; and high intakes of fruits, nuts, fish, vegetables (excluding russet/white potatoes), vegetable oils, minimally processed whole grains, legumes, and yogurt. Data suggest that the prudent pattern is associated with a reduced risk of 10years CVD. Avoiding high fat/low

fibre and high sugar dietary components may reduce the risk of CVD events and all cause mortality in older adults. The available evidence does support a potential opportunity for those with and without diabetes to adopt the DASH dietary pattern to improve cardiometabolic health. people with increased risk for CVD type1/2 diabetics.

## REFERENCES

1. Systematic review and meta- analysis of clinical trials of the effects of low carbohydrate diets on cardiovascular risk factors. F L. Santos, S. S. Esteves, A. da Costa Pereira. *Obesity*, 2012; 13: 1048–1066.
2. Western dietary pattern increases risk of cardiovascular disease in Iranian adults. Parvin Mirmirana, Zahra Bahadoranb. *Applied Physiology, Nutrition, and Metabolism*, 5 December 2016; 42(3): 326-332.
3. Cardiovascular Disease and Risk Management *Diabetes Care*, 2016; 39(1): S60–S71.
4. Dietary Patterns and Their Association with Cardiovascular Risk Factors in a Population Undergoing Lifestyle Changes. S Eilat-Adar, M Mete. *The Strong Heart Study. Nutr Metab Cardiovasc Dis*, 2013; Jun; 23(6): 528–535.
5. Experimental Outcomes of the Mediterranean Diet Lessons Learned from the Predimed Randomized Controlled Trial. Dicle Kargin, Laura Tomaino. *Nutrients*, 2019; 11: 2991.
6. Metabolic Benefits of Plant-Based Diets. Hana Kahleova and Susan Levin. *Cardio-.Nutrients*, 2017; 9: 848.