



Association Between Diet and Nutrition in the Pathophysiology of Migraine: a Literature Review

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Introduction

Migraine is one of the primary headache disorders, characterized as a chronic, multifactorial, and complex condition influenced by genetic and environmental factors. Migraine attacks can be alleviated or triggered depending on dietary choices. As triggers, one can mention dietary habits such as low fluid intake and the consumption of specific foods, such as alcohol, coffee, chocolate, and citrus fruits. Weight can also be related, as indicated by some studies.

Objective

To discuss the association between dietary and nutritional factors in migraine attacks.

Methods

This is an integrative literature review. A bibliographic search was conducted in the PubMed and Scielo databases to identify studies evaluating the effect of diet on migraine. The search strategies combined free-text terms and outcomes of interest. The search terms used were "diet," "migraine," "nutrition," and the Boolean operator "and." Initially, 130 articles were found. After applying the analysis filters, 6 were selected for inclusion in the study.

Results

Observational studies indicated that dietary triggers were implicated in triggering migraines in 27% of cases, with alcohol and caffeine consumption being the dietary patterns most strongly associated with the frequency of migraine attacks. A systematic review demonstrated that fasting and alcohol were triggers in 44% and 27% of patients, respectively. When averaging data from three studies, it was observed that alcohol consumption is associated with migraines in 24.5% of patients. On the other hand, dietary interventions such as low-fat diets, high omega-3 and low omega-6 diets, low-sodium diets, and ketogenic diets have been shown to reduce migraine attacks. Several randomized clinical trials have concluded that vitamin B supplements (folic acid, vitamin B6, and B12) significantly reduced the intensity and disability caused by migraine attacks, and some studies have observed that riboflavin (vitamin B2) reduced the frequency of attacks, with the hypothesis that increased riboflavin availability may improve mitochondrial function. Probiotic supplementation resulted in nearly complete relief for 60% of participants in a Brazilian study, with 20% experiencing improvements in their quality of life. Furthermore, studies have reported that after bariatric surgery, patients experienced a reduction in migraine severity following an average weight loss of 56%. Researchers found that an increase in BMI was followed by an increase in the frequency of chronic migraines, supporting the hypothesis of previous research. Overweight patients had more frequent and intense headache episodes compared to patients with normal weight.

Conclusion

Certain dietary interventions hold promising prospects in the treatment of migraines. Managing dietary quality can be an effective strategy to mitigate the severity of migraine attacks, regardless of the nutritional status and weight fluctuations of patients. Additionally, improvements in dietary habits have shown a correlation with reduced migraine severity and potential inflammation reduction, suggesting that dietary quality improvement may be an underlying mechanism. However, while numerous studies have pointed to a relationship between diet and migraines, it is crucial to emphasize that these associations need to be confirmed by high-quality longitudinal studies. Therefore, it is imperative to continue research on this topic with the aim of achieving robust evidence before they can be recommended as gold-standard treatments in clinical practice.

Keywords: Diet; Headache; Migraine; Nutrition; Pathophysiology.