

Effect of Glycemic Index and Glycemic Load on Atherosclerotic Stenosis and Stroke

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Recently, we read the article¹⁾ published in the Journal of Atherosclerosis and Thrombosis by Peng and colleagues with great interest. The study observed increased 2.1-fold odds for higher carotid stenosis of glycemic index (GI) and an increased 1.8-fold risk of glycemic load (GL)¹⁾, but we want to present some questions about the above research.

During the last decade, there has been a well-recognized epidemiological link between high GL, GI, and the increased risk of stroke morbidity and mortality, while atherosclerotic stenosis is the main cause of stroke^{2, 3)}. However, many studies have reported no significant association between high GI, GL, and stroke morbidity or mortality^{4, 5)}. Nonetheless, the evidence for this is limited. Although a number of clinical studies have assessed the association between GI, GL, and stroke outcome, the association between GI, GL, and stroke is debated.

Cai *et al.* undertook a meta-analysis of prospective cohort studies and found that high GI was not associated with the risk of stroke events and that GL was a risk factor for strokes, but meta-regression suggested that no significant differences existed between gender and reference food⁶⁾; whereas Rossi *et al.* showed that GL is merely an important determinant of the more common ischemic stroke, not of the hemorrhagic stroke⁷⁾. Levitan *et al.*⁴⁾ found that dietary GI and dietary GL were not associated with ischemic cardiovascular disease or mortality, but dietary GL was associated with a greater risk of hemorrhagic stroke.

Yu *et al.* conducted a prospective cohort study and suggested that high dietary GI and GL are associated with increased risks of total ischemic and hemorrhagic stroke in middle-aged and older urban Chinese women⁸⁾. Further, Song *et al.*⁹⁾ showed that high dietary GL was associated with the presence and burden of cerebral small vessel diseases in patients with acute cerebral infarction.

However, the recent study by Peng *et al.*¹⁾ showed that there was no significant relationship between GI/GL and cardiovascular disease risk factors using the Spearman test. We would like to point out some limitations and problems that are not mentioned in the article. First, the use of the food frequency questionnaire derived from the National Health and Nutrition Examination Surveys to evaluate patients' eating habits is highly subjective, and because the study is a cross-sectional study, the assessment of eating habits of patients who have been discharged from the hospital in the past will be considerably different. Second, for the baseline data included in the study, many of them have statistical differences, and there is no related propensity score matching in this paper. Third, there is no exclusion and explanation for patients who have previously taken statins, which is an important factor that affects hyperlipidemia and atherosclerotic stenosis. This makes us doubt the accuracy of the research results.

This recent controversial report challenges the association between GI and GL with atherosclerotic stenosis and stroke. It is therefore imperative to explore the attendant concerns. First, GI and GL have a substantially increased risk of atherosclerotic stenosis

and stroke outcomes; future research can observe whether low-GL/GI diet daily could reduce the risk. As the diet patterns and dietary contributors to the GL vary in different populations that had an impact on the outcomes, other important factors should take into account in the future. Furthermore, a study-specific dose-response analysis based on the estimates presented for the different categories of carbohydrate intake, GI, and GL is needed.

In summary, future research should pay more attention to the exact pathogenetic mechanisms between GL/GI with atherosclerotic stenosis and stroke, and certain recommendations should be considered for the efficacy of the low-GL/GI diet daily for atherosclerotic stenosis and stroke outcomes in different sexes, countries, and ages. Large higher-quality prospective studies conducted with the use of standardized outcome measures in different levels are necessary to assess the association in the future.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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