

**Glycemic index, glycemic load, and the risk of
acute myocardial infarction in middle-aged
Finnish men:**

The Kuopio Ischaemic Heart Disease Risk Factor Study

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INTRODUCTION

- **Glycemic index** (GI) is a measure of the blood glucose response to a standard amount of carbohydrate from a food, using glucose or white bread as a reference.
- **Glycemic load** (GL) takes also into account the amount of carbohydrate in a food.
- GI was originally developed to quantify the glycemic burden of carbohydrate containing foods in the diet to prevent complications of diabetic patients.



INTRODUCTION

- Also, in non-diabetic persons high dietary GI or GL may lead to postprandial hyperglycemia and dyslipidemia and have detrimental effects on health.
- Epidemiological studies have suggested that high dietary GI and GL could be detrimental in regard to cardiovascular disease (CVD) risk, especially among overweight persons.



AIMS OF THE STUDY

- The aim of our study was to assess the association between GI and GL and the risk of acute myocardial infarction (AMI) in Finnish men.
- We also studied whether body mass index (BMI) or leisure-time physical activity (LTPA) modifies the association.



MATERIALS AND METHODS

The Kuopio Ischaemic Heart Disease Risk Factor Study (KIHD)

- Prospective population-based study designed to investigate risk factors for CVD, cancer and related outcomes in men in Eastern Finland.
- A total of 2682 men aged 42-60 years participated in the baseline examinations in 1984-1989.
- Men with coronary heart disease (CHD) at baseline (n=269) were excluded, leaving 1981 men with complete data for the final analysis.



MATERIALS AND METHODS

Ascertainment of the follow-up events

- By computerized record linkage from the National Hospital Discharge Data Registry.
- Complete coverage with no losses to follow-up.

Food record data

- Dietary intake of nutrients was measured at study baseline using a 4-day food recording, checked by nutritionist.
- Dietary intakes of nutrients were adjusted for energy intake using a residual method (Willett and Stampfer 1986).



MATERIALS AND METHODS

Other measurements

- Leisure-time physical activity questionnaire.

Statistical analyses

- Cox proportional hazards model adjusted for:
- Age and examination years, smoking, BMI, systolic blood pressure, hypertension medication, serum HDL and LDL cholesterol, triglycerides, LTPA, education, family history of CVD, diabetes, alcohol intake, and dietary intakes of energy and energy adjusted folate, fiber, vitamin C, polyunsaturated (PUFA) and saturated fat (SAFA).
- Stratified analyses:
 - BMI (< 27 or ≥ 27 kg/m²).
 - Energy expenditure of LTPA (< 50 kcal/d or ≥ 50 kcal/d).



RESULTS

- During the average follow-up time of 16.1 years, 376 new cases of AMI were documented.
- For the whole study population, no significant associations were found between dietary GI or GL and the risk of AMI.

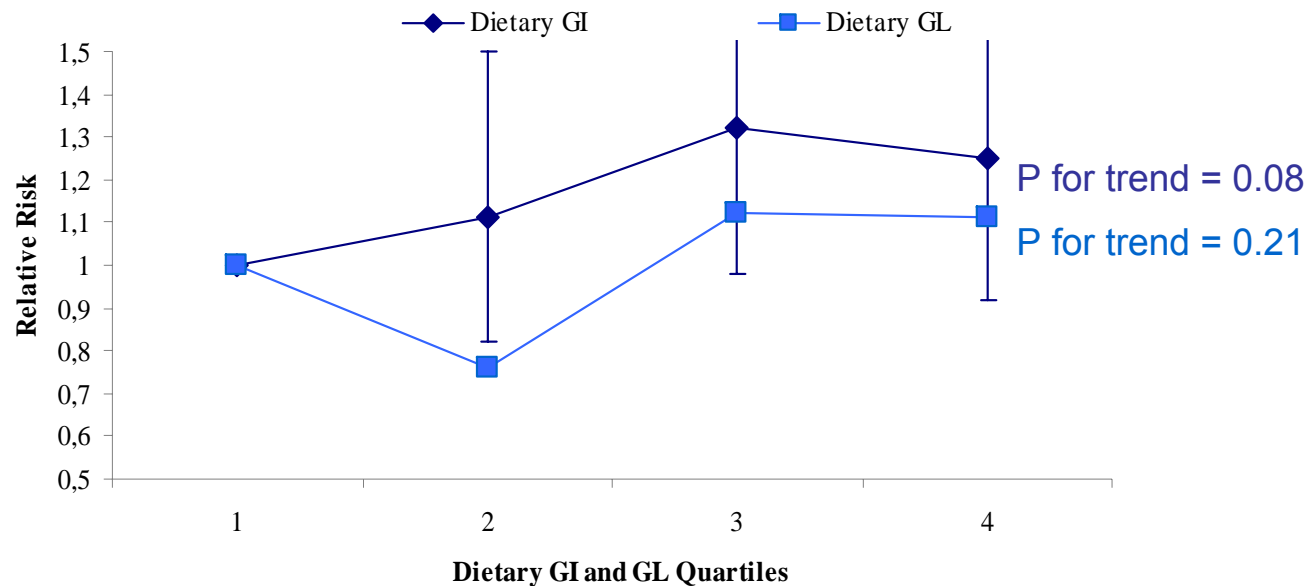


Figure 1. Association between dietary GI and GL and the risk of acute myocardial infarction.

Adjusted for age and examination years, smoking, systolic blood pressure, hypertension medication, serum HDL and LDL cholesterol, triglycerides, BMI, LTPA, education, family history of CVD, diabetes, alcohol intake, and dietary intakes of energy and energy adjusted folate, fiber, vitamin C, PUFA and saturated fat SAFA.



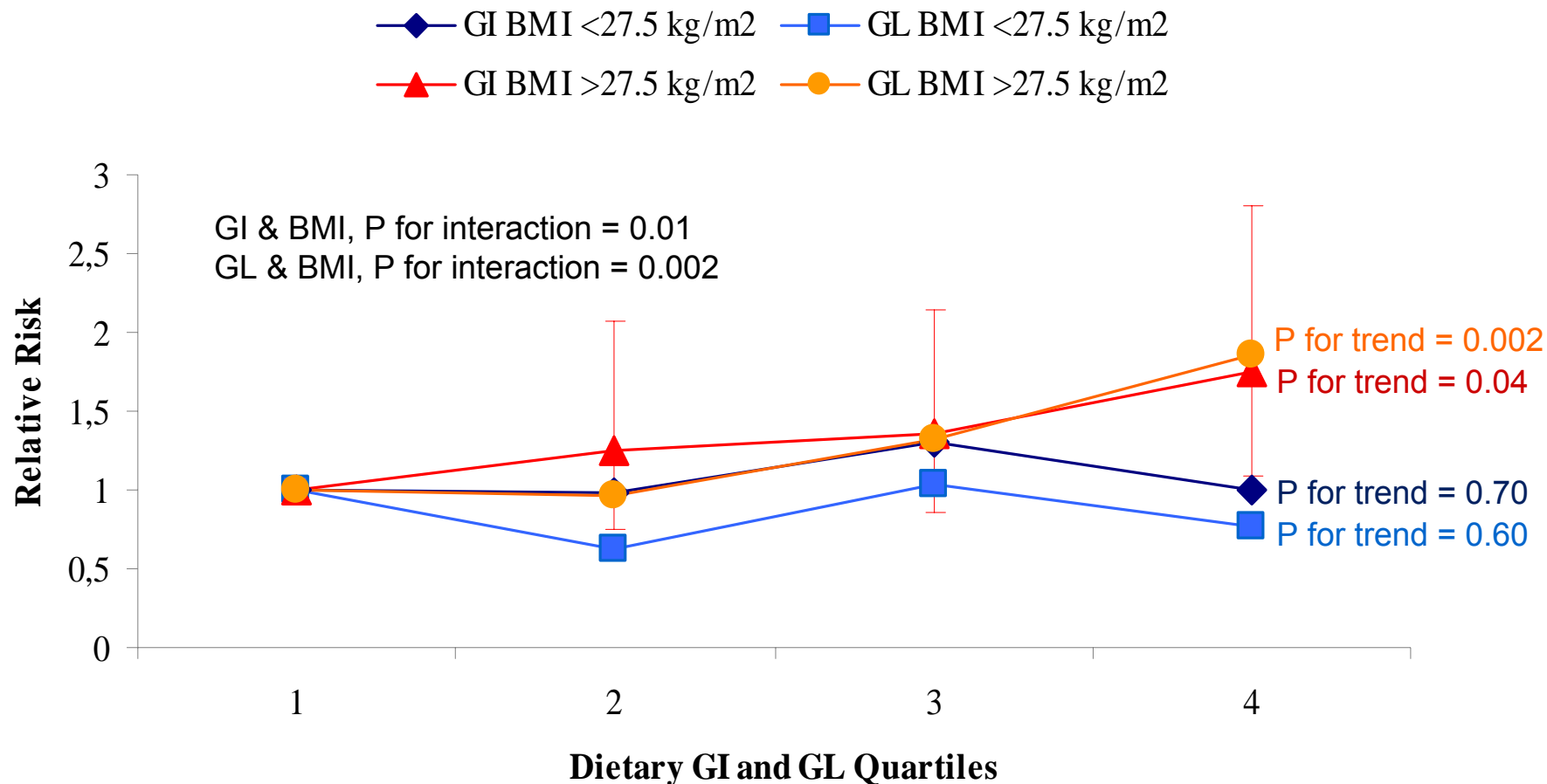


Figure 2. Multivariate-adjusted association between dietary glycemic index and glycemic load and the risk of acute myocardial infarction, stratified by BMI.

Adjusted for age and examination years, smoking, systolic blood pressure, hypertension medication, serum HDL and LDL cholesterol, triglycerides, LTPA, education, family history of CVD, diabetes, alcohol intake, and dietary intakes of energy and energy adjusted folate, fiber, vitamin C, PUFA and saturated fat SAFA.



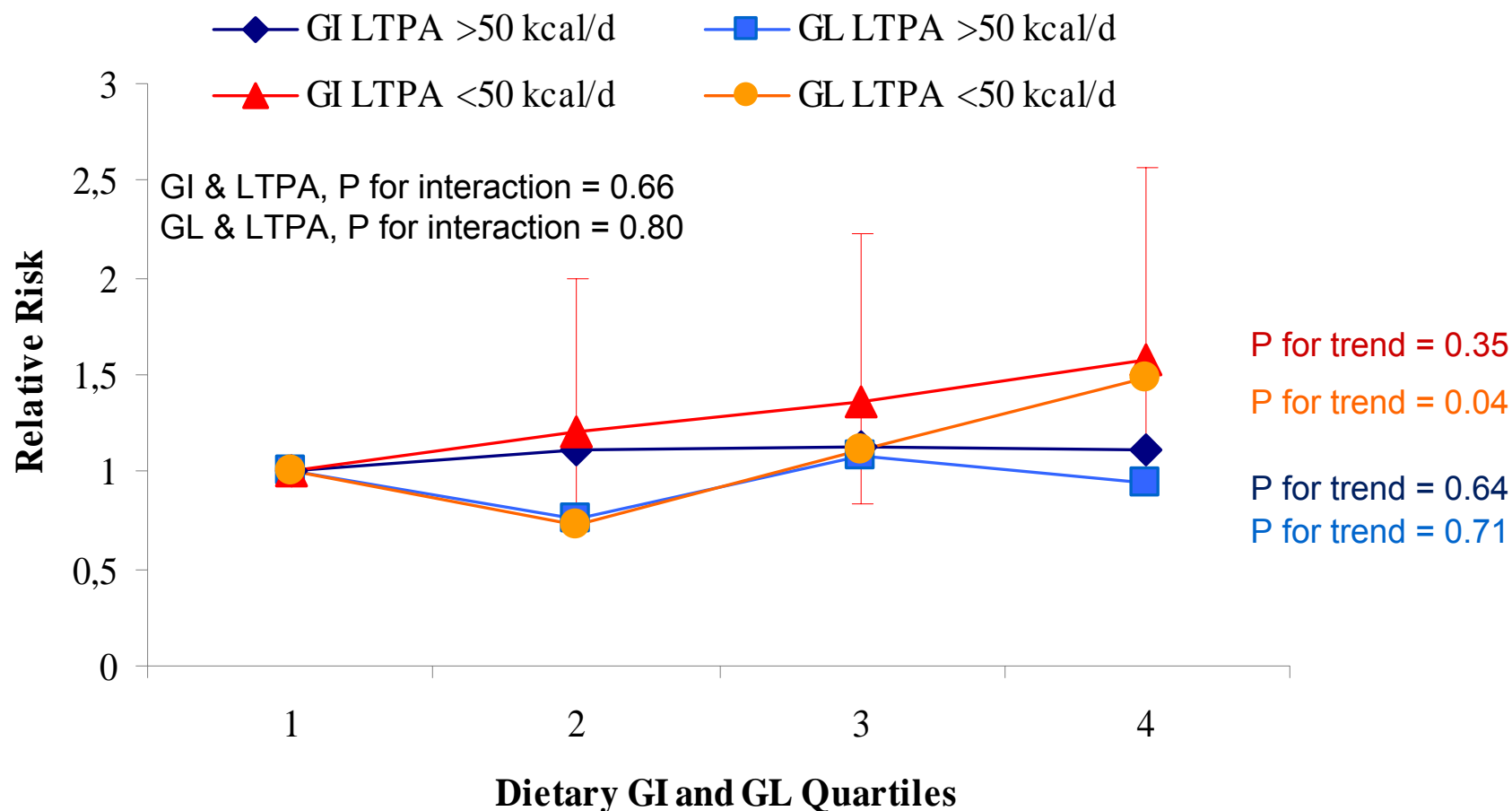


Figure 3. Multivariate adjusted association between dietary glycemic index and glycemic load and the risk of acute myocardial infarction, stratified by LTPA.

Adjusted for age and examination years, smoking, systolic blood pressure, hypertension medication, serum HDL and LDL cholesterol, triglycerides, BMI, education, family history of CVD, diabetes, alcohol intake, and dietary intakes of energy and energy adjusted folate, fiber, vitamin C, PUFA and SAFA.



CONCLUSIONS

- In this population of middle-aged or older Finnish men, both high dietary GI and GL were found to be associated with significantly increased risk of AMI among **overweight** (BMI > 27 kg/m²) and non-significantly among **physically less active men**.
- No association was found among those whose BMI was <27 kg/m² and physically more active men.

