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Abstract

Nutrition-Related Factors and the Progression of Metabolic Syndrome Characteristics over Time in Older Adults: Analysis of the TUDA Cohort [†]

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Abstract: Metabolic syndrome (MetS) is associated with an increased risk of cardiovascular disease and type 2 diabetes mellitus by an estimated two- and five-fold, respectively. Nutrition intervention could help to prevent the progression of MetS and associated pathologies with age, but the precise dietary components and related factors are not well understood. Therefore, the aim of this study was to evaluate the role of nutrition-related factors in MetS as well as the progression of MetS and its components over a 7-year follow-up period in older adults. This investigation involved the secondary analysis of data from the North–South of Ireland Trinity–Ulster–Department of Agriculture (TUDA) study of community-dwelling older adults (≥ 60 y), which were sampled at baseline (2008–2012; $n = 5186$) and follow-up (2015–2018; $n = 953$). Participants were deemed to have MetS if they met at least three of the following criteria: waist circumference (≥ 102 cm for males, ≥ 88 cm for females); HDL cholesterol (< 1.0 mmol/L for males, < 1.3 mmol/L for females); triglycerides (≥ 1.7 mmol/L); blood pressure (systolic ≥ 130 and/or diastolic ≥ 85 mmHg); and HbA1c (≥ 39 mmol/mol). The prevalence of MetS increased with advancing age (67% at baseline vs. 74% at follow-up). The factors at baseline that were predictive of a higher MetS risk at follow-up included waist circumference (OR 1.04, 95% CI 1.00–1.08; $p = 0.038$) and triglycerides (OR 1.77, 95% CI 1.21–2.59; $p = 0.003$). In a detailed dietary analysis conducted at the follow-up time point, higher protein intake (g/kg body weight) was associated with a lower risk of MetS (OR 0.06, 95% CI 0.02–0.20; $p < 0.001$), abdominal obesity (OR 0.10, 95% CI 0.02–0.51; $p = 0.006$), and hypertension (OR 0.022, 95% CI 0.00–0.80; $p = 0.037$), and a higher MUFA intake (g/day) was associated with a lower risk of MetS (OR 0.88, 95% CI 0.78–1.00; $p = 0.030$). No other dietary factors were significantly associated with MetS. In terms of protein quality, participants with MetS compared to those without consumed fewer high-quality protein foods ($p = 0.009$) and consumed more low-quality protein foods ($p < 0.001$). Dietary intervention along with other strategies focusing on potentially modifiable risk factors may delay the progression of MetS in older adults. Efforts to enhance the quantity and quality of protein intake may be warranted to reduce MetS in certain at-risk groups.



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Keywords: metabolic syndrome; older adults; nutrition-related factors; protein quality

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Data Availability Statement: Some or all datasets generated during and/or analyzed during the current study are not publicly available but are available from the corresponding author on reasonable request.

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