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Glycated hemoglobin A1c level is associated with low-grade albuminuria in non-diabetic adult population

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Background: Regarding the association between glycated hemoglobin A1c (HbA1c) levels and microvascular complications, high HbA1c level in participants without diabetes mellitus (DM) may be associated with low-grade albuminuria (LGA).

Methods: 12,774 participants without DM were included in this study. The participants were divided into three groups according to HbA1c levels: a Low group (<5.7%), Middle group (5.7-6.0%), and High group (>6.0%). The urinary albumin-to-creatinine ratio (UACR) was calculated as mg per g of creatinine (mg/g). High LGA was defined as UACR \geq 3.9 mg/g for men and UACR \geq 7.5 mg/g for women.

Results: The proportions of participants with high LGA in the Low, Middle, and High groups were 22.3%, 28.1%, and 37.4%, respectively. Both univariate and multivariate analyses showed that UACR was greatest in the High group compared to the other groups. For participants without metabolic syndrome (MetS), the proportion of high LGA and UACR was greatest in the High group compared to the other groups. For participants with MetS, the statistical significant associations between HbA1c and high LGA or HbA1c and UACR were weak.

Conclusion: Participants with relatively high HbA1c levels should be closely monitored for LGA, especially if participants do not have MetS.

Keywords: diabetes mellitus, glycated hemoglobin A1c, low-grade albuminuria, Metabolic syndrome