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Socioeconomically disadvantaged groups and metabolic syndrome in European adolescents: The HELENA study

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Abstract

Introduction: Psychosocial stressors deriving from socioeconomic disadvantages in adolescents can result in higher metabolic syndrome (MetS) risk. We aimed to examine whether socioeconomic disadvantages were associated with MetS independent of lifestyle and whether there was a dose response relationship between the number of cumulated socioeconomic disadvantages and the risk of MetS.

Materials and Methods: The present study included 1,037 European adolescents (aged 12.5–17.5) of the 3,528 total HELENA participants. Sociodemographic variables and lifestyle were assessed through self-reported questionnaires. Disadvantaged groups included adolescents with low educated parents, low family affluence, migrant origin, unemployed parents, and from non-traditional families. MetS score was calculated as the sum of sex- and age-specific z-scores of waist circumference, HOMA-IR index, mean of z-scores of diastolic and systolic blood pressure and mean of z-score of HDL-C multiplied by -1 and z-score of TG. A higher score indicates poor metabolic health. Linear mixed-effects models were used to study the association between social disadvantages and MetS risk score. Models were adjusted for sex, age, pubertal status (Tanner stage) and lifestyle (diet quality, physical activity, alcohol consumption and smoking status).

Results: Adolescents with low educated mothers showed a higher MetS score (0.54 [0.09–0.98]; β [99% confidence interval]) compared to high-educated mothers. Adolescents who accumulated more than three disadvantages (0.69 [0.08–1.31]) or with missing information on disadvantages (0.72 [0.04–1.40]) had a higher MetS risk compared to non-socioeconomically disadvantaged groups. Stronger associations between socioeconomic disadvantages and MetS were found in male in comparison with female adolescents.

Discussion: Out of the studied socioeconomic disadvantages, maternal education is the most important determinant of adolescent's MetS risk independently of sex, age, Tanner stage, smoking status, alcohol consumption, diet quality and physical activity. Social vulnerabilities (migrant background, unemployment status and belonging to a non-traditional family) were not associated with a higher MetS risk in European adolescents. However, we found a dose-response relationship between the number of factors related to social disadvantage and adolescents' MetS risk with adolescents accumulating three or more socioeconomic disadvantages showing the highest risk. Stronger associations between socioeconomic disadvantages and MetS were found in male compared to female adolescents. Policy makers should focus on low educated families to tackle health disparities.

Conflict of Interest

There is no conflict of interest