

IMPROVED SOCIAL INTEGRATION SHAPES FEMALE BODY COMPOSITION IN TURKISH MIGRANTS: BIOCULTURAL EVIDENCE FROM GERMANY AND THE NETHERLANDS

Basak Koca Ozer¹, Kubra Baran², Michael Hermanussen³ and Christiane Scheffler⁴

¹Ankara University, Faculty of Languages, History and Geography, Department of Anthropology, Physical Anthropology, Sıhhiye, Ankara, Türkiye; ²Ankara University, Graduate School of Social Sciences, Department of Anthropology, Sıhhiye, Ankara, Türkiye; ³Altenhof, Germany;

⁴University of Potsdam, Institute of Biochemistry and Biology, Human Biology, Potsdam, Germany

Background: Turkish migrants in Western Europe exhibit higher adiposity than both host-country populations and non-migrant Turks, yet the role of host-country institutional environments remains poorly understood. European nations differ substantially in their integration policy frameworks – Germany pursues an integration-oriented approach encouraging participation in host institutions, while the Netherlands has historically emphasised multicultural policies preserving ethnic community structures. These contrasting regimes may create divergent biocultural environments with measurable consequences for somatic adaptation.

Objective: To examine whether contrasting integration policy regimes independently shape body composition in Turkish adult migrants, with particular attention to sex-specific biocultural responses.

Subjects and methods: Cross-sectional study of 478 Turkish adults (aged 20–65 years) across Türkiye (n=278), Germany (n=75), and the Netherlands (n=125). Standardised anthropometry assessed BMI, arm fat area (AFA), arm muscle area (AMA), fat percentage, fat-free mass, and frame index. Statistical analyses included one-way ANCOVA, multiple and hierarchical regression, principal component regression, and St. Nicholas House Analysis (SNHA) – a graph-theoretical method for detecting multivariate association structures – applied separately to six sex-by-country subgroups.

Results: Both Germany and the Netherlands independently predicted elevated AFA relative to Türkiye in regression models ($\beta=0.061-0.073$, $p<0.05$). Country of residence explained an independent increment in AFA variance in females ($\Delta R^2=0.025$, $p=0.017$), with Germany additionally predicting higher AMA ($\beta=0.128$, $p=0.031$) after full covariate adjustment. A country/integration policy dimension accounted for 12.0% of predictor variance and significantly predicted both outcomes ($p<0.001$). In males, cross-country differences were largely explained by age. SNHA networks revealed that the structural coupling between body composition, education, and income was systematically reorganised across migration contexts, with sex-specific patterns particularly pronounced in female subgroups.

Conclusions: Host country integration policy constitutes an independent biocultural force shaping female migrants' somatic profiles. These findings underscore the need for sex-responsive, structurally informed public health approaches to migrant well-being.

Keywords: Migrant health; Integration policy; Body composition; Biocultural adaptation, anthropometry.