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Parental education and anthropometric indicators of childhood malnutrition as risk factors of type 2 diabetes in a multi-center cross-sectional study among Ghanaian migrants in Europe and their compatriots in Ghana: The RODAM Study

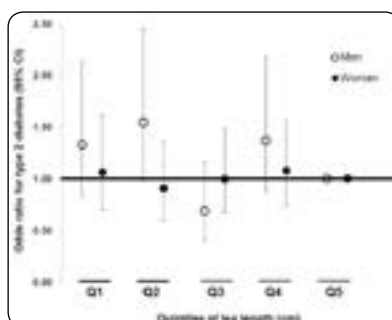
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Statement of the Problem: Early-life experiences may impact on the metabolic health of individuals in later life but few studies have explored this association in African populations. In this study, childhood socio-economic status and childhood malnutrition were evaluated as risk factors for type 2 diabetes (T2D) among adults in rural and urban Ghana and among Ghanaian migrants in Europe.

Methods: Data were derived from the multi-center, cross-sectional Research on Obesity and Diabetes among African Migrants (RODAM) Study. The associations of parental education and anthropometric markers of childhood malnutrition [leg length, leg length-to-height ratio (LHR)] with T2D were investigated using logistic regression models.

Findings: Among 5,575 participants (mean age 46.2 SD 11.1 years; 62% female), the crude prevalence rates for T2D were 11% in men and 8% in women. There was a gradient for increasing parental education from rural Ghana through urban Ghana to Europe among both men and women, and this was also true for leg length among males. Lower father's education tended to increase the odds of T2D in women (1.50; 95% CI: 0.96, 2.36) but not in men (0.74; 95% CI: 0.43, 1.30). Among men, lower quintiles of leg length tended to increase the odds of T2D (OR per 1 SD leg length decrease: 1.11; 95% CI: 0.95, 1.30). The strongest leg LHR gender difference was seen in rural Ghana, OR 1.83 (95% CI: 0.94, 3.57) and 0.93 (95% CI: 0.60, 1.42) for men and women respectively.

Conclusion & Significance: Further studies examining the association of early life socioeconomic and nutritional factors with T2D are needed in low and middle-income populations with reported increasing burden of T2D occurring alongside an unfinished agenda of malnutrition and other poverty related diseases. Interventions to prevent T2D may need to target the early life period and adults who experienced lower socioeconomic status during childhood.



Adjusted odds ratios of leg length (cm) quintiles and type 2 diabetes, stratified by sex

Recent Publications

1. Addo J, Agyemang C, de-Graft Aikins A, Beune E, Schulze MB, Danquah I, et al. Association between socioeconomic position and the prevalence of type 2 diabetes in Ghanaians in different geographic locations: the RODAM study. *Journal of epidemiology and community health*. 2017;71(7):633-9.

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2. Agyemang C, Nyaaba G, Beune E, Meeks K, Owusu-Dabo E, Addo J, et al. Variations in hypertension awareness, treatment, and control among Ghanaian migrants living in Amsterdam, Berlin, London, and nonmigrant Ghanaians living in rural and urban Ghana - the RODAM study. *Journal of hypertension*. 2018;36(1):169-77.
3. Agyemang C, Beune E, Meeks K, Addo J, Aikins AD, Bahendeka S, et al. Innovative ways of studying the effect of migration on obesity and diabetes beyond the common designs: lessons from the RODAM study. *Annals of the New York Academy of Sciences*. 2017;1391(1):54-70.
4. Adjei DN, Stronks K, Adu D, Beune E, Meeks K, Smeeth L, et al. Chronic kidney disease burden among African migrants in three European countries and in urban and rural Ghana: the RODAM cross-sectional study. *Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association*. 2018.
5. Agyemang C, Beune E, Meeks K, Owusu-Dabo E, Agyei-Baffour P, Aikins A, et al. Rationale and cross-sectional study design of the Research on Obesity and type 2 Diabetes among African Migrants: the RODAM study. *BMJ open*. 2014;4(3):e004877.

Biography

Juliet Addo is a Clinical Research Director in Global Health R&D at GlaxoSmithKline (GSK). She joined the GSK non-communicable diseases (NCDs) Open Lab in 2016 and is currently part of the Global Health Catalyst team working in collaboration with academic partners to address major global health problems. She is a physician and epidemiologist by training, and was a lecturer in epidemiology at the London School of Hygiene and Tropical Medicine (LSHTM) prior to joining GSK. Her research has focused on cardiovascular diseases and their risk factors including strokes, hypertension and diabetes and the ethnic and socioeconomic differences in these. She is a member of the Diploma of Tropical Medicine and Hygiene (DTM&H) Board of the Royal College of Physicians and an Honorary Assistant Professor of Epidemiology at the LSHTM.

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