

68

Qualitatively distinct child to adult BMI trajectories and adult cardiometabolic outcomes



Russell J. Thomson¹, Markus Juonala^{2,3}, Matthew Sabin^{4,5}, David Burgner^{4,5}, Terho Lehtimäki^{2,6,7}, Niina Hutri-Kähönen⁷, Jorma Viikari^{2,3}, Olli Raitakari^{2,3}, Costan Magnussen^{8,3}, Marie-Jeanne Buscot^{8,*}

¹ Centre for Research in Mathematics, School of Computing, Engineering & Mathematics, Western Sydney University, Sydney, Tasmania, Australia

² Department of Medicine, Research Centre of Applied and Preventive Cardiovascular Medicine, University of Turku, Turku, Finland

³ Research Centre of Applied and Preventive Cardiovascular Medicine, University of Turku, Turku, Finland

⁴ Murdoch Childrens Research Institute, The Royal Children's Hospital, Melbourne, Australia

⁵ Department of Paediatrics, University of Melbourne, Melbourne, Australia

⁶ Department of Clinical Chemistry, Fimlab Ltd, Tampere, Finland

⁷ Department of Pediatrics, Tampere University Hospital, University of Tampere Faculty of Medicine and Life Sciences, Tampere, Finland

⁸ Menzies Institute for Medical Research–University of Tasmania, Hobart, Tasmania, Australia

Background: The relationship between life course body mass index (BMI) trajectories and adult cardiovascular disease risk is poorly described. In a well-characterized longitudinal cohort study, we aimed to identify BMI trajectories from early-childhood to adulthood and investigate their association with adverse cardiometabolic phenotypes (type 2 diabetes (T2DM), high risk lipid levels, hypertension, and high carotid intima-media thickness (cIMT)) in middle adulthood.

Methods: We used Latent Class Growth Mixture Modelling to identify distinct BMI trajectories among 2631 Cardiovascular Risk in Young Finns Study participants aged 6–49 years, and Poisson regression with a robust error variance to determine whether trajectory groups predicted each cardiometabolic outcome measured in adulthood.

Results: Six distinct life-course BMI trajectories were identified: stable normal (class 1, 55.2%), high BMI resolving (class 2, 1.6%), progressively overweight stabilizing (class 3, 33.4%), progressively obese increasing (class 4, 4.2%), rapidly overweight stabilising obese (class 5, 4.3%), and overweight or obese persisting (class 6, 1.2%). Higher trajectories were generally associated with increased cardiometabolic risk in middle age. Participants who progressively became overweight (class 3) had greater risks in adulthood compared with those in the stable normal group (class 1) for all considered cardiometabolic phenotypes (risk ratios, RR: 1.47–3.06). Compared with the progressively overweight stabilizing group (class 3), the high BMI resolving group (class 2) had smaller risk ratios for adult T2DM, high-risk lipid levels and hypertension, but increased risk for high cIMT (RR: 3.37 vs. 1.70).

Conclusion: BMI trajectories from childhood to adulthood that reach or persist at high levels are associated with increased cardiometabolic risk in middle age. Stabilizing BMI in obese adults may limit adverse risk profiles and resolution of elevated BMI in young adulthood may substantially reduce cardiometabolic risk.

However, to effectively reduce the risk for high adult cIMT, obesity prevention should be targeted at young children.

<https://doi.org/10.1016/j.orcp.2018.11.073>

69

Predictors of persistent body weight misclassification from adolescence period to adulthood: A longitudinal study



Abdulaziz A.A. Aloufi^{1,*}, Jake Najman^{1,2}, Abdullah Mamun^{1,3}

¹ School of Pubic Health, The University of Queensland, Herston, Brisbane, Queensland, Australia

² School of Social Science, The University of Queensland, St Lucia, Queensland, Australia

³ Institute for Social Science Research, The University of Queensland, Indooroopilly, Brisbane, Queensland, Australia

Objective: This study examined whether body weight misclassification continues from adolescent to adulthood and associated predictors behind that misclassification.

Method: Data are from a sample of participants who were part of the Mater-University of Queensland Study of Pregnancy (MUSP). Data analyses were restricted to 2938 participants whose measured and perceived body weight were recorded during their adolescent and adulthood follow-ups. Measured body weight was categorized into (underweight–obese) and participants reported their perceived body weight at each follow-up. To identify misclassification, we objectively compared their measured and perceived body weight at each follow-up. Potential predictors during early life or adolescence periods were included in data analyses.

Results: At each follow-up, normal weight participants were more likely to estimate their body weight correctly compared to their under, overweight, and obese counterparts. Weight underestimation was recorded more often among overweight and obese participants while overestimation was recorded more often among underweight ones. In gender analysis, more than 40% of males and of females were able to correctly estimate their body weight at one follow-up while almost 30% of males and 40% of females were able to do so in more than one follow-up. Almost a third of females and more than 45% of males were underestimated their body weight at one follow-up while a 13% of females and a quarter of males were able to do so in more than one follow-up. Being female, dieting, being overweight, having overweight mother, being White, and having poor mental health were the most significant predictors for more than one follow-up misclassification.

Conclusion: Finding of this study suggested that weight misclassification may persist from adolescent to adulthood. Being female, dieting, overweight, and mental health appeared to be predictors behind persistent weight misclassification. Further study needed to evaluate the impact of persistent misclassification on population health benefits.

<https://doi.org/10.1016/j.orcp.2018.11.074>