Impact of a school-based health intervention program on body composition among South African primary schoolchildren: results from the KaziAfya cluster-randomized controlled trial

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The prevalence of overweight and obesity is increasing among African children potentially predisposing them to greater obesity and non-communicable diseases (NCDs) in adulthood. This risk may be higher among growth-impaired children who may have greater fat mass. Therefore, we examined the effects of school-based physical activity (PA) promotion and multi-micronutrient supplementation (MMNS) on body composition among South African children enrolled in a longitudinal school-based randomized controlled trial.; Children were cluster-randomized by class to one of four groups: (a) a physical activity group (PA), (b) a multi-micronutrient supplementation group (MMNS), (c) a physical activity + multi-micronutrient supplementation group (PA + MMNS), and (d) control group, and were being followed for 3 years. Linear random effects regression models with random intercepts for school classes tested the associations of each intervention arm with overall fat mass (FM), fat-free mass (FFM), truncal fat mass (TrFM), and truncal fat-free mass (TrFFM) at 9 months (T2) for boys and girls. These differences were then explored among children who differed in height velocity (HV).; A total of 1304 children (614 girls, 667 boys) in twelve clusters were assessed at baseline and after 9 months follow-up (T2). At baseline, approximately 15% of children were classified as overweight or obese while approximately 38% of children were classified as mildly stunted or moderately/severely stunted. Among girls, promotion of PA was associated with reduced FM and TrFM at T2 while MMNS was associated with increased FFM. Children with reduced HV in the PA arm had reduced FM while children in the MMNS arm with lower HV had increased FFM compared to children in the control arm. Similarly, children with lower HV in the MM and PA groups had reduced TrFM compared to children in the control arm.; Our study suggests that the promotion of school-based physical activity programs and micronutrient supplementation can reduce childhood adiposity and so reduce the risk of obesity and chronic diseases later in adulthood.; ISRCTN, ISRCTN29534081 . Registered on August 9, 2018. The trial was designed, analyzed, and interpreted based on the CONSORT protocol (Additional file 1: CONSORT checklist for randomized trial).
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