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CROSS-SECTIONAL DIFFERENCE IN BMI BETWEEN SENIOR AND JUNIOR STUDENTS PREDICTS PROSPECTIVE CHANGE IN BMI AT THE SCHOOL LEVEL

W.S. Lo, R. Huang, S.Y. Ho, H.K. Lai, T.H. Lam

School of Public Health, University of Hong Kong, Hong Kong, China

Objectives: To examine whether cross-sectional BMI difference between senior and junior secondary school students was correlated with prospective changes in BMI at the school level.

Background: Schools are known to exert prospective influences on adolescent BMI. The school effects may also be reflected in cross-sectional BMI differences between senior and junior students in each school. Schools could quickly be identified for weight-control interventions if such cross-sectional differences could predict prospective changes in BMI.

Methods: In the Hong Kong Student Obesity Surveillance project, mean BMI based on self-reported height and weight was obtained at baseline 2006-7 among Form 1 (US grade 7) and Form 4 students in each school (baseline cross-sectional difference, Form 4 vs Form 1), and in 2009-10 among Form 4 students of the same schools (prospective changes, from baseline Form 1 to follow-up Form 4). The correlation between cross-sectional differences and prospective changes in mean BMI was examined with Pearson's correlation coefficient (*r*) in boys (14 schools) and girls (17 schools) separately.

Results: Substantial mean BMI (kg/m^2) differences across schools were observed both cross-sectionally (range -0.40 to 2.14) and prospectively (range -0.16 to 2.49). A strong correlation (r=0.70; P=0.002) between cross-sectional difference and prospective change was observed in girls, whereas no significant correlation was observed in boys (r=-0.30; P=0.30).

Conclusions: Substantial variations in school effects on adolescent BMI are evident. Such prospective effects could be predicted by cross-sectional difference in BMI in girls between junior and senior students in a school. No significant correlation was observed in boys probably because boys are less affected by the school environment than girls, but more research is warranted to differentiate the effects of physical and social environments.