Childhood obesity, school environment, and socioeconomic status

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Introduction: Childhood obesity is a global public health threat and behavioural interventions have been relatively ineffective. A socio-ecological model has been proposed to tackle the issue using a holistic multilevel approach. This study aims to investigate the association between childhood obesity, school physical activity environment, and socioeconomic status (SES) in Hong Kong.

Methods: Two cross-sectional studies were conducted. The first one was a population-based school survey measuring students' body height, weight, and blood pressure in schools. Family SES was reported by parents; neighbourhood SES retrieved from census. The second was a multilevel data linkage study. Students' body height and weight were retrieved from Student Health Service database and school surveys were conducted to assess school physical activity environment.

Results: 14842 children (age 6–19 years) included in the first study. Children whose mother only completed secondary school or below had higher risk of childhood obesity (RR 1.41, 95% CI 1.13–1.76, p=0.003) and hypertension (1.18, 1.01–1.36, p=0.03). Meanwhile, children in the lowest neighbourhood SES group had higher risk of childhood underweight (1.61, 1.04–2.49, p=0.03), overweight (1.35, 1.05–1.72, p=0.02), and obesity (2.07, 1.11–3.88, p=0.02). The second study included 208,280 students (6–18 years) from 438 schools (45% of Hong Kong). A reduced obesity risk was associated with higher teachers' perceived PA benefits (0.96, 0.94–0.99, P=0.02), PA teaching experience (0.93, 0.91–0.96, P<0.001), school campus size (0.93, 0.87–0.99, P=0.02), PA ethos (0.91, 0.88–0.94, P<0.001), number of PA programmes (0.93, 0.90–0.96, P<0.001), and PA facilities (0.87, 0.84–0.90, P<0.001). Students in schools with at least three PA-friendly environmental factors (11.7%) had a much lower risk of obesity (0.68, 0.62–0.75, P<0.001) than those without (23.7%).

Conclusions: Childhood obesity was found to be associated with various school, family, and neighbourhood factors. Future intervention studies on obesity should consider a multi-component intervention for optimal effectiveness.