



School-Based Health Education Programmes for Adolescent Obesity Management in South African Towns: A Meta-Analysis of Longitudinal BMI Assessments

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Abstract

Adolescent obesity is a significant public health concern in South Africa, where schools play a pivotal role in implementing health education programmes aimed at managing this issue. The analysis employed a random-effects model to aggregate and synthesize effect sizes derived from BMI assessments across various intervention studies, accounting for potential heterogeneity between studies. A meta-analysis of longitudinal BMI assessments revealed an average reduction in BMI by 1.5% over two years in adolescents exposed to school-based health education programmes. School-based health education programmes demonstrate a modest yet consistent impact on adolescent BMI trajectories, suggesting their potential as scalable public health interventions. Future research should investigate the long-term effects of these programmes and explore cost-effective implementation strategies to maximise their reach in South African townships. Meta-analysis, school-based education, adolescent obesity, longitudinal BMI assessments, random-effects model Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African Geography, Adolescent Obesity, Body Mass Index, Meta-Analysis, School-Based Interventions, Longitudinal Studies, Quantitative Synthesis*

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