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Cost-effectiveness of community-based obesity prevention interventions in Australia

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Background: Community-based interventions (CBIs) that include multifaceted community level strategies to increase physical activity and improve nutrition, implemented in multiple settings, have been shown to be effective in reducing unhealthy weight gain in children. This study synthesises the evidence of effectiveness of CBIs and assesses the cost-effectiveness of CBIs implemented in the Australian setting.

Methods: The effectiveness of CBIs, measured by mean difference in body mass index (BMI) *z*-scores between intervention and control communities, was determined by undertaking a scoping literature review and meta-analysis, using a random effects model, of trials published between 1990 and 2016. Although the strategies implemented are typically unique to each CBI community, for the purposes of this economic evaluation a generic hypothetical CBI appropriate for the Australian setting, incorporating commonly implemented strategies was costed (in 2010 Australian dollars). A multiple cohort Markov model that simulates diseases associated with overweight and obesity was used to estimate the long term health benefits and cost outcomes induced by reductions in BMI. Outcome measures were health adjusted life years (HALYs) saved, healthcare-related cost savings, and the incremental cost-effectiveness ratio (ICER). Health and cost outcomes were estimated over the lifetime of the target population (5–18 year olds).

Results: The meta-analysis revealed a small but significant difference in BMI *z*-score (mean difference of −0.07 (95% uncertainty interval (UI): −0.13 to −0.01) favouring the CBI community compared to the control. The net cost of implementing CBIs across all local government areas in Australia was approximately AUD426 million (M) (95% UI: AUD3 M to AUD823 M) over three years and resulted in savings of 51,792 HALYs (95% UI: 6,816 to 96,972). The mean ICER was AUD8,155 per HALY saved (95% UI: AUD237 to AUD81,021).

Conclusion: CBIs are cost-effective obesity prevention initiatives, however implementation across Australia would be expensive (relative to existing investments in prevention).

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Reliability and construct validity of a health behaviour questionnaire battery among children

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Background: Self-report recall questionnaires are cost efficient, low burden assessment tools commonly used in population research to examine the determinants of childhood obesity. However, self-report questionnaires typically exhibit poor to moderate psychometric properties due complexity in recalling each behaviour and bias intrinsic to self-report data (e.g. social desirability). In this study, we examined the reliability and validity of a battery of self-report recall questionnaires that examined physical activity, sedentary behaviour, dietary intake and sleep hygiene among children aged 9–12 years.

Methods: The test-retest reliability of the questionnaires was assessed among a sample of 26 Grade 4 and 6 students ($M_{age} = 11.15 \pm 1.07$) who completed the questionnaires on two occasions, one week apart in 2014. Criterion validity was assessed by comparing self-reported physical activity and sedentary behaviour against objectively measured duration spent in moderate-to-vigorous physical activity (MVPA) and sedentary time via accelerometry from a sub-sample of 19 students. Test-retest reliability of individual items and scales was determined for categorical variables using Kappa statistics. Spearman's rho assessed correlations between daily MVPA and sedentary time from self-report estimates.

Results: Preliminary analysis indicate test-retest reliability ranges from no agreement to high agreement for categorical variables with kappa coefficients ranging from −0.07 to 0.86. Items examining dietary intake consistently showed poor to moderate reliability with kappa ranging from 0.15–0.48 while items indicating adherence to national PA and SB guidelines having the strong reliability when met on all 7 days ($\kappa = 0.61$, $\kappa = 0.61$). Initial results suggest the correlations between reported PA and accelerometer data were weak to moderate and non-significant ($r_s = 0.29, p = 0.24$).

Conclusion: Primarily analysis indicate the questionnaires psychometric properties are consistent with systematic reviews of existing international questionnaires, that examine physical activity, sedentary behaviour, dietary intake and sleep hygiene in children.

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Unhealthy sport sponsorship at the 2017 AFL Grand Final: a case study of its frequency, duration and nature

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Background: Sponsorship of elite sports provides a compelling avenue for unhealthy food, alcohol and gambling companies to promote their products, allowing them to advertise with relatively few restrictions and to reach a highly-engaged mass audience, including children and young adults. Exposure to branded sponsorship is known to influence preferences and behaviours in relation to food and beverages, and emerging evidence suggests that gambling