

Thesis abstract

Understanding and preventing poor diet, alcohol use, tobacco smoking and vaping among adolescents from low socioeconomic and remoteness areas through eHealth interventions

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Chronic diseases disproportionately affect disadvantaged populations, including individuals of low socioeconomic status (SES) and those living in geographically remote ('regional', 'rural', and 'remote') areas. These health inequities are systemic, unjust, and preventable. Adolescence represents a critical period for shaping future health behaviours and outcomes, offering a pivotal opportunity to mitigate the burden of chronic disease and reduce disparities. During this key developmental period, lifestyle risk behaviours such as poor diet, alcohol use, tobacco smoking, and vaping typically emerge. Evidence-based prevention strategies during adolescence are essential to prevent the entrenchment and progression of these lifestyle risk behaviours into adulthood, thereby addressing the widening health equity gap faced by disadvantaged populations. This thesis aims to address critical gaps in the literature concerning lifestyle risk behaviours among adolescents from low SES and geographically remote contexts, with a primary focus on Australian adolescents. It also contributes to the global evidence base by offering strategies for the development of effective and equitable lifestyle behaviour interventions in both the Australian and international con-

text. Chapter 2 of this thesis examines the prevalence of poor diet, alcohol use, tobacco smoking, and vaping behaviours across a large and geographically diverse sample of 4,445 Australian adolescents aged 14–17 years. The findings reported a nuanced and complex picture of these behaviours, showing that there are no uniform patterns of these behaviours across SES and geographical locations. Lower SES adolescents reported less excessive discretionary food intake and alcohol consumption compared to their mid-to-high SES peers. In contrast, regional adolescents fared considerably worse across alcohol and tobacco outcomes compared to their peers in major cities. Chapter 3 systematically synthesised the existing global evidence on electronic health (eHealth) interventions targeting poor dietary habits, alcohol use, tobacco smoking, and vaping among disadvantaged adolescents. The findings support eHealth interventions in improving dietary habits and reducing alcohol use among disadvantaged adolescents, but lacked evidence for addressing tobacco smoking, and vaping. Chapter 4 applied latent growth curve modelling to evaluate the moderating effects of SES and geographical location, on the efficacy of a universal eHealth, school-based intervention,

Health4Life, in targeting poor diet, alcohol use, tobacco smoking, behavioural intentions (diet-, alcohol-, and tobacco-related), psychological distress and knowledge over 24 months. There was little evidence of a moderation effect on most outcomes, with the exception of diet-related outcomes by geographical location. Adolescents in regional areas in the intervention group reported poorer dietary habits than the control group, whereas adolescents in major cities in the intervention group reported greater intentions to swap sugar-sweetened-beverages for water than the control group. Chapter 5 conducted a process evaluation of *Health4Life* among disadvantaged adolescents and their teachers to gain insights into the feasibility and acceptability of the intervention in disadvantaged schools. The findings revealed that content and technical challenges were key barriers to acceptability among disadvantaged adolescents, with participants identifying areas for refinement. Lastly, Chapter 6 evaluated the acceptability, and potential global scalability, of an effective eHealth school-based alcohol use prevention program, the *OurFutures*

Alcohol Module, among disadvantaged adolescents in Bogotá, Colombia. The results support that with appropriate place-based end-user involvement in co-designing the adaptation, the *OurFutures Alcohol Module* could be an acceptable and engaging alcohol prevention program in Bogotá. This thesis outlines actionable recommendations for policy, public health, and research to support the development of more effective and equitable lifestyle behaviour interventions for disadvantaged youth. These insights have global implications for the design, implementation and scalability of such interventions. Applying these insights has the potential to improve chronic disease outcomes for disadvantaged adolescents on a global scale.

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