

# The association between school environment and children's general health and oral health outcomes in Australia

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## Abstract

Schooling forms a large part of a child's life experience and schools are recognised as an appropriate setting for health promotion activities. Characteristics of schools have been associated with various health outcomes. The association between aspects of schools and child oral health outcomes was assessed for a sample of children from New South Wales, South Australia and the Australian Capital Territory.

Parents of a random sample of 5,418 children aged 5–14 years responded to self-complete surveys, and children participated in a dental examination. Parent perceptions of their child's school were collected as were administrative data for participating schools from the MySchool website (including school type, socioeconomic information, number of students and teachers and percentage of students from non-English speaking background). Various health outcome measures were assessed across three sample populations: full sample (children aged 5–14 years), deciduous dentition subset (children aged 5–10 years,  $n=3,477$ ) and permanent dentition subset (children aged 9–14 years,  $n=3,044$ ). These included parent-rated health and oral health (*PRH* and *PROH*), presence of deciduous and permanent caries (*poc* and *POC*), deciduous and permanent decayed, missing and filled surfaces (*dmfs* and *DMFS*), and deciduous and permanent untreated decayed surfaces (*ud* and *UD*). Multilevel, multivariable logistic regression analyses were conducted on outcome measures, using child sociodemographic information, MySchool information and parent perception of schools at individual-level (collected) and at school-level (amalgamated).

Reference models for all outcome measures showed significant school-level variation. Among dichotomised outcome measures the Median Odds Ratio (*MOR*) was between 1.09 (deciduous *PROH*) and 1.50 (deciduous *PRH*). Among continuous outcome measures, the Intraclass Correlation (*ICC*) was between 2.5% (*dmfs*) and 5.3% (*UD*). The effects were small but have the potential for large consequences when considering population-level impact. In adjusted models, child-level parent perceptions of school variables demonstrated a higher number of significant associations with outcome measures in the permanent rather than the deciduous subset, particularly among clinical outcome measures. School socioeconomic status was persistently associated with outcome measures in the deciduous but not the permanent subset. The opposite was seen for teacher workload. Of school-level parent perceptions of school variables, school relations demonstrated the most persistent associations with outcomes. Better parent perceptions of school were generally associated with better oral health outcomes among children. Outcomes in the permanent subset saw more school-level variation explained in models than outcomes in the deciduous subset, potentially representing effects of longer exposure to school environment among older than younger children. School-level parent perception variables explained more variance than individual-level, supporting the concept of relevant contextual differences in school environment.

There was significant variation across schools for all outcome measures indicating the presence of a general contextual effect of the school environment on child general and oral health outcomes. There were numerous significant specific effects seen in the univariable, bivariable and multivariable analyses. Better parent perceptions of school were generally associated with better health and oral health outcomes among children. Well-considered policy instigating appropriate change in school environment could help alleviate children's oral disease experience.

## Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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