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Impact of Socioeconomic Status, Access to Community Water Fluoridation, and Access to Dental Health Professionals on Potentially Preventable Dental Hospitalisations of Young Children

Authors:

John Rogers (**Presenter**)

The University of Melbourne

Michael Morgan, University of Melbourne

F.A.C. Wright, Centre for Education and Research on Ageing

Kaye Roberts-Thomson, University of Adelaide

Geoffrey Adams, The University of Melbourne

Abstract

Objectives: To determine the impact of socioeconomic status and both access to community water fluoridation (CWF) and dental health professionals (DHP) on Potentially Preventable Dental Hospitalisations (PPDH) of 0-4 year olds in Victoria, Australia.

Methods: Data on PPDH of 0-4 year olds in 2012-13 were obtained from the Victorian Admitted Episode Dataset (VAED). The VAED includes all admissions to Victorian hospitals. Conditions considered not preventable were excluded such as the extraction of impacted teeth. Rates of DHP were calculated from main practice addresses and organised into a tertile scale. PPDH and DHP rates were generated at the postcode level using Australian Bureau of Statistics (ABS) estimated resident population. Socioeconomic status was determined using the ABS Index of Relative Socioeconomic Disadvantage (IRSD) presented in quintiles. Postcodes were designated 'fluoridated' if the majority of the population had access to a water supply with a fluoride concentration of at least 0.7ppm.

Results: In Poisson multivariate analysis, each of the three variables was independently significantly associated with PPDH. Children without access to CWF had 59% higher rates than those with access (IRR 1.59, $p < 0.0001$); children with the lowest level of access to DHP had 47% higher rates than those with the highest access (IRR 1.47, $p < 0.0001$); and children living in the most disadvantaged IRSD quintiles had 70% higher rates than children in the most advantaged quintiles (IRR 1.70, $p < 0.0001$). There was a step-wise social gradient by IRSD quintile. In analysis of access to CWF and IRSD status, children without access to CWF had 75% higher PPDH rates than children with access (IRR 1.75, $p < 0.0001$), equating to 43% lower PPDH rates in fluoridated postcodes.

Conclusions: No access to CWF, poor access to DHP, and lower socioeconomic status were independently associated with higher PPDH rates among 0-4 year olds in Victoria at the postcode level.