Socioeconomic Inequalities in Child Oral Health: A Comparison of Discrete and Composite Area-Based Measures

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Abstract

Objectives: *This study aims to examine the relationship between child caries prevalence and six discrete area-based measures of socioeconomic status (SES). Comparisons were also made of the discrete SES measures and the Socio-Economic Index for Areas (SEIFA) composite index in explaining child caries experience.* ***Methods:*** *Oral health data were electronically captured for 58,463 4- to 16-year-old children enrolled in the School Dental Service of South Australia in 2001. Socioeconomic measures for the same year were extracted from Basic Community Profiles for postcodes available from the Australian Bureau of Statistics.* ***Results:*** *There were generally consistent linear relationships between caries prevalence and SES with children having poorer oral health residing in areas of greater socio-economic disadvantage. This was evident across all SES measures, although some variations were shown for some measures. Children from more socioeconomically disadvantaged areas had higher odds of having either one or more decayed, missing, or filled teeth or four or more decayed, missing, or filled teeth. Most discrete SES measures explained a significant amount of the variance in oral disease beyond that accounted for by the composite SEIFA index.* ***Conclusions:*** *Pervasive social inequality in child oral health exists in Australia. Specific area-based measures of SES are valuable in documenting these inequalities and may be more meaningful than composite area-based indices of SES.*

Key Words: oral health, socioeconomic factors, dental caries, inequality, neighborhood

Introduction

Findings of relationships between socioeconomic status (SES) and health outcomes are ubiquitous across the health literature. People with lower educational attainment, lower income, or with manual or working-class jobs have lower life expectancy (1) and greater morbidity (2,3). Children with parents from lower socioeconomic groups are more likely to be born with low birth weight (4) and are more likely to suffer from childhood illnesses such as asthma (5). In relation to oral health, research in the 1960s showed that children from lower SES backgrounds actually had better dental health than children with higher SES (6). This was predominantly a result of differences in diet, with children from higher SES backgrounds having a more cariogenic diet. However, more recent surveys in a number of western countries show that this situation has been reversed, with higher caries in children now associated with lower SES (7-9). While a systematic review in 2001 indicated that the evidence of an inverse relationship between SES and dental caries was weaker for adults than for children (10) several studies since that time have clearly shown that social and economic disadvantage among adults is also associated with poorer oral health (11-13).

One way to examine SES inequalities in health outcomes is to use area-based measures of SES. These generally employ census data on small areas to classify individuals in terms of levels of material deprivation. Locker has pointed out that, in relation to oral health research, area-based measures can be used as either substitutes for individual- or household-level data, as supplements to individual- or household-level data, to replace conventional measures of social class, or as surrogate indicators of needs for health care in defined geographic areas (14). Many recent examinations of socioeconomic inequalities in health outcomes using area-based indices are based on the idea that aggregate community-level variables are important explanatory factors in health outcomes above and beyond individual-level circumstances. Indeed, ecological factors can be seen as crucial "upstream" determinants of health and disease status in a population, and the growing awareness of the impact of neighborhood factors on individual health outcomes is evidenced by the proliferation of research in this area.

Area-based investigations into health inequalities often employ

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composite indexes of SES such as the Townsend Index (15) used in the UK. In Australia, the Socio-Economic Indexes for Areas (SEIFA), extensively developed by the Australian Bureau of Statistics (16) and based on national census data, have become the *de facto* standards for socioeconomic indexes in health-related publications (17). Numerous studies of health outcomes have found health inequalities using the SEIFA indexes (18-20).

Composite indexes of SES combine a number of discrete SES variables, providing easy-to-use summary statistics for different aspects of socioeconomic well-being for an area. However, the perceived advantage of this approach to measuring area-based SES also poses a problem in that the indexes mask variation – that is two areas with the same score may differ in the values that contributed to that score. Composite indexes may also de-identify and obscure the very issues and conditions at the core of social gradients in health outcomes. McCracken contends that public health research has become too wedded to the broad brush of the composite measures and that there is a need to move beyond this approach if we wish to achieve improvements in our understanding of the social and economic processes underlying health inequalities (21).

The objectives of this study were a) to determine the extent of dental health inequalities in a low-caries Australian child population and b) to determine whether discrete SES measures were associated with dental health inequality beyond the traditional and widely used SEIFA composite measure.

Methods

Clinical oral health data were obtained electronically from the South Australian School Dental Service (SDS). In South Australia, a full enumeration of all children presenting for a course of care takes place, with either dentists or dental therapists entering the data directly into a computer. The SDS in South Australia provides services to children in both government and non-government schools. Free service is provided for children in primary school, while a co-payment is required for children in high school who do not possess a means-tested health care card. In South Australia, approximately 78 and 48 percent of pre- and primary school children and secondary school children respectively are enrolled in the SDS. Because of the nature of the SDS, there is no ongoing calibration of dentists or therapists. Disease experience was measured by either the number of teeth decayed, missing due to caries, or filled due to caries in the deciduous dentition (dmft) and in the permanent dentition (DMFT). A tooth was judged as decayed if demineralization extended into the dentine.

Socioeconomic variables, matched to postcodes (in Australia, a series of digits appended to a postal address for the purpose of sorting mail), were obtained from the Census Basic Community Profile and Snapshots available from the Australian Bureau of Statistics and derived from the 2001 national census. Three hundred and eleven community profiles were obtained corresponding to each South Australian postcode. The mean estimated resident population (ERP) of the postal areas was 4,869 people (standard deviation = 5,911, 95 percent range = 226 to 15,010).

Area-level measures of income, education, occupation, employment, housing, and mobility were selected for use in this study. These six realms of potential disadvantage have recognized importance and have been identified by an independent inquiry into inequalities in health in the UK as presenting opportunities for future policy development (22). Each of the socioeconomic areas was operationalized by a reported or calculated statistic from the Census Basic Community Profiles. Selected SES variables were extracted and converted into categorical variables by creating approximate quartile cut-points, assuring roughly similar numbers in each quartile. Income was assessed using the percentage of households with an income of less than $300 per week, education by the percentage of all people without a university education, occupation by the percentage of all people working as laborers, employment by the male unemployment rate, housing by the percentage of dwellings rented from the government Housing Trust Authority, and transport and mobility by the percentage of dwellings with no motor vehicles. Where necessary, recoding was carried out so that higher scores represented greater social disadvantage.

The SEIFA Index of Relative Socio-Economic Disadvantage (IRSD) was used as the area-based composite measure of SES (16). The index is derived from a total of 20 weighted items (see Table 1) and is believed to capture multiple levels of disadvantage. Variable weights were determined from a principal components analysis of variables believed to make a significant contribution to the index and higher scores on the IRSD indicate higher SES. The IRSD is generally perceived as comprising important measures of area-based disadvantage (23).

Ethical approval for the study was obtained from the University of Adelaide and the Australian Institute of Health and Welfare.

Statistical Methods. Bivariate analyses used children aged 5- to 6-years-old and 12-years-old, as these age groups are commonly reported on by the World Health Organization. Analyses were conducted using the deciduous dentition of the younger children and the permanent dentition of 12-year-olds, and all socioeconomic variables were matched to the child's residential postcode. Odds ratios and confidence intervals were calculated using logistic regression for the increased likelihood of having either a dmft or DMFT score of 1 or more (any caries experience), or of having a dmft or DMFT score of 4 or more (high caries experience) across categories of increasing socioeconomic disadvantage. Comparisons of the

Table 1
Variables Contributing to the Index of Relative Socio-Economic Disadvantage (IRSD) and their Weights

Variables underlying the IRSD	Weight
% Persons aged 15 years and over with no qualifications	0.31
% Families with offspring having parental income less than $15,600	0.29
% Females (in labor force) unemployed	0.27
% Males (in labor force) unemployed	0.27
% Employed males classified as "Laborer and Related Workers"	0.27
% Employed females classified as "Laborer and Related Workers"	0.27
% One parent families with dependent offspring only	0.25
% Persons aged 15 years and over who left school at or under 15 years of age	0.25
% Employed males classified as "Intermediate Production and Transport Workers"	0.24
% Families with income less than $15,600	0.23
% Households renting (government authority)	0.22
% Persons aged 15 years and over separated or divorced	0.19
% Dwellings with no motor cars at dwelling	0.19
% Employed females classified as "Intermediate Production and Transport Workers"	0.19
% Persons aged 15 years and over who did not go to school	0.18
% Aboriginal or Torres Strait Islanders	0.18
% Lacking fluency in English	0.15
% Employed females classified as "Elementary Clerical, Sales, and Service Workers"	0.13
% Occupied private dwellings with two or more families	0.13
% Employed males classified as "Tradespersons"	0.11

independent effects of the composite SEIFA measure and discrete SES measures derived from the Basic Community Profiles used hierarchical multiple linear regression modelling, with age and sex entered at step 1 and the SES measures entered separately for each model at step 2. Six further models were carried out for each of the two age groups, and the independent effect of the discrete SES measures beyond that of age, sex, and the IRSD was assessed by the significance of the *F* change. Unweighted data were used for all analyses in this study.

Results

Data were obtained on 58,463 children in South Australia in 2001. Table 2 provides a breakdown of the demographic characteristics of the sample, as obtained by the SDS during the process of child enrollment into the SDS program. Only a small percentage of the sample identified themselves as being of Indigenous descent, over two-thirds of children resided in a metropolitan location, three-quarters of children were identified as being born in Australia, and less than 20 percent were deemed as being at high risk for future disease. Almost 53 percent of 4- to 9-year-old children had no evidence of deciduous caries experience, while approximately 63 percent of 12-year-olds had no permanent caries experience.

All discrete area-based socioeconomic measures correlated significantly with each other; however, the correlation between the absence of a motor vehicle and not having a university degree was low (Table 3). The negative correlations between the IRSD and the discrete SES measures are a result of higher scores on the IRSD being indicative of higher SES.

Socioeconomic inequalities were found in the disease prevalence of 5- to 6-year-old children and 12-year-old children, with increased prevalence of dmft/DMFT associated with increasing socioeconomic disadvantage for almost all discrete SES indicators (Table 4). Across all SES measures other than the proportion of people without a university degree, there were stronger relationships between socioeconomic disadvantage and high caries experience (dmft or DMFT ≥ 4) than with any caries experience (dmft or DMFT ≥ 1). Disease prevalence of 12-year-old children had stronger associations with low income, unemployment, public housing residencies, and not having a motor vehicle than did disease prevalence of 5- to 6-year-olds.

A series of hierarchical linear regression models using expanded age ranges were computed for deciduous and permanent caries experience to compare the variance in caries experience (dmft/DMFT) explained by the IRSD and the discrete SES measures (Table 5). All measures were significant in the models for 4- to 9-year-olds, and the percentage of people with low income, without a university degree, or employed as laborers explained as much or more variance in dmft as did the SEIFA IRSD. For 10- to 16-year-olds, all measures were again significantly associated with DMFT, although only the percentage of people employed as laborers explained more of the variance in DMFT than the IRSD.

Another series of hierarchical regression models were computed to determine if the discrete area-based SES measures would account for a significant amount of the variance in decayed, missing, and filled teeth beyond that accounted for by the composite SEIFA IRSD (Table 6). All SES measures, except for the proportion of people living in public housing, accounted for a greater amount of the variance in deciduous dmft than did the combined variables of age, sex, and the IRSD. Although the linear regression model on permanent caries experience was stronger than for deciduous caries experience, the contribution of the discrete area-based SES measures was less than that indicated for the deciduous dentition. Nonetheless, all SES measures, except the proportion of people without motor vehicles, remained significant after controlling for the effects of age, sex, and the IRSD on DMFT.

Discussion

This study, using area-based SES in contrast to individual-level SES and using discrete variables rather than a composite index, found that social inequality in child oral health is prodigious, even in a population with low childhood caries such as in South Australia. Moreover, while a composite index of SES might include a number of highly relevant individual measures, it was found that as much variation in health outcomes could be explained by the use of some discrete SES measures than by combining multiple items into a single index.

Analyses also revealed that the discrete area-based SES measures accounted for a significant amount of variance in caries prevalence beyond that accounted for by the composite IRSD. Clearly, combining 20 variables in a weighted fashion resulted in the contribution of any one variable being diminished. It should be noted, however, that the IRSD remained significant after controlling for the variance explained by each of the discrete SES measures. Both the composite index and the discrete measures shared common variance, but each also made a unique contribution above and beyond the other.

This study used only six ecological-level measures of socioeconomic disadvantage out of many possible measures. Nonetheless, these variables represent considerable diversity in terms of their relationship to the broad concept of SES. Income, for example, impacts on health through either a direct effect on the material conditions necessary for biological survival or through an effect on social participation and the opportunity to control life circumstances. Education, on the other hand, is a primary determinant of a person's labor market position, which in turn influences income, housing, and other material resources. Education prepares children for life by enabling practical, social, and emotional knowledge for achieving a full and healthy life and plays a role in preparing people for participating in society, teaching about rights and responsibilities, and educating people with regard to the use and availability of services. Employment plays a basic defining role in our society, with area and type of employment providing both a primary source of status in industrialized countries such as Australia

Table 2
Summary of the Characteristics of the Study Participants

	n	%
Male	30,556	50.7
Age		
4 to 6	14,209	24.3
7 to 9	16,673	28.5
10 to 12	15,359	26.3
13 to 16	12,222	20.9
Indigenous*	1,068	2.4
Metropolitan residence	42,196	70.5
Country of birth		
Australia	45,932	76.0
Overseas	2,342	3.9
Unspecified	12,170	20.1
Risk status		
Low	12,461	21.0
Medium	36,384	60.6
High	10,910	18.4
Deciduous dmft† (4- to 9-year-olds)		
0 decayed, missing, filled teeth	16,250	52.6
1 to 3 decayed, missing, filled teeth	8,644	28.0
≥4 decayed, missing, filled teeth	5,988	19.4
Permanent DFMT‡ (10- to 16-year-olds)		
0 decayed, missing, filled teeth	17,497	63.4
1 to 3 decayed, missing, filled teeth	8,291	30.1
≥4 decayed, missing, filled teeth	1,793	6.5

* Identifies as being of aboriginal or Torres Strait Islander descent.
† Number of teeth decayed, missing due to decay, or filled due to decay in the deciduous dentition.
‡ Number of teeth decayed, missing due to decay, or filled due to decay in the permanent dentition.

Table 3
Correlation Coefficients between All Discrete Socioeconomic Status Variables and the Socio-Economic Index for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage

	Education	Occupation	Unemployment	Housing	No vehicle	SEIFA IRSD
Income	0.26*	0.32*	0.66*	0.65*	0.84*	–0.55*
Education		0.71*	0.40*	0.43*	0.09*	–0.75*
Occupation			0.38*	0.42*	0.14*	–0.69*
Unemployment				0.79*	0.65*	–0.74*
Housing					0.74*	–0.71*
No vehicle						–0.52*

* $P < 0.001$.

Table 4
Odds Ratios (and 95% Confidence Intervals) for 5- to 6-Year-Old and 12-Year-Old Children Having Either dmft/DMFT ≥ 1 or dmft/DMFT ≥ 4 by Discrete Area-Based Socioeconomic Measures

	5- to 6-year-old dmft ≥ 1	5- to 6-year-old dmft ≥ 4	12-year-old DMFT ≥ 1	12-year-old DMFT ≥ 4
Proportion low income				
Quartile 1 (0.0-10.0%)	Ref.	Ref.	Ref.	Ref.
2 (10.01-14.0%)	1.31 (1.17-1.46)	1.40 (1.21-1.61)	1.35 (1.14-0.60)	1.60 (1.15-2.22)
3 (14.01-17.5%)	1.51 (1.35-1.69)	1.83 (1.59-2.11)	1.41 (1.19-1.67)	1.90 (1.38-2.61)
4 (17.51+%)	1.51 (1.35-1.68)	1.78 (1.56-2.04)	1.56 (1.32-1.84)	2.02 (1.47-2.76)
Proportion without university degree				
Quartile 1 (0.0-87.5%)	Ref.	Ref.	Ref.	Ref.
2 (87.51-92.5%)	1.16 (1.03-1.32)	1.16 (0.99-1.36)	1.02 (0.85-1.22)	0.77 (0.55-1.09)
3 (92.51-95.0%)	1.66 (1.47-1.89)	1.90 (1.62-2.22)	1.38 (1.15-1.66)	1.25 (0.90-1.74)
4 (95.01+%)	1.80 (1.59-2.04)	2.02 (1.73-2.35)	1.38 (1.15-1.66)	1.39 (1.01-1.91)
Proportion laborers				
Quartile 1 (0.0-7.5%)	Ref.	Ref.	Ref.	Ref.
2 (7.51-11.5%)	1.53 (1.37-1.71)	1.86 (1.61-2.15)	1.21 (1.02-1.43)	1.19 (0.86-1.65)
3 (11.51-15.0%)	1.80 (1.60-2.01)	2.23 (1.93-2.58)	1.48 (1.25-1.75)	1.71 (1.25-2.34)
4 (15.01+%)	2.07 (1.85-2.31)	2.61 (2.26-3.01)	1.65 (1.40-1.96)	2.08 (1.53-2.83)
Proportion male unemployed				
Quartile 1 (0.0-5.5%)	Ref.	Ref.	Ref.	Ref.
2 (5.51-8.0%)	1.04 (0.92-1.17)	1.08 (0.93-1.25)	1.06 (0.89-1.26)	1.51 (1.08-2.11)
3 (8.01-11.5%)	1.19 (1.06-1.33)	1.21 (1.05-1.39)	1.10 (0.93-1.31)	1.31 (0.94-1.84)
4 (11.51+%)	1.35 (1.20-1.51)	1.47 (1.28-1.69)	1.37 (1.15-1.63)	1.73 (1.24-2.43)
Proportion living in public housing				
Quartile 1 (0.0-1.5%)	Ref.	Ref.	Ref.	Ref.
2 (1.51-6.5%)	1.13 (1.01-1.26)	1.18 (1.03-1.36)	1.15 (0.97-1.36)	1.34 (0.97-1.86)
3 (6.51-12.5%)	1.26 (1.13-1.41)	1.31 (1.14-1.51)	1.31 (1.11-1.55)	1.59 (1.15-2.20)
4 (12.51+%)	1.48 (1.32-1.65)	1.70 (1.49-1.95)	1.58 (1.33-1.87)	2.05 (1.50-2.81)
Proportion without motor vehicles				
Quartile 1 (0.0-4.0%)	Ref.	Ref.	Ref.	Ref.
2 (4.01-6.0%)	1.25 (1.12-1.39)	1.32 (1.16-1.51)	1.26 (1.07-1.49)	1.38 (1.01-1.88)
3 (6.01-10.0%)	1.15 (1.03-1.28)	1.19 (1.04-1.37)	1.25 (1.06-1.48)	1.49 (1.09-2.03)
4 (10.01+%)	1.22 (1.09-1.36)	1.36 (1.19-1.56)	1.41 (1.19-1.67)	1.56 (1.14-2.14)

and also providing purpose, income, social support, structure to life, and a means to participate in society. In contrast, as a result of government housing policies, rented dwellings from the Housing Trust Authority in South Australia have increasingly become a housing sector for low-income groups, resulting in a separation and overconcentration of households with high levels of need in areas with often poor amenities. Furthermore, the fear of crime sometimes associated with these areas compounds the feeling of social exclusion of people living in these areas. Finally, restricted mobility and transport options may lead to limited work and training opportunities, higher prices, and a limited range of goods at available supermarkets, limited access to health care facilities, and increased social isolation.

Each of these measures represents a different aspect of SES, impacting in different ways on the social functioning and position of an individual. Some of these differences are revealed in the nature of the relationships found between these measures and oral disease in this study. Although composite measures of area-based SES effectively tap into these various chords, they also obscure the real-world issues and struggles underlying them. The concept of SES is so broad and often so loosely defined that it can become almost meaningless. Living in an area with high unemployment, or a high percentage of low-income families, or considerable public housing is, however, proximal in effect and can be instantly recognized and appreciated for the problems they may present. Therefore, even though single composite area-based socioeconomic measures may be convenient as tools for measuring socioeconomic gradients, and may actually be more effective at revealing inequalities, there is still much benefit to be derived from moving discussions of socioeconomic inequalities in health outcomes back to the plethora of socioeconomic factors and issues which underlie social disadvantage. It may even be appropriate or useful to employ both types of measures in future studies.

One of the limitations of this study is the size of the neighborhood areas used. Some researchers have

Table 5
Multivariate Modeling of Age, Sex, Socio-Economic Index for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD), and Discrete Socioeconomic Status Measures on 4- to 9-Year-Old dmft and 10- to 16-Year-Old DMFT

	Model R^2	Change R^2
Models for 4- to 9-year-olds		
Step 1 (age and sex)	0.004	0.004***
Step 2		
Model 1: SEIFA IRSD	0.011	0.007***
Model 2: % low income	0.010	0.007***
Model 3: % without university degree	0.012	0.008***
Model 4: % laborers	0.018	0.014***
Model 5: % unemployed males	0.005	0.001***
Model 6: % living in public housing	0.008	0.004***
Model 7: % without motor vehicles	0.004	0.001***
Models for 10- to 16-year-olds		
Step 1 (age and sex)	0.065	0.065***
Step 2		
Model 1: SEIFA IRSD	0.070	0.005***
Model 2: % low income	0.070	0.004***
Model 3: % without university degree	0.069	0.003***
Model 4: % laborers	0.072	0.007***
Model 5: % unemployed males	0.067	0.002***
Model 6: % living in public housing	0.068	0.003***
Model 7: % without motor vehicles	0.067	0.001***

*** $P < 0.001$.

Table 6
Multivariate Modeling of Age, Sex, Socio-Economic Index for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD), and Discrete Socioeconomic Status (SES) Measures on 4- to 9-Year-Old dmft and 10- to 16-Year-Old DMFT

	Model R^2	Change R^2
Models for 4- to 9-year-olds		
Step 1 (age and sex and IRSD)	0.011	0.011***
Step 2 (discrete SES measures)		
Model 1: % low income	0.012	0.002***
Model 2: % without university degree	0.012	0.002***
Model 3: % laborers	0.012	0.002***
Model 4: % unemployed males	0.018	0.007***
Model 5: % living in public housing	0.011	0.000
Model 6: % without motor vehicles	0.011	0.001***
Models for 10- to 16-year-olds		
Step 1 (age and sex and IRSD)	0.070	0.070***
Step 2 (discrete SES measures)		
Model 1: % low income	0.071	0.001***
Model 2: % without university degree	0.070	0.000*
Model 3: % laborers	0.072	0.002***
Model 4: % unemployed males	0.070	0.000**
Model 5: % living in public housing	0.070	0.000*
Model 6: % without motor vehicles	0.070	0.000

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

criticized the use of larger areas because of the difficulty of inferring causality to individual socioeconomic indicators as compared to neighborhood deprivation (24). Such criticism of area-based measures in epidemiological studies using larger neighborhood sizes is often a result of the apparent intractability of the ecological fallacy, whereby group-level data are used to infer individual disease risk (25). However, the increasing theoretical interest in societal influences on individual disease risk and findings from hundreds of multilevel studies, which show that area-based variables exert significant effects on an individual above and beyond individual circumstances, has validated the worth of area-based measures. As pointed out by Krieger and colleagues, area-based social measures are meaningful indicators of socioeconomic context in their own right, not merely proxies for individual-level data (26). It might be argued that the postal areas used in this study were too large, with too much internal heterogeneity to even adequately account for neighborhood effects. It should be noted, however, that while postal codes in Australia are functionally comparable to zip codes in the United States, their population size is more comparable to US census tract areas than zip code areas. A study by Krieger and colleagues (27) in the United States found comparable area-based effects for SES on childhood health for census tract (ERP = 4,572) and the smaller census block (ERP = 1,085) areas, but diminished effects for the larger zip codes (ERP = 12,720).

Despite the increase in the use of area-based epidemiological investigations, various issues with this methodology remain to be addressed. For example, the differential relatedness of neighborhood characteristics to health outcomes requires better understanding and the causal pathways operating between neighborhood socioeconomic context and health must be assessed to determine if they exist and, if so, how they operate (28). Despite this, area-based measures of SES do represent an important way of documenting the existence of oral health inequalities. They may also help inform those studies focusing exclusively on individual-level SES by moving the discourse away from family or individual responsibility for oral health and toward the idea of contextual or environmental attributes as important in oral health outcomes. Indeed, the increased interest in "multilevel" studies attests to the perceived value of examining both individual and area-based factors in health research.

One of the main strengths of this study is the detailed clinical oral health data obtained and the large number of children examined. The large-scale enrollment of children in the school dental services in Australia provides an almost unique opportunity to examine a range of topical and relevant research issues. Because the school dental services are available to and utilized by children from wealthy or poor backgrounds, private or government schools, and by children of any ethnic or racial background, this makes for a highly representative sample and allows for comparisons across the entire socioeconomic range.

In conclusion, this study found pervasive social inequalities in child oral health in Australia. Discrete area-based measures of SES were found to be capable of demonstrating these oral health inequalities and in some cases were superior to a widely used composite index. It is hoped that using discrete real-world measures of SES will assist in focusing attention on the issues and problems that form the core of social inequality.

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