Education Expenditure and Preventive Dental Care for Washington Children

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Background

The World Health Organization (WHO) recognizes education as a primary social determinant of health (SDOH)[1] due to its influence on the conditions in which people are born, grow, live, work, and age. In 2007, Fisher-Owens published a conceptual model proposing that the population effects of education extend to oral health,[2] and more recently it has been observed in Europe that increased country-level public education expenditure may be associated with increased frequency of dental visits.[3]

While the United States spends roughly 6% of its GDP on public education, and as disparities in preventive dental care use persist,[4] to date there's been no investigation into how education expenditure may be associated with preventive pediatric dental care.

Purpose

To evaluate the relationship between public education expenditure and preventive dental care use in Medicaid-enrolled children in Washington state.

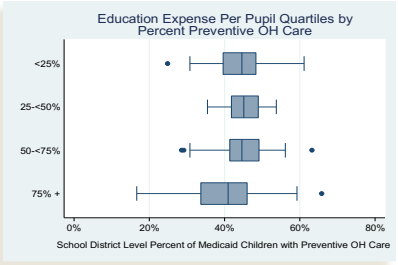
Methods

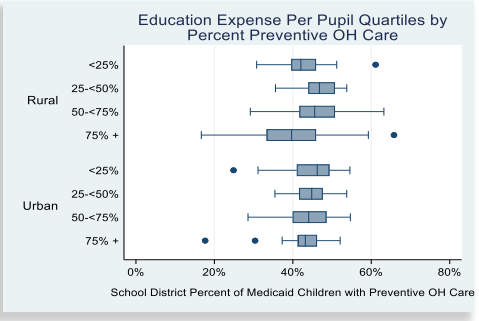
Children ages 5 to 18 years old enrolled in the Washington State Medicaid program were geocoded into corresponding school districts, and school district-level public education expenditures for the 2019-2020 academic year were categorized into quartiles. Unadjusted and adjusted linear regression models were performed in Stata 14.1 and a significance level was set to 0.05

Results

	Mean (SD) ($)	[range] ($)
Per-Pupil Expenditure	17,265.4 (6,468.1)	[10784, 52335]
Quartiles		
<25%	13,129.6 (503.2)	[10784, 13781]
25-<50%	14,123.3 (185.1)	[13788, 14412]
50-<75%	14,927.7 (336.1)	[14418, 15623]
75% +	22,125.8 (8,041.2)	[15719, 52335]

Reported per-pupil Expenditure Quartiles for Washington State School Districts (N=296) (*above*)





Medicaid-enrolled Child Preventive Dental Care Use and Public School District Per-Pupil Expenditure, Non-stratified (above) and Stratified (Rural vs. Urban) (below)

Stratified (Urban vs. Rural) Multiple Variable Linear Regression Models for Preventive Dental Care Use Among Medicaid-enrolled Children by Washington State Public School District by Per-pupil Expenditure (*below*)

	RURAL				URBAN			
	Unadjusted		Adjusted		Unadjusted		Adjusted	
	Mean Difference	*p*	*Mean Difference*	*p*	*Mean Difference*	*p*	*Mean Difference*	*p*
Expenditure Quartiles		<0.01		<0.01		0.47		0.46
<25%	Reference		Reference		Reference		Reference	
25-<50%	0.04	0.03	0.02	0.19	0.00	0.81	-0.02	0.15
50-<75%	0.03	0.02	0.02	0.26	-0.01	0.41	-0.01	0.48
75% +	-0.02	0.10	-0.03	0.06	-0.03	0.14	-0.02	0.21
White (%)	--		0.00	0.02	--		0.00	0.77
Hispanic (%)	--		0.00	<0.01	--		0.00	<0.01
FPL (%)*	--		0.00	0.84	--		-0.02	<0.01
Disabilities (%)**	--		0.05	0.60	--		-0.01	0.21
Education***	--		0.01	0.85	--		0.14	0.16

**Percent of the Federal Poverty Level for a family of 4 | **Percent of children with a disability | ***Percent of adults with a high school education*

Race (0.02) and Ethnicity (<0.01) were statistically significant confounding variables in the rural regression analysis | Ethnicity (<0.01) and Household income (<0.01) were statistically significant confounding variables in the urban regression analysis

Conclusions

- Children attending the highest spending ***rural*** school districts (*75%+ quartile*) utilized preventive dental care **significantly less frequently** when compared to children attending lower spending schools in ***rural*** school districts (***p* < 0.01**)
- There were no statistically significant differences in child preventive dental care use among Medicaid-enrolled students of ***urban*** public school districts, no matter their reported per-pupil expenditure
- **Increased public education expenditure** (*per-pupil*) **was associated with less frequent preventive dental care use** by Medicaid-enrolled attendees in Washington state, particularly in rural school districts
- Future research should explore this relationship between rural pediatric preventive dental care use and rural public education expenditure

References