Measuring the magnitude of oral health related inequalities in Canada and the United States from 1970-2009

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Introduction

The magnitude of income-related oral health inequalities has not been compared between Canada and the United States. Given their similarities and differences, there is an opportunity to understand how changes in social policy, dental care markets, and dental care systems may have influenced oral health inequalities in both countries over time.

Objectives

I. Compare the magnitude of oral health inequalities between Canada and the United States over time;
II. Determine the contributors to income-related oral health inequalities in Canada and the United States; and
III. Determine potential changes in the contributors to income-related oral health inequalities in Canada and the United States.

Methodology

- The Concentration Index (CI) estimated income-related inequalities in three oral health outcomes from the Nutrition Canada National Survey 1970-1972 (n=6,842), Canadian Health Measures Survey 2007-2009 (n=3,139), Health and Nutrition Examination Survey I 1971-1974 (n=12,628) and National Health and Nutrition Examination Survey 2007-2008 (n=5,003).
- Concentration curves were plotted for three binary oral health variables: the presence of one or more decayed teeth, presence of one or more filled teeth, and edentulism. Indirect standardization was utilized to account for the effect of confounding variables on estimates. CIs were derived from concentration curves using convenient regression estimated by OLS.
- CIs were decomposed to determine the contribution of age, sex, age/sex interactions, income, education and household size to income-related inequality. Survey weights were applied to all analyses.

Results

The prevalence of untreated dental disease (decayed teeth) and edentulism have declined in both countries over time. Our results identify persistent pro-poor inequalities in the presence of one or more decayed teeth and edentulism and pro-rich inequalities in the presence of one or more filled teeth. Inequalities in the presence of untreated dental disease have increased in both countries over time, and decreased for measures of filled teeth and edentulism. The CIs for all outcomes were higher in the United States compared to Canada at both time periods.

Decomposition analysis revealed that socioeconomic characteristics (education/income) exhibited a greater contribution to inequalities than demographic characteristics (age, sex). The contribution of age and sex to inequalities were greater in Canada than the United States for the presence of edentulism. Income had a higher contribution to inequalities in more recent surveys in both countries.

Table 1. Weighted Proportions of Oral Health Outcomes (%).

	Decayed	Filled	Edentulism
Canada 1970-1972	58.1	79.6	23.0
Canada 2007-2009	21.6	77.9	5.6
United States 1971-1974	46.8	82.1	15.5
United States 2007-2008	21.3	83.5	

Table 2. Concentration Indices of Oral Health Outcomes.

	Decayed	Filled	Edentulism
Canada 1970-1972	-0.122	0.051	-0.162
Canada 2007-2009	-0.164	0.046	-0.067
United States 1971-1974	-0.160	0.227	-0.159
United States 2007-2008	-0.209	0.106	-0.083

Decomposition Analysis

Figure 1. Canada 1970-1972

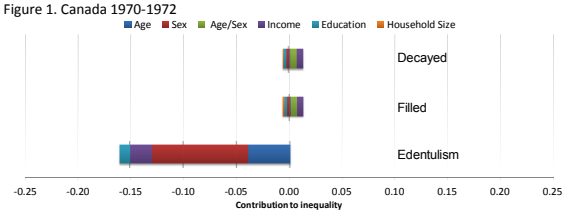


Figure 2. United States 1971-1974

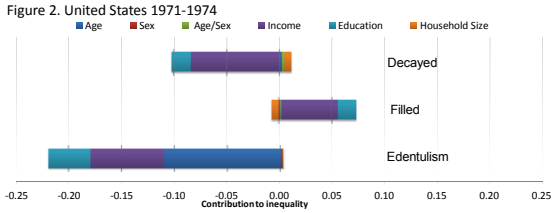


Figure 3. Canada 2007-2009

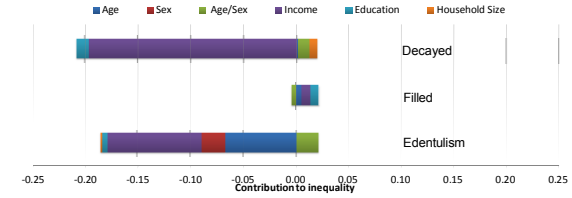
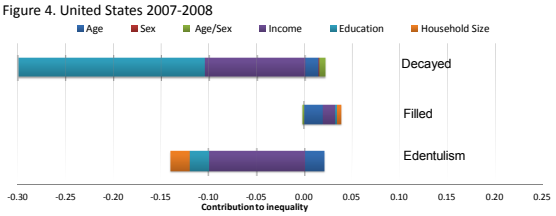


Figure 4. United States 2007-2008



Conclusion

Oral health inequalities have persisted in Canada and the United States over the past 35 years. Decomposition analysis reveals that such inequalities are associated with socioeconomic and demographic characteristics, which vary based on population of study. Our findings provide insight into how individual demographic and socioeconomic characteristics, oral health care systems, and social policies may have impacted oral health in both countries over time.

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