IS EDUCATIONAL INEQUALITY PROTECTIVE?

Galea and Ahern\(^1\) examined the ecological association between educational distribution and a range of population health outcomes. In one of their findings, Galea and Ahern reported that higher levels of educational inequality within New York City neighborhoods were associated with lower percentages of low birthweight. The finding contradicts the more frequently found association between higher levels of income-related inequality and unfavorable population health outcomes. Is neighborhood educational inequality protective of population health?

Given the provocative nature of this question, we sought to examine the ecological association of educational inequality and percentage of low-birthweight infants in Montreal. We measured area-level education and calculated the educational Gini coefficient. We found a high degree of collinearity between measures of mean education and educational Gini coefficient (~0.89; \( P<0.001 \)). This collinearity yielded models susceptible to unstable coefficient estimation.

Galea and Ahern reported a similarly high degree of correlation between mean education and education Gini measures (~0.84; \( P<0.01 \)) in their analyses. Areas with higher average education tend to have lower levels of educational inequality. Considerable collinearity between mean education and educational Gini coefficient may account for the change in the direction of the \( \beta \) coefficient for the education Gini coefficient, as reported by Galea and Ahern when they introduced their mean education variable to the previous bivariate regression of the percentage of low-birthweight infants on the education Gini coefficient. Variance inflation factor values increased from 1.0 to 5.2 when we added mean education to our bivariate model; we observed a more modest increase from 1.0 to 1.5 when we used alternative measures of education (percentage of adults with at least a college degree) and educational distribution (standard deviation in schooling). Correlated factors that may act as confounders or effect modifiers should potentially be omitted from analysis because biased estimates may result, particularly in ecological regression.\(^2\)\(^3\) An ostensibly positive relation between educational inequality and favorable health outcomes may constitute no more than a statistical artifact. The potential political consequences of accepting the conclusion that a form of social inequality might be beneficial for health requires attention to assumptions underpinning statistical conclusion validity.

A number of differences between our investigation and that of Galea and Ahern should be mentioned. First, Canadian census data do not allow the same level of discrimination in educational attainment that Galea and Ahern achieved. Second, we examined the ecological association at a smaller area of analysis (census tract) than Galea and Ahern (district level). Whether these differences have corresponding implications on the hypothesized association between educational inequality and population health remains a topic for further research. As few such studies have been published, we suggest that the considerable collinearity found between mean education and educational Gini coefficient precludes general acceptance of the conclusion that
neighborhood-level educational inequality is protective of population health.

Spencer Moore, PhD, MPH  
Mark Daniel, PhD  
Yan Kestens, PhD

About the Authors  
The authors are with the Department of Social and Preventive Medicine, Université de Montréal, Quebec.

Requests for reprints should be sent to Spencer Moore, PhD, MPH, Centre de recherche du Centre hospitalier de l’Université de Montréal, 3875 St. Urbain, Bureau 3-02, Montréal, Quebec, Canada H2W 1V1 (e-mail: spencer.moore@umontreal.ca).

doi:10.2105/AJPH.2006.101618

References