ESTIMATING HEALTH DISPARITY INDICES WITH CONFIDENCE INTERVALS FROM COMPLEX SAMPLE SURVEYS: THE CALIFORNIA ORAL HEALTH NEEDS ASSESSMENT OF CHILDREN

Stuart A. Gansky[1], Pamela Z. Han[2], Nancy F. Cheng[1]

(1) Center to Address Disparities in Children's Oral Health, University of California, San Francisco, CA, USA; (2) School of Public Health, University of California, Berkeley, CA, USA

The US National Center for Health Statistics (NCHS) recently issued a monograph with 11 guidelines for reporting health disparities (HDs) (Keppel *et al.* 2005). But not all the guidelines can be readily implemented with complex sample surveys. For example, estimating confidence intervals (CIs) for most of the HD indices is not straightforward. Objectives were: (1) To provide methods to apply NCHS guidelines to complex sample surveys to assess associations of race/ethnicity and socioeconomic position (SEP) to oral health outcomes with confidence intervals (CIs); and (2) To illustrate those HD methods applied to a children's oral health example. HD indices in NCHS guidelines include absolute and relative measures, Slope Index of Inequality (SII), Relative Index of Inequality (RII) for mean and ratio, health concentration index (*C*), and Theil's index. Methods for estimating CIs for HD indices such as SII, RII, *C*, and Theil's index were developed using direct computation (extended from Hayes & Berry 2002) with Taylor series linearization (TSL) and/or rescaled bootstrap methods (Rao *et al.* 1992) with 500 resamples. HD indices were estimated for the California Oral Health Needs Assessment of Children (COHNAC) 2004-5, a complex stratified cluster sample survey (N=21,399), to assess associations of race/ethnicity and socioeconomic position (SEP) (percent free and reduced-price lunch (FRL) program in schools) to oral health outcomes such as rampant caries (7+ decayed, missing, or filled tooth-surfaces). Software to estimate HD indices and perform TSL and rescaled bootstrap confidence interval estimation was developed. For both relative and absolute measures, rampant caries was significantly higher in all racial/ethnic groups versus non-Hispanic Whites, in FRL participants versus non-participants, and in schools with >25% FRL versus those with <25%. Other HD indices had CIs excluding zero, indicating that SEP was significantly related to rampant caries. Bootstrapping provided narrower confidence intervals than Taylor series linearization; *C:* -0.28, -0.12 for TSL and -0.23, -0.16 for bootstrap; Theil: 0.015, 0.135 for TSL and 0.051, 0.103 for bootstrap. Bootstrap CIs were relatively symmetric. We developed practical ways to apply the HD index methods recommended in NCHS guidelines to estimate oral health disparities with CIs. Support: US DHHS NIH/NIDCR R03DE018116.