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Intergenerational education mobility and depressive symptoms in a population of Mexican origin

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ABSTRACT

Purpose: Low educational attainment has been associated with depression among Latinos. However, few studies have collected intergenerational data to assess mental health effects of educational mobility across generations.

Methods: Using data from the Niños Lifestyle and Diabetes Study, we assessed the influence of intergenerational education on depressive symptoms among 603 Mexican-origin individuals. Intergenerational educational mobility was classified: stable-low (low parent and/or low offspring education), upwardly mobile (low parent and/or high offspring education), stable-high (high parent and/or high offspring education), or downwardly mobile (high parent and/or low offspring education). High depressive symptoms were defined as scoring ≥10 on the Center for Epidemiological Studies Depression Scale-10 (CESD-10). We examined prevalence ratios (PRs) for depressive symptoms with levels of educational mobility. We used general estimating equations with log-binomial models to account for within-family clustering, adjusting for age, gender, and offspring and parent nativity.

Results: Compared with stable-low participants, the lowest prevalence of CESD-10 score ≥10 occurred in upwardly mobile (PR = 0.55; 95% confidence interval [CI] = 0.39–0.78) and stable-high (PR = 0.62; 95% CI = 0.44–0.87) participants. Downwardly mobile participants were also less likely to have a CESD-10 score ≥10 compared with stable-low participants (PR = 0.65; 95% CI = 0.38–1.11), although the estimate was not statistically significant.

Conclusions: Sustained stress from low intergenerational education may adversely affect depression. Latinos with stable-low or downwardly mobile intergenerational educational attainment may need closer monitoring for depressive symptoms.

Introduction

The World Health Organization estimates that by 2030, depression will be the leading cause of disease burden in high-income countries [1]. In the United States, the Latino community suffers a disproportionate burden of poor mental health outcomes. Prevalence of depressive symptoms is estimated to be 27% for Latino adults, and Latinos aged 65+ years are twice as likely to suffer from depression as non-Hispanic whites [2–6]. Given that individuals of Mexican origin comprise 64.6% of the U.S. Latino population, examining factors associated with depression in this subgroup is of particular importance [7].

Personal educational attainment has shown a strong association with depression among Mexican-origin individuals, and recent data suggest that parental educational attainment may influence offspring mental health [8,9]. These studies are limited to the independent effect of a single generation's educational attainment, either that of the parent or the offspring, on offspring mental health. However, educational mobility across multiple generations may affect health outcomes of future generations as a consequence of accumulated and persistent exposure to stressors and the resulting disruption of physiological systems [10–14].

Immigrant communities are uniquely prone to intergenerational transmission of low educational attainment due to marginalization, discrimination, and obstructed opportunities for upward social

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mobility [15,16]. Cultural behaviors, identity, and immigration status are particularly salient for mental health and inextricably linked to socioeconomic factors such as education [17,18]. Educational mobility, therefore, may differentially impact mental health by degree of acculturation. Yet few intergenerational cohort studies exist among Latinos, and no studies have examined interactions between educational mobility and cultural orientation on mental health.

This study used data from the Niños Lifestyle and Diabetes Study (NLDS) coupled with the Sacramento Area Latino Study on Aging (SALSA), which includes parent–offspring pairs, allowing us to examine the association between educational mobility and depressive symptoms across two generations of Latinos. We hypothesized that participants with stable-low educational attainment across generations would have higher depressive symptom prevalence compared with those classified as stable-high, upwardly mobile, or downwardly mobile.

Material and methods

Study population

Participants in this analysis were members of the NLDS. The NLDS cohort comprises adult biological offspring (GEN2), grandchildren (GEN3), and other referred biological relatives of participants (GEN1) in the SALSA, which took place from 1998 to 2008 [19]. Any living English- or Spanish-speaking biological relatives of the 1789 SALSA participants aged 18+ years were eligible to participate. For the purposes of this study, we used participants from the NLDS who could be linked to a biological parent in either SALSA or NLDS.

Trained interviewers collected data at baseline (March–November 2013) and follow-up 12–18 months later (May–November 2014). Written or verbal informed consent was obtained from all participants, and study procedures were approved by institutional review boards at participating institutions. The protocol at each wave included: (1) a 30-minute phone interview and (2) a 2-hour home visit that included an interview, anthropometric measurements, blood draw, and medication inventory. This analysis used baseline data collected from the phone interview and linked participants' data with baseline socioeconomic and demographic data from their parents. Of the 670 NLDS participants contributing to baseline phone interviews, 638 could be linked to a parent with educational and nativity data. Participants who did not report education, age, gender, or nativity were excluded, leaving a total study sample of 603 offspring–parent pairs.

Measures

Assessment of high depressive symptoms

The outcome of interest was Center for Epidemiological Studies Depression Scale-10 (CESD-10) scores among offspring. The CESD-10 is a 4-point Likert-type scale assessing the extent to which individuals experienced depressive symptoms during the prior week. The CESD-10 was derived from the 20-item CES-D, a widely used self-report survey designed to measure depressive symptomatology in the general population [20]. Both the CES-D and CESD-10 have been validated in Spanish-speaking populations [21–24], and the CESD-10 was pilot tested in our population. The shorter 10-item scale was developed to alleviate participant burden in older adults [25]. The CESD-10 corresponds closely to the full-length version [25] and has high internal consistency and test–retest reliability [26,27]. As suggested by previous validation studies using the CESD-10, participants scoring $\geq$10 were considered to have high depressive symptoms [26,28].

Assessment of educational attainment across generations

Intergenerational educational mobility was the exposure of interest. We classified individual educational attainment for SALSA participants as low (<12 years) or high ($\geq$12 years) and for NLDS participants as low (<13 years) or high ($\geq$13 years). We used a lower education cut point for SALSA participants than NLDS participants to account for age- and location-related differences in education levels between generations in the two cohorts. Furthermore, education cut points were based on categorization used in previous SALSA analyses and other studies of similar populations [29,30]. If both parents of an NLDS participant were SALSA participants, the more highly educated parent was linked to the NLDS participant. We then classified each participant into one of four educational mobility categories: (1) stable-low (low parent and/or low participant education), (2) upwardly mobile (low parent and/or high participant education), (3) stable-high (high parent and/or high participant education), and (4) downwardly mobile (high parent and/or low participant education).

Other covariates

Nativity was based on participant report of birth country. Participants and their parent were classified as either U.S.-born or foreign-born (in Mexico or another Central or South American country). To measure degree of acculturation, we used a version of the Acculturation Rating Scale for Mexican Americans II, an established measure of cultural orientation that assesses multiple dimensions of the acculturative process, including ethnic identity and coethnic social ties [31]. This scale is comprised of the Anglo Orientation Subscale and the Mexican Orientation Subscale. As recommended by Cuellar et al. [31], the mean Mexican Orientation Subscale was subtracted from the mean Anglo Orientation Subscale to create an overall acculturation score with higher scores indicating lower Mexican orientation and a score of 0 indicating equal Anglo and Mexican orientation. We defined "high" Mexican orientation as an overall score <0 and "low" Mexican orientation as a score $\geq$0. Other covariates used in this analysis included age and gender of the NLDS participant.

Statistical analysis

The distributions of demographic, socioeconomic, and depressive characteristics by generation were summarized with descriptive and graphical analyses. Bivariate analyses were conducted for educational mobility and high depressive symptoms. We created and examined a directed acyclic graph to identify potential confounders and adjusted our final model for age, gender, and offspring and parent nativity. Nativity and location of education were highly correlated for both parents and offspring, and cross tabulations of these variables revealed sparse data in several cells. For this reason, our final model included nativity and excluded location of education.

We used log-binomial models to estimate prevalence ratios (PRs) of CESD-10 score $\geq$ 10, comparing each level of educational mobility to stable-low educational attainment. To assess potential modification of the educational mobility effect by cultural orientation and nativity, we examined models including interaction terms and assessed results stratified by cultural orientation and nativity of the offspring. General estimating equations were used to account for within-family clustering [32]. All analyses were conducted in SAS 9.4 (SAS Institute, Inc., Cary, NC).

Results

Table 1 summarizes selected individual and parent characteristics of the sample overall and stratified by nativity. Participants