Is temporary migration from Mexico to the United States related to depressive symptoms later in life?

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In general, depression has been associated to characteristics that define vulnerable populations such as poverty, low socioeconomic status, living in a rural area, being female, and being older. Among older adults depression is tightly related to the aging experience. Health limitations, alongside poverty, and access to a social network, all play an important role (Trevino-Siller, et al. 2006).

Immigrants and their families are also an example of a population that finds itself in a position of vulnerability. Depression, anxiety, and substance abuse have all been found to be common responses to the stress associated to migration (Aroian & Norris, 2002; Grzywacz, et. al. 2006). Escobar et al. (2000) and Vega et al. (1998) found that the mental health of Mexican immigrants deteriorated as their US migration experience increased. Among the main explanations are a reduced access to family support and a greater exposure to drugs and alcohol. While Mexican immigrants see their time in the U.S. as necessary to support their family most of them feel very ambivalent about leaving their spouse and/or children. This ambivalence has been found to be commonplace among Mexican immigrant men (Mexican women usually migrate with their family or to join their husbands) and to be associated to poorer mental health status (Grzywacz, et al. 2006). The physical and emotional stress of the U.S. migration experience has been linked to depressive symptoms. Escobar, et al. 2000 and Vega et al. 1998 found this effect to increase alongside the time in the U.S. It is unclear, however, if these effects last throughout old age.

The migration experience could have a long term effect on mental health through changes in family formation and family structure since family relationships and social support are very important for well being in old age. This is especially true in a context with an insufficient social security system such as Mexico. The time away in the United States could increase union dissolution and, if the children of immigrants are more likely to migrate themselves, reduce access to family support. It could also have a negative effect on other social networks. On the other hand, U.S. migration experience seems to be

negatively correlated with poverty during old age and access to health insurance among Mexican immigrants (Wong, 2002 & Wong, et al. 2007) and children with migration experience -both domestic and international- are more likely to provide economic support to parents (Rivero-Fuentes, 2005). While the number of children may be affected as a result of the migration experience, according to Koropeckyj-Cox (2002), having or not having children is not directly related to depression in middle and old age. It is the attitudes about being childless or having a certain number of children what seem to matter as well as the quality of the relationship with such children.

Specific Aim. The present study will compare the number of depressive symptoms later in life among Mexicans with and without U.S. migration experience and will examine if the presence of symptoms of depression is partially explained by family characteristics in older life that are related to the migration experience.

Hypothesis 1. *Older adults with U.S. migration experience will have a higher number of depressive symptoms after controlling for other relevant characteristics.*

Hypothesis 2. *Depressive symptoms among Mexicans with U.S. migration experience will be associated to changes in family formation related to the migration experience.*

Data

The Mexican Health and Aging Study (MHAS) is a prospective panel study of health and aging conducted in Mexico in 2001 with a follow-up in 2003.The baseline survey is a national representative sample of Mexicans born before 1951 (ages 50 and over in 2001) as well as their spouse or partner regardless of their age.

The design of the MHAS was based on the Health and Retirement Study (HRS) to facilitate cross-national comparison. The MHAS collected demographic information of the respondents as well as data on health status, household characteristics, support networks and financial transfers across generations. Of special interest for this study is the fact that the survey includes migration history of the respondents, as well as that of their parents and their offspring. Furthermore, the study oversampled the six Mexican states from which most of the migration to the United States originates.

Depressive symptom. Nine questions targeting depression were included in the Health section of the MHAS. Seven of these questions are CES-D items tapping negative affect (felt depressed, felt lonely, felt sad), positive affect (felt happy, enjoyed life), and somatization (restless sleep, felt everything was an effort). The other two items measured vitality levels (felt tired, had a lot of energy), which are commonly associated to depression. All nine items have a Yes/No response format indicating if the majority of the time during the past week the respondent has felt in the way described in the item. A summary score is obtained by summing the number of "yes" across the nine items after having reversed the coding of the two items measuring positive affect.

The Center for Epidemiologic Studies Depression Scale (CES-D) is a self-report instrument in which respondents provide a self-assessment of their emotional and mental status. The original scale contains 20 items with a 4-point Likert response scale indicating the degree of prevalence of each symptom in the week before the survey. It is important to keep in mind that the CES-D scale is not a diagnostic scale of depression since it lacks evaluation of duration and intensity of depressive symptoms, which are essential diagnostic criteria for depression in the DSM (Diagnostic and Statistical Manual of Mental Disorders). Furthermore, it does not test for differential diagnosis; mainly anxiety disorders. What the CES-D really provides is a measure of the risk of depression based on the frequency of symptoms. Shortened versions, such as the one included in the MHAS, have been created in order to have a simplified instrument to assess mental health among respondents unused to lengthy and complex surveys. Grzywacz et al. (2006) examined three short versions of the CES-D scale among Mexican immigrants in the United States and found them to be appropriate and reliable to assess the mental health of Mexican immigrants. The short number of items and the simplified yes/no answers seem to work well with respondents with low education levels, as it is commonly the case among Mexican immigrants.

Statistical Analysis

The outcome variable, number of symptoms of depression, is a count variable that is likely to show a right-skewed distribution (assume lower values). Therefore, a Poisson regression will be used to model the number of depressive symptoms:

$$\log(\mu) = \beta_0 + \beta_1 X_1 + \beta_i Z_i$$

In this model the main outcome variable μ will be the number of symptoms of depression while the main explanatory variable X_1 will be the total length of the migration experience measured in number of years. β_1 will show the estimated change in the log of the number of depressive symptoms per year increase of U.S. migration experience controlling for the covariates included in the model. The other variables included in the model will be the traditional sociodemographic characteristics as well as health status variables that have shown to be relevant when looking at depression, especially in older populations.

To assess whether the relationship between U.S. migration experience and symptoms of depression is mediated by changes in family formation, family variables such as number of children, being divorced or separated, and access to family support, will be added to the previous Poisson model. Then, the magnitude and direction of the association between U.S. migration experience and symptoms of depression will be tested for any significant changes after adjusting for the proposed mediators (Baron & Kenny, 1986).

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