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Attrition of Older Mexican American Survey Respondents

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Abstract

Objective—The purpose of this study is to compare sample attrition between foreign born and US born older Mexican Americans.

Methods—Prospective cohort data over five waves (Hispanic established population for the epidemiological study of the elderly) of 3,050 older Mexican Americans were used to estimate the number and proportion of drop outs. Multivariate logistic regression of predictors of attrition included nativity, age, gender, race/ethnicity, marital status, financial strain, employment status, education, chronic conditions, cognitive function, disability, and depressive symptoms.

Results—Over 11 years of follow-up, 62% of the respondents dropped out of the study, but the difference between respondents born in the US and Mexico differed by only 2% points. Multivariate analyses of correlates for attrition related to death, refusal, and lost to follow-up revealed that older respondents in poor health were more likely to die and be lost to follow up.

Conclusion—Over 11 years of follow-up, immigrants were no more likely to drop out than US born respondents.

Keywords

Cohort studies; Prospective studies; Immigrants; Mexican Americans

Introduction

Over the past few years, several studies have documented correlates and determinants of attrition such as demographic characteristics, mode effects, and interviewer effects [1–3]. However, despite the potential for bias from attrition, most empirical studies fail to report how attrition was handled or how it impacted the results [4]. Sample attrition in studies designed for older cohorts has received very little attention despite that most studies of older cohorts have significant loss of cases due to mortality [5–7]. A recent systematic review of the literature on attrition among older cohorts found that individuals who drop out of a study tend to be older and suffer greater cognitive decline [8]. There has also been little attention to the potential impact of immigrants on sample bias. There are a growing number of studies suggesting that Latin American immigrants have better health despite poorer socioeconomic status [9]. One theory called the “salmon bias hypothesis” has been proposed to explain this Hispanic Paradox. The salmon bias hypothesis suggests that survey estimates of immigrant

health are biased because immigrants move back to their country of origin prior to death [10]. Another factor that may contribute to attrition may be that immigrants change address frequently for economic or family reasons. Whether it is true that immigrants differ from US born respondents in loss to follow-up requires use of a large database with appropriate representation of minorities and immigrants. The purpose of this study is to compare risk factors for attrition between foreign born and US born older Mexican Americans using a well-established source of prospective data on older Mexican Americans. A secondary aim will be to ascertain characteristics predictive of dropping out of a survey for an older cohort of Mexican American respondents.

Methods

Data

This research is based on public use data files that were approved by the appropriate institutional review board. This study used data from the Hispanic established population for the epidemiological study of the elderly (H-EPESE). The Hispanic EPESE, first fielded in 1993–1994, is a longitudinal study of 3,050 Mexican Americans. Subjects were selected through an area probability multistage sample of non-institutionalized Mexican Americans aged 65 and over residing in Texas, New Mexico, Colorado, Arizona and California. Follow-ups were conducted at 2 (95–96), 5 (98–99), 7 (2000–2001) and 11 (2004–2005) years. All interviews were conducted in-person.

Measures

For this study sociodemographic variables commonly studied as major sources of attrition were chosen. Binary indicators are used for gender (female = 1), immigrant status (US born = 1), marital status (married = 1), and employment status (employed = 1). Age and education were measured in years. Financial strain was determined by asking the subject “How much difficulty do you have in meeting monthly payments on your bills?” Responses were collapsed into three categories with higher scores indicating more financial strain. Health factors that are believed to be major contributors to attrition are also included. Disability was measured with the activities of daily living scale that assessed the respondent’s ability to walk across a small room, bathe, groom, dress, eat, transfer, and use the toilet. The seven items were summed to create a scale ranging from 0 (no functional difficulty) to 7 (functional difficulty with all items). Cognitive function was assessed by the number of correct responses given in the mini mental status examination (MMSE). Depressive symptoms were measured using the center for epidemiologic studies depression scale (CES-D) with a possible range of 0–60. Chronic disease was an additive index of six conditions that were assessed by asking respondents to report whether a doctor had ever told them they had a heart attack, stroke, cancer, diabetes, hip fracture, or hypertension.

Analytic Strategy

Analyses were performed with SAS 9.1 using the SURVEYLOGISTIC procedure which accounts for the complex survey design. The first step will provide a detailed account of the number and percentage of respondents participating in the H-EPESE over the five waves of the study by nativity and type of drop out. Multivariate logistic regression will predict whether or not a participant died, refused to participate, or was lost to follow-up over a 2-year period between the baseline and second wave interview. Parameter estimates that fall within the 95% confidence interval indicate variables that are significant predictors of dropping out of the study.

Results

Table 1 provides detailed data on the number and percentages of drop outs over each follow-up period for H-EPESE. The sample size for the baseline cohort was 3,050 with 44% of the original cohort reporting that they were born in Mexico. In the second wave of interviews (1995–1996), 20% of the sample dropped out but the difference between respondents born in the US or Mexico differed by only 2% (81% vs. 79.1%). None of respondents born in the US moved to Mexico and five respondents (1%) born in Mexico moved back to Mexico. The other reasons for drop out were also within 2% points. 1998–1999 drop outs were also within 2% points between respondents born in Mexico and the US. By the fourth wave of interviews in 2000–2001, nearly half the original cohort had dropped out of the study. Yet, the difference in sample attrition by nativity remained small. The overall difference between respondents born in the US or Mexico was 4% points (43.1% vs. 47%). In the most recent wave, 2004–2005, 38.3% of the original cohort was reinterviewed, and again the difference by nativity was within 2% points. Therefore, over 11 years of follow-up, the evidence suggests that immigrants were no more likely to drop out than US born respondents.

Table 2 presents estimates for the multivariate logistic regression predicting the odds that respondents dropped out of the H-EPESE. Analyses from this table provide evidence of correlates for types of attrition such as death, refusal, and lost to follow-up with adjustment for other known predictors of attrition. The c-statistic for the logistic regression was 0.582. The odds of death increased with age, education, number of chronic conditions, depressive symptoms, and disability. The odds of death decreased with female gender and with each unit increase in cognitive function. Financial strain was associated with lower odds of refusal, but no other variable was a statistically significant correlate of refusal. Loss of subjects over the follow-up period was associated with age, number of chronic conditions, depression, and cognitive function.

Discussion

This study used a prospective cohort study with excellent representation of immigrants and older, Mexican Americans to assess differences in drop outs by nativity and, secondarily, to ascertain predictors of attrition among older Mexican Americans. The study design took advantage of health status data commonly found in epidemiological data and that are likely to be important correlates of attrition. Contrary to theory that speculated estimates of foreign born respondents may be biased by a greater tendency of this population to be lost to follow-up or return to their country of origin, our findings suggest that immigrants are not more likely to drop out of a study compared to US born respondents. At least in this prospective cohort of older, Mexican Americans, any estimates comparing differences by nativity should be accurate. More prospective studies of minority and immigrant samples are needed to replicate these findings. It is possible that respondent retention efforts in the H-EPESE may account for the lack of difference in attrition by nativity.

The multivariate analysis of correlates for various types of attrition was consistent with the previous work in sample attrition. Older respondents in poor health (e.g., low cognitive function and higher levels of depressive symptoms, disability, and chronic conditions) were more likely to die and be lost to follow up. Another interesting pattern arising from this analysis was that women and married respondents were less likely to be lost to follow-up. Presumably they may be less likely to move to a new residence because family ties prohibit frequent change of location.

Traditionally, survey research has focused on the role of demographic, mode, or interviewer factors in attrition and used these factors to allocate resources for identifying follow-up

respondents. However, the findings from this study suggest that researchers may need to attend to issues facing older cohorts when designing prospective cohort studies. For example, researchers may profit by focusing resources on tracking respondents with high levels of chronic disease, physical disability, and lower cognitive function as determined from the baseline assessment. As people age and their health deteriorate over time, researchers can use that information on health and mental health status to identify subjects that may need more resources to be located in subsequent waves of data collection. Other suggestions that may help retain important respondent information are the use of proxy interviews and designing alternative measurement devices that assist respondents in providing information. In addition, there are several methods available to analyze incomplete data including multiple imputation, maximum likelihood estimation, pattern-mixture models, and sensitivity analysis.

In conclusion, over 11 years of follow-up, immigrants were no more likely to drop out than US born respondents. Predictors of attrition among older,

Mexican Americans were female gender, married marital status, low cognitive function, higher levels of depressive symptoms, disability, and chronic conditions. Retention efforts should be targeted toward these characteristics for this population. More research with other immigrant populations is needed to test whether foreign born respondents are more likely to drop out of prospective cohort studies.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Table 1

Sample attrition by nativity in the Hispanic established population for the epidemiological study of the elderly (H-EPESE)

1993-1994		1995-1996		1998-1999		2000-2001		2004-2005	
N	%	N	%	N	%	N	%	N	%
Full sample	3,050	2,438	80	1,980	65	1,682	55.1	1,167	38.3
Total dropouts		612	20	1,070	35	1,368	44.9	1,883	61.7
Death		238	7.8	661	21.6	943	30.9	1,410	46.2
Refusal		110	3.6	124	4.1	137	4.5	145	4.7
Lost to follow-up		259	8.5	268	8.8	273	9	309	10.2
Moved to Mexico		5	\1	17	\1	15	\1	19	\1
Born in United States	1,704	1,348	79.1	1,120	65.7	969	56.9	657	38.6
Total drop outs		356	20.9	584	34.3	735	43.1	1,047	61.4
Death		138	8.1	362	21.2	512	30.1	786	46.1
Refusal		76	4.5	77	4.5	81	4.8	92	5.4
Lost to follow-up		142	8.3	145	8.5	140	8.2	167	9.8
Moved to Mexico		0	0	3	\1	2	\1	2	\1
Born in Mexico	1,346	1,090	81	860	63.9	713	53	510	37.9
Total drop outs		256	19	486	36.1	633	47	836	62.1
Death		100	7.4	299	22.2	430	31.9	624	46.4