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Trajectories of Limitations in Activities of Daily Living among Older Adults in Mexico, 2001–2012

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Abstract

Background—Trajectories of disability are an essential component to understand the burden of disability at the societal level. Longitudinal studies, compared to cross-national studies, enable a better analysis of the progression of physical limitations among the elderly. However, information on disability dynamics in developing countries is limited.

Objectives—This paper examines the changes in activities of daily living (ADLs) in an 11-yr. period in the Mexican elderly population aged 60 or older and identifies how sociodemographic variables alter these trajectories.

Methods—The data come from the Mexican Health and Aging Study (MHAS), a national sample of adults born in 1951 or earlier, including a baseline survey in 2001 and follow-ups in 2003 and 2012.

Results—The ADL score increased on average by 0.03 for every year respondents aged after 60. In contrast, the ADL score was reduced by 0.06 for every additional year of education.

Conclusions—Age, gender, and years of education were confirmed to influence the trajectories of ADL limitations. Understanding the patterns of deterioration of functional limitations will help inform public health policies to better serve the population.

Keywords

Activities of Daily Living (ADLs); trajectories; mixed-effects model; older adults; MHAS; Mexico

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Conflicts of Interest: None.

Introduction

Basic Activities of Daily Living (ADLs) refer to functional capabilities that are essential to survival and independence and tend to deteriorate with old age[1]. Declines in functionality in old age present a challenge not only because they reduce the quality of life of the individual but also because they add additional social, time and financial burdens to the family and community around the elder. From the individual standpoint, and taking into consideration that full or partial recovery is possible, a person with functional limitations tends to lose independence, social networks, and mental capacity over time[2, 3]. Additionally, the decline in functionality increases the probability of being institutionalized or dying as a result of these limitations[4]. From the community perspective, families are affected emotionally and economically as they have to spend more time and money to provide proper care for their loved ones.

Trajectories of disability are an essential component to understand the burden of disability at the societal level[5] and longitudinal studies, compared to cross-national studies, enable a better analysis of the progression of functionality among the elderly. Most longitudinal studies of disability come from developed countries. Romoren and Blekeseaune[6] analyzed trajectories of ADL limitations in Norwegians aged 80 or older and found that respondents took (on average) 1.7 years to move from having no ADL limitations to having one ADL limitation. Other studies focus on specific segments of the population in the United States like older institutionalized adults in Michigan[2], veteran military men[7] or older migrants[8]. Studies have used different definitions of physical limitations such as combining ADLs with Instrumental Activities of Daily Living (IADLs), and/or mobility items to analyze trajectories of disability by gender[9]; by race/ethnicity[10–12]; or by respondents with a specific illness like diabetes[13] or stroke[14].

Despite the different targeted populations and the contrasting methodologies used in all these studies, the majority tend to agree that: 1) age seems to play an important role in establishing viable trajectories of disabilities; 2) women tend to be more disabled than men; and 3) lower levels of education increase the prevalence of ADL limitations. However, in most cases, it is hard to adapt these findings to the context of a developing nation because the speed of the progression and the prevalence of disability vary across age cohorts and even within populations. Thus trajectories of functional limitations might be unique to a specific population[15, 16].

Unfortunately, information on disability dynamics in developing countries is limited[17]. Recent studies have measured the prevalence of obesity and disability in older adults aged 65 or older living in six Latin American cities[18]; calculated the trajectories of disability and mortality among the oldest-old in China[19] and examined the trajectories of disability and their association with onset, recovery, and mortality in Taiwan[20], opening the door for further research.

A recent study compared ADLs in similar respondents in Mexico and in the United States. In Mexico, 10.6% of respondents aged 51 or older in 2001 had at least one ADL while 11.5% of U.S. respondents aged 52 or older in 2000 had at least one ADL. However, almost

twice the share of older adults in Mexico (5%) had higher prevalence of three or more ADLs compared to older adults in the US (2.6%)[21]. Further, the authors find that recovery from one ADL limitation at time-1 to no limitations at time-2 is prevalent in both countries but more likely in Mexico (53.0% in the US compared to 62.7% in Mexico). And those with zero or one ADL limitation at time-1 in the U.S. had higher probability of dying than similar respondents in Mexico. Another study analyzed the effect of educational attainment on the transitions of disability in urban Mexico (2001–2003) and the city of São Paulo, Brazil (2000 and 2006). Results indicated that men in urban areas in Mexico had a higher incidence of disability than men in São Paulo and both genders in Mexico showed significantly higher recovery rates from disability across all ages[22]. Recovery in urban areas in Mexico might be linked to age, gender, and years of education.

One study examined the effect of physical activity on the transitions of disability in Mexico (2001–2003) and in the United States (2000–2002). Results showed that, among older adults with no ADL limitations, exercise is much more common in the US than in Mexico (44% vs. 27%) and its protective effect on disability is stronger in the U.S.[23]. Finally, a study analyzed how Body Mass Index (BMI) affects the transition of disability in older adults in Mexico (2001–2003) and in the United States (2000–2002). The study found a stronger association in the U.S. between obesity (BMI of 30 or higher) and disability. In fact, obesity appeared to be more prevalent in the U.S. than in Mexico (23.4% vs. 20.5%) and a higher percentage of obese respondents in the U.S. (16.6%) reported at least one ADL limitation compared to reports by obese respondents in Mexico (9.6%)[24].

As reliable longitudinal survey data on aging from developing countries have become available, it is now possible to start analyzing the trajectories of ADL limitations among older adults in Mexico. The purpose of this paper is to provide an overview of the progression of limitations in ADLs in the Mexican elderly population over time. We use cohorts born prior to 1940, because, during their life span, these cohorts saw considerable achievements in population health like the reduction of the fertility rate and the increase in life expectancy[25] along with fast urbanization and industrialization for certain segments of the population[26]. Our hypothesis is that the number and progression of ADL limitations faced by the elderly population in Mexico will vary by socioeconomic conditions like age, gender, and education. This is because socioeconomic inequalities during the life cycle will change the risk of an older adult becoming physically limited.

Data and Methods

Sample

Data come from the Mexican Health and Aging Study (MHAS), a nationally representative study of health and aging in Mexicans born in 1951 or earlier. Participants were first interviewed in 2001 in a stratified sample representative of the national population (response rate of 92%) with follow-ups in 2003 (response rate of 93%) and 2012 (response rate of 88%). The database provides detailed health characteristics such as limitations with ADLs and IADLs, cognition, depression, and mobility[27–29]. For more information about the study please refer to Wong, Michaels-Obregón, and Palloni[30]. This study was approved by the Institutional Review Boards or Ethics Committees of the University of Texas Medical

Branch in the United States, the *Instituto Nacional de Estadística y Geografía* (INEGI) and the *Instituto Nacional de Salud Pública* (INSP) in Mexico.

Our sample is based on 6,519 respondents aged 60 or older and with a direct interview at baseline. We excluded 366 respondents who were lost to follow-up after the first wave and 231 respondents who required a proxy in at least two waves because information of just one period will not be significant in a longitudinal analysis. Additionally, we excluded 157 respondents who did not provide complete ADL information at baseline. The final sample included 5,765 respondents. The excluded respondents were older, predominantly not married (divorced, separated, widowed, or never married) and had, on average, almost two fewer years of schooling than respondents who were included in the final sample. We control for attrition in two ways by considering those who died (contributing in either one or two waves) and those who were alive and contributed either two or three waves to the panel data.

Measures

Dependent Variable—Our main variable is a modified version of the Katz Index of ADLs indicating if the respondent needed help to perform any of the following five functions: bathing, dressing, eating, using the toilet, and transferring in and out of bed[31]. Each activity variable was dichotomized and the respondent was assigned a value of 0 if help was not required (answered “no”) or 1 if the respondent received any help (answered “yes”) to perform the activity. Additionally, respondents had the option to answer “cannot do” or “does not do” for each activity. Following previous literature dealing with ADLs in the United States[32, 33] and Mexico[34], these respondents were recoded as 1 if they could not or did not perform the activity and received help from their spouse or someone else to perform it, and 0 otherwise. Finally, each dichotomized variable was added to generate a score (0–5) measured in each of the three waves of the MHAS. For descriptive analysis, and consistent with previous literature[35, 36], the ADL limitations are grouped in 3 dichotomous variables measuring zero ADL limitations, one or two ADL limitations, and three or more ADL limitations.

Covariates—In a longitudinal analysis, certain covariates change with time and others do not. We include time-variant and time-invariant covariates that have consistently appeared in the literature as factors linked to disability and that are needed to understand the transitions and trajectories of physical limitations. For a review of the literature linking each covariate to disability, please refer to the work by Raîche and colleagues[37].

Time-varying variables are measured at each wave in order to capture possible changes. Age was defined as a variable centered around 60 years old. Additionally, we included a quadratic term to allow for the possibility of a non-linear relationship between age and the number of ADL limitations following previous work by Reynolds and Silverstein[38]. Death was defined as a dichotomous variable indicating if the respondent had died by either 2003 or 2012 (dead = 1). Number of contributions captures the possibility that respondents may be lost to follow-up. Respondents can have values of 2 or 3. Marital status was defined as a dichotomous variable (married = 1). Finally, a time/wave variable was created to indicate the

year gap between each round of the MHAS and baseline. In 2001, time has a value of 0, in 2003 it has a value of 2, and in 2012 it has a value of 11.

We also include variables measured at baseline that are not affected by time. Education was defined as a variable that measures the highest year of schooling completed by the respondent. For the descriptive analysis, education was divided into four dichotomous variables indicating 0 years of schooling, 1–5 years of schooling (incomplete elementary education), 6 years of schooling (complete elementary education), and 7 years of schooling or more. Gender was defined as a dichotomous variable indicating if the respondent is female (= 1). Finally, we include the ADL score at baseline to measure the starting point of each respondent as this will impact their subsequent progression in functional limitations. In addition, interaction terms were introduced as a way to verify if a change in the level of one variable had an impact on the ADL score, depending on time. We include three interaction terms measuring time and gender, time and years of education, and time and marital status.

Data Analysis

We use longitudinal data with multiple times of assessment to examine the trajectories of ADL limitations. Previous studies of ADL limitations and disability tend to follow three possible statistical analyses: event history methods that use logistic regressions[39], Markov models[40], or mixed-effect models[41]. Event history tends to under-utilize longitudinal data. Both the Markov and mixed-effect models tend to handle attrition better than event methods, but mixed-effect models establish a connection between each point in time for each respondent, making the results more cohesive and easier to interpret[42]. Thus, we use a mixed-effect model to analyze the number of ADL limitations in older Mexicans during an 11-yr. period between waves 1 (2001) and 3 (2012) of the MHAS, controlling for all covariates. All analyses are performed using Stata version 13.1[43].

Results

At baseline, 7.1% of respondents aged 60 or older had limitations in one ADL, 2.4% had limitations in two ADLs, and 3.2% had limitations in three or more ADLs (results not shown). Dressing represents the most prevalent activity that respondents cannot do by themselves. At baseline, 9.2% of our sample reported needing help getting dressed and by 2012 this number increased to 16.2%. Transferring in and out of bed is the second most prevalent ADL. In 2001, 8.0% reported having difficulties and needing help with this activity; by 2012, this number increased to 9.9%. Finally, bathing/showering is the third most prevalent ADL. At baseline 6.6% of our sample reported having difficulties performing this ADL and by 2012, this number increased slightly to 6.7%.

Table 1 shows 2001–2012 cohort characteristics of Mexicans aged 60 or older stratified by the number of limitations in ADLs. It is worth noting that the 5,752 respondents who comprise our final sample contributed 2.4 times on average to this model. As mentioned before, some contributed once (if they died by 2003), some twice and others three times, which translates to the 13,988 observations presented in this table.

On average, respondents with zero limitations were seven years younger than respondents with three or more limitations. Further, 49.5% of the respondents with three or more ADL limitations had zero years of schooling. In contrast, only 4.5% of the respondents with three or more ADL limitations had six or more years of schooling. Finally, the sample is composed of more women (52%) and almost 58% of the contributions to the panel data were made by married respondents.

Figure 1 presents the unadjusted variability in transitions in the number of limitations in ADLs across the eleven-year period. Two of every five respondents who had zero ADL limitations in 2001 remained without any ADL limitation in 2012 (40.3%). However, other respondents with zero ADL limitations in 2001 did show a decline in health in 2012 as indicated by reporting having one or two ADL limitations (10.6%) or three or more ADL limitations (3.3%) and 35.8% had died by 2012. It is worth noting that older adults do present some recovery. For respondents with one or two ADL limitations in 2001, 18.1% reported no limitations in 2012. As for older adults with three or more ADL limitations in 2001, 8.0% partially recovered from three or more limitations to one or two and 6.8% of the respondents reported no limitations eleven years later.

Compared to respondents who did not improve between 2001 and 2012, those who recovered were, at baseline, three years younger, predominantly female, with slightly fewer years of education, and a higher percentage were married.

The top section of Table 2 presents results of the mixed-effects model for the ADL score of the 2001–2012 panel data. Sociodemographic variables such as age, age squared and gender are associated with the ADL score over time. Using these results and since the model includes a quadratic term and interaction terms, we decided to also calculate the marginal effects of selected covariates (keeping the rest at their means) to make the results easier to interpret. These results are presented in the bottom part of Table 2. Moving from time 0 (baseline) to time 1 (2 years later) yields an increment in the ADL score of 0.03 points while moving from time 0 to time 2 (11 years later) represents an increase in the ADL score of 0.38 points on average.

Further, with every year the respondent ages after 60, the ADL score will increase by 0.003 points while being female leads to a slight rise in the ADL score over time of 0.07 points higher than males. Also, every additional year of education implies a reduction in the total ADL score of 0.06 points. The inclusion of marital status was not statistically significant and respondents who died had a higher ADL score than those who survived.

Figure 2 uses the results of the mixed-effects model to show estimated time trajectories of the number of ADL limitations stratified by gender. The gender differences are evident, with females experiencing a steeper increase in their predicted ADL scores than males.

Since respondents are not homogenous, they experience a myriad of possible trajectories in ADL limitations, ranging from those who have no limitations throughout the study to those who already are disabled at baseline and continue to worsen (or potentially improve) with time. Because some respondents begin the analysis with zero ADL limitations the curves presented in Figure 2 are dominated by those with no limitations. To represent the

trajectories of respondents more accurately, we estimate the time-trajectories for respondents with zero and with one ADL limitation at baseline and for two different ages also at baseline, 60 and 70 years old.

Figure 3a shows the case of an individual aged 60 and an individual aged 70 who had no ADL limitations at baseline, by gender. Individuals aged 60 begin at a lower point than individuals aged 70, with females showing higher levels of ADL limitations than men. In other words, holding everything else at their means, men aged 60 will go from a score of not having any limitations to an average score of 0.29 in 11 years while women will reach an average score of 0.48. Similarly, men aged 70 at baseline will go from having no ADL limitations to an average score of 0.33 while women will reach an average score of 0.53.

Figure 3b showcases a similar scenario but starting with one ADL limitation at baseline. In this case, men aged 60 at baseline reach a score of 1.09 on average in 11 years, while women will reach an average score of 1.15 in the same time span. Similarly, men aged 70 at baseline will reach an average score of 1.22 while women will reach a score of 1.29 in 11 years. These two figures summarize the relevance of age and gender and their impact on the trajectories of ADL limitations.

Discussion

ADLs are commonly used as a tool to evaluate the health status of older adults and, difficulties with ADLs can also be a predictor of quality of life. Traditionally, studies measuring ADL disability tended to focus on a specific limitation or the effect of these limitations on several diseases or on the risk of mortality. Respondents are usually classified as disabled or not[44]. In addition, most of these studies were done in the context of a developed country where socioeconomic inequalities are not as deep and the population of older adults has general access to health care. Our study fills a void in the literature by using longitudinal data to estimate the trajectories of limitations in ADLs by including a time-varying effect that can improve the prediction of disability. This enhances our ability to provide results that reflect more accurately the current socioeconomic situation in a developing country like Mexico.

We used a mixed-effects model to examine the trajectory of the number of ADL limitations from 2001 to 2012. We selected this model because it has been used in different settings; is helpful when the same individuals provide repeated measures; can accommodate the introduction of time-variant (random) and time-invariant (fixed) effects into the model; and is more effective than other models when dealing with missing information and grouped data[45].

We included sociodemographic covariates such as age, years of education, marital status, and gender in a sample of older Mexican adults. Our results suggest that both older age and being female increase the ADL score over time. This is consistent with the literature that shows women have more disabilities than men in cross-sectional analyses[46, 47]. Further, the interaction between time and marital status was not statistically significant and neither was the main effect of being married.

In contrast, higher education reduced the ADL score over the 11-yr. period under analysis which is consistent with previous findings that show higher education linked to overall better physical functioning[48]. Overall, the effect of gender is the most significant (as seen in Figure 2), with women having a higher intercept and steeper deterioration over time compared to men.

This is further illustrated in Figures 3a and 3b, with age and gender playing key roles in establishing trajectories of ADL disability. Further, as seen in Figure 1, respondents were able to partially or fully recover from at least one ADL limitation at baseline to fewer limitations in 2012, providing evidence that physical disability is a dynamic and reversible process[49]. This analysis has some limitations. We used self-reported ADL limitations and these reports could have gender bias. In Mexico, money and decision-making are typically controlled by men. These social roles and norms may imply that Mexican men could be hesitant to ask for help to perform physical activities and/or to report them[50]; thus, self-reports of ADL limitations could be under-reported for men. Further, ADLs represent the final step in the process of disability. An individual who is incapable of performing vital activities like eating or transferring in/out of bed without help has reached one of the most severe forms of impairment thus ADL limitations might not be that frequent among the young-old population represented in the study[12, 51]. Finally, the analysis does not distinguish among specific types of functional limitations nor takes into account the severity of these limitations, all of which could potentially affect results.

Conclusions

Aging and physical disability have a magnified impact in a developing country like Mexico. First, the population is aging rapidly in a very short period of time[52]. Second, income inequalities combined with infectious and parasitic diseases as well as chronic and degenerative diseases[53] cause social exclusion of some segments of the population, particularly those living in rural areas which can lead to limited access to healthcare services[54]. Third, economic and institutional infrastructure and resources are unable to keep up with the needs of the rapidly aging Mexican population[55]. The inability to meet the demands of older adults combined with the rapid aging of the population becomes a challenge for governments trying to create efficient public policies, likely exacerbating the impact of disability on the Mexican elderly and on their families[56].

Scarce resources and limited access to health services interact with the traditional concept of "*familia*" present in most Hispanic nations, including Mexico. Families continue to provide informal care at home as a way of honoring their elders[57, 58] and seem to do so no matter the economic sacrifices or living conditions they have to endure[59]. In Mexico, the idea of institutionalization is regarded as a last resort and is often viewed with a negative connotation thus, the study of ADL becomes particularly relevant because the healthcare system and families, especially women, may bear the burden of being long-term care providers of older adults who are limited in their ability to perform certain activities[60].

Future research should focus on establishing the relationship between socioeconomic status (SES) and health at old ages. Enrollment in basic education (grades 1–9) has increased

steadily from 9.7 million in 1970 to around 31 million in 2005, representing an increase from 70% to 88% of the children ages 6–15[61]. This is particularly relevant for disability because men with low education have higher risks of being disabled compared to women with low education[62] and women with high levels of education tend be more functionally capable than women with low levels of education[63].

Future research should also explore the interaction between other sociodemographic, economic and health-related variables and physical limitation. These variables may not be directly related to the onset of disability but they might be related to the deterioration and possible recovery of an individual. It has been shown in previous literature that variables like depression[64], educational attainment[65], income[66], Body-Mass index[67], social relationships with family, friends, and neighbors[68], and cohabitation with adult children[69], among others, can affect the probability of recovery in an individual with a physical limitation. In our case, we were able to establish that some respondents were able to partially or fully recover after eleven years thus, further analysis of these individuals is needed in order to understand what factors promoted their recovery.

Mexico faces the challenge of improving an inadequate health system and tending to the needs of a population that is getting older. In addition, urban-rural differences continue to deepen the health and socioeconomic disparities within the country and health programs are only targeting specific segments of the population, like low-income individuals living in rural areas[70]. Further, the quality of public health services in Mexico is forcing increasingly more older adults to seek private health services and for older adults, this comes at an increasingly high cost and with companies that prefer younger adults with higher income[71].

The trajectories of ADL limitations among the Mexican elderly are significantly modified by many environmental, socioeconomic, political, and even cultural factors, thus, as successive cohorts of Mexicans continue to enter old age, it is important to analyze these trajectories of disability in order to provide empirical evidence that can be used to design future public policy.

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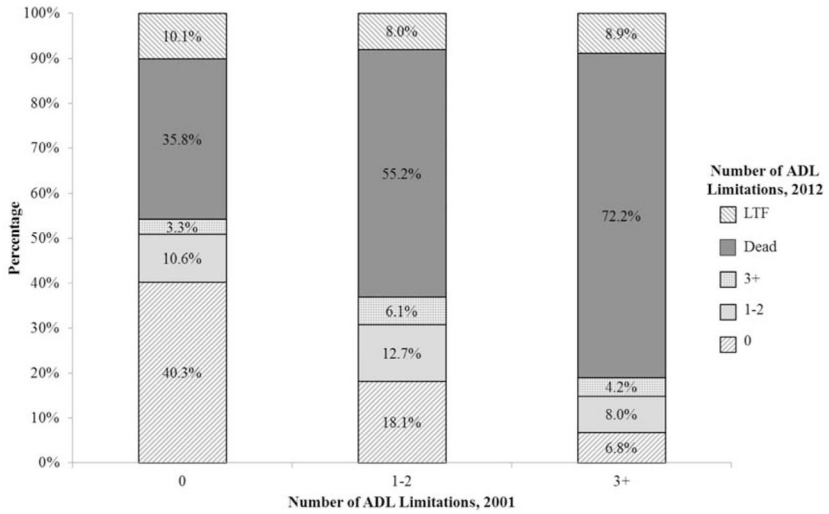

Figure 1. Unadjusted Eleven-Year Transitions in the Number of ADL Limitations of Older Mexicans Aged 60 or Older at Baseline

Note: This figure includes respondents with direct interviews in 2001 and 2012. LTF refers to Lost to Follow-Up. Total number of respondents is 5,590 of which, at baseline, 85.9% report zero limitations, 9.9 % report one or two limitations, and 4.2% report three or more limitations.

Source: Author's calculations with data from the Mexican Health and Aging Study[27–29].

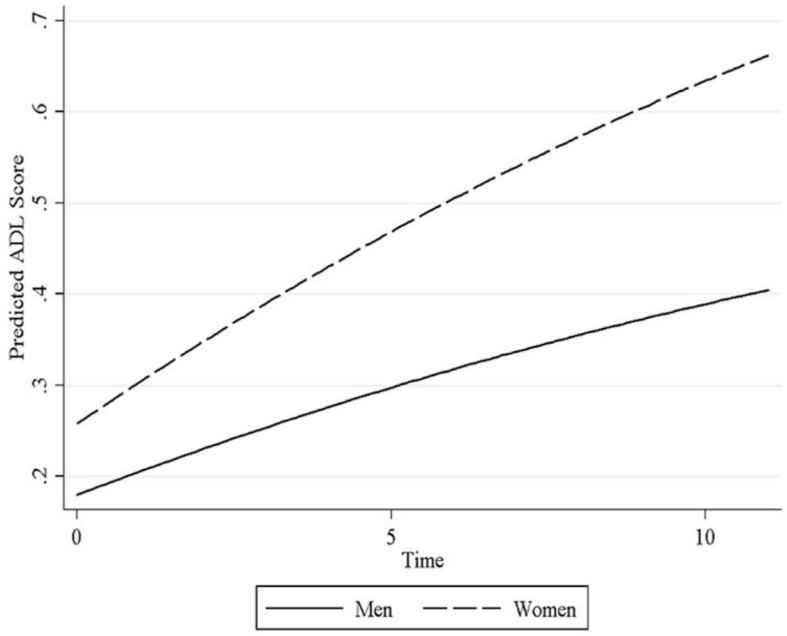

Figure 2. Trajectories of the Estimated Number of ADL Limitations of Older Mexicans Aged 60 or Older at Baseline by Gender, 2001–2012

Note: Regression model shown in Table 2 is used to obtain predicted ADL score. All covariates included in that model are held constant at their mean value.

Source: Author's calculations with data from the Mexican Health and Aging Study[27–29].

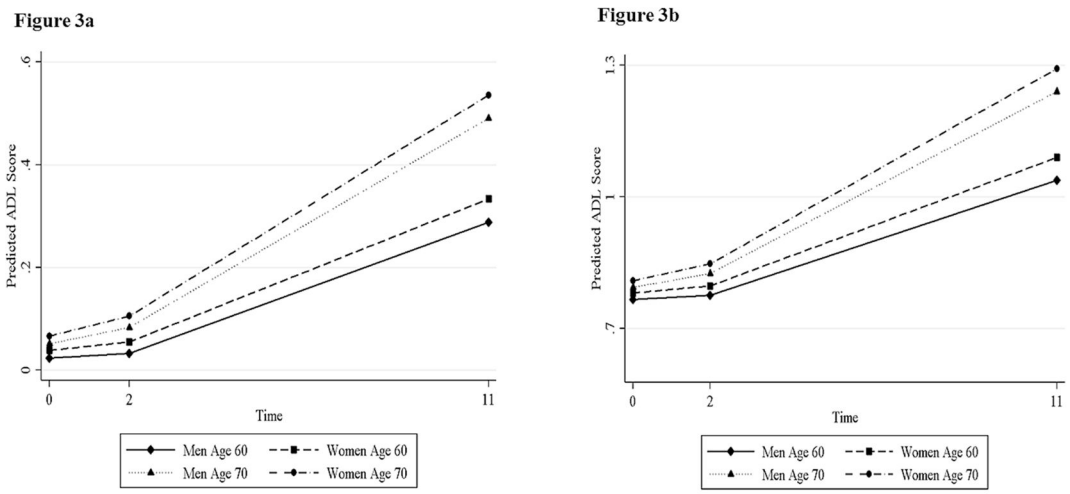

Figure 3.

Figure 3a. Estimated 2001–2012 Trajectories of the Number of ADL Limitations for Respondents Aged 60 and 70 with Zero ADLs at Baseline by Gender

Note: Regression model shown in Table 2 is used to obtain predicted ADL score. Age is kept constant at 60 or 70 and ADL score at baseline is kept constant at 0. All other covariates included in the model are held constant at their mean value.

Source: Author's calculations with data from the Mexican Health and Aging Study[27–29].

Figure 3b. Estimated 2001–2012 Trajectories of the Number of ADL Limitations for Respondents Aged 60 and 70 with One ADL at Baseline by Gender

Note: Regression model shown in Table 2 is used to obtain predicted ADL score. Age is kept constant at 60 or 70 and ADL score at baseline is kept constant at 1. All other covariates included in the model are held constant at their mean value. Source: Author's calculations with data from the Mexican Health and Aging Study[27"29].

Table 1

Sample Characteristics of Mexicans Aged 60 or Older by Number of ADL Limitations, 2001–2012

Sociodemographic Characteristics	At Baseline (2001)	Number of ADL Limitations 2001–2012		
		0	1–2	3+
Age				
Average (years)	69.4	71.4	76.2	78.4
Gender (%)				
Female	52.7	51.8	60.4	62.5
Education (%)				
0 years of education	32.8	34.1	41.3	49.5
1–5 years of education	37.4	37.0	39.3	35.8
6 years of education	14.9	13.9	10.5	10.2
7 or more years of education	14.9	15.0	8.9	4.5
Marital Status (%)				
Married	59.6	59.4	50.9	45.1
Unweighted Contributions	-	11,762	1,651	585

Note: Unweighted data and sample size totals. Observations based on 5,752 respondents who contributed 1, 2, or 3 times to the sample. Column percentages are used in variables with the percent symbol.

Source: Author's calculations with data from the Mexican Health and Aging Study[27–29].

Table 2

Mixed-Effects Regression Model of 2001–2012 ADL Scores of Adult Mexicans Aged 60 or Older (top) and Marginal Effects of Selected Covariates (bottom)

Variables	Model	95% C.I.
Fixed Portion		
Time	0.035***	0.025–0.045
Socioeconomic Variables		
Age		
Age Centered	−0.009***	−0.012 – (−0.005)
Age Centered Squared	0.001***	0.001 – 0.001
Gender		
Female	0.024*	0.001 – 0.047
Marital Status		
Married	−0.003	−0.027 – 0.021
Education		
Years of Schooling	−0.002	−0.045 – 0.001
Number of Limitations		
ADL Score at Baseline	0.746***	0.732 – 0.760
Attrition		
Dead	0.084***	0.046 – 0.122
Number of Contributions	−0.007	−0.041 – 0.027
Interactions		
Female & Time	0.015***	0.006 – 0.025
Education & Time	−0.001*	−0.002 – (−0.001)
Marital Status & Time	−0.009	−0.018 – 0.001
Constant	0.047	−0.059 – 0.152
Random-Effect Parameters		
Variance (Time)	0.122	0.107 – 0.141
Variance (Constant)	0.011	0.009 – 0.014
Covariance (Time, Constant)	0.012	0.010 – 0.013
Variance (Residual)	0.241	0.230 – 0.252
LR Test vs. Linear Regression		
Chi-Square	2706.66***	
Number of Observations	13,988	
Respondents	5,752	

Variables	Model	95% C.I.
Average Number of Observations per Respondent	2.4	

Variables	Marginal Effects	95% C.I.
Time		
2 Years	0.03***	0.01 – 0.05
11 Years	0.38***	0.33 – 0.43
Socioeconomic Variables		
Age Centered	0.003**	0.001 – 0.004
Years of Education	−0.06**	−0.001 – (−0.002)
Female	0.07***	0.04 - 0.11
Married	−0.02	−0.05 – 0.01

Note:

* p = .05;

** p = .01;

*** p = .001.

Marginal effects with the rest of the covariates at their means.

Source: Author's calculations using data from the Mexican Health and Aging Study[27–29].