Economic and family impacts of changes in health status of the aged population. Mexico 2001-2003.

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Introduction

During the 20th Century Mexico underwent sharp social, economic and political changes that affected demographic dynamics. In those hundred years population multiplied seven-fold, from 13.6 million in 1900 to 95.5 million in 2000. The background demographic transition process was relatively short. In a few decades of intense changes, mortality and fertility came from very high and irregular to very low and stable. A major consequence of demographic trends is a rapid population aging, which is becoming one of the main challenges for the 21st Century in relation to social structures, economic performance and family behavior.

Projections estimate that during this 21st Century rates of growth of the population 65 and over will be highest compared to all other age brackets. Between 2007 and 2050 the percent of people younger than 15 will fall from 30.0 % to 17.4 %, for those between 15 and 64 years old it will increase from 65% in 2007, up to 68% in 2020 and thereafter it will fall to be 62 % in 2050. The sustained trend of increase will come from population 65 and over that will grow from 5 % in 2007 to 21 % in 2050 (CONAPO, 2006).

There is not consensus about the intensity or the direction of causality between health conditions and family economics or living arrangements. Nevertheless research has shown that demographic aging will carry major economic and social consequences, from non lethal morbidity and disabilities resulting from chronic and degenerative diseases. It has been reported that health problems interfere with activity and well-being at any age and life cycle, including that deleterious consequences are magnified for the elderly (Grundy, 1991; Wolfe and Behrman 1984; Lynn, 2005). When reaching old age the most demanding requirements are related to health care, thus becoming a matter for worry and uncertainty among aged people, their relatives and for the society in general (Garrido, Ramirez and Gómez, 1999).

Objective

Considering that health is the main source of vulnerability at old age, the objective in this paper is to measure and substantiate how changes in health conditions of the elderly impact socio-economic, family and living arrangements. These topics are important because the rapidity of demographic aging in Mexico implies precarious medical services, high female sex ratio, low education levels, lack of social security, pressure to remain in a job mostly in the informal labor market and meager income for the aged population. These characteristics are concomitant to the

withdrawal of the State as provider of social services and the privatization and deregulation of public services, all ending up in inequality, poverty, vulnerability, social exclusion and economic insecurity.

Theoretical developments identify numerous relevant factors affecting family relationships, living arrangements and economic risks for the elderly population. Among them there are the increase of domestic and international migration due to economic and labor circumstances; reduction of the number of children and therefore family size ; increase in separation and divorce rates; incorporation of women into the work force, and residential preferences of the elderly to live alone (Ariza and Oliveira, 2001; Arber and Ginn, 1996; Bazo, 1992; Bliezner, 1990; Leñero, 1999; Waite, 2004; Ybañez et.a., 2005). Nevertheless, studies on family changes caused by health deterioration due to chronic diseases, disability, depression, cognitive declining, sensorial lost, are scarce in Mexico.

Materials and methods.

The main source of data is the "National Study on Health and Aging in Mexico" (MHAS). It is the first and only longitudinal survey, providing statistical information of the population 50 and over in 2001 and 2003. It has national and urban-rural representation, allowing evaluation of the aging process considering backgrounds and interrelations on demographics, chronic diseases, mental conditions, disabilities, economics, labor, migration, social, and family.

Models of logistic regression with dummy variables and panel data techniques are used seeking the effect of health on the economy and the living arrangements of the elderly. This study use information about population aged 50 and over, with complete interview in 2001 and 2003. A total of 11,989 individuals and 23,978 records (for the two rounds in which data are available). The attrition between rounds was 4.6% for death, and 17.6% for incomplete interview in 2001 or 2003. People who are being analyzed are in better health than those who are leaving out of the study. A simple comparison between the two groups indicates younger, better health, higher functional ability, and in general better living conditions for those in the sample.

Since we are searching the effects of health on economic situation and living arrangements of elderly population, three models with their respective dependent variables were constructed. For the economic situation two variables were built. Job income (0 if there is income and 1 if there is not), the construction of this variable intend to capture the loss of work income due to health status deterioration; and family money transfers (0 if there are not transfers and 1 if there are). For living arrangements the dependent variable is about living in an extended household (0 if it is not an extended household and 1 if it is). In this case extended household is defined as a household consisting of the selected person and other relatives and nonrelatives different from the spouse and children, whether or not a spouse and/or children lives with them.

To establish health status, chronic diseases asked in the survey are used: hypertension, diabetes, cancer, pulmonary disease, heart disease, cerebral stroke and arthritis (0 without diagnosis and 1 with); ability to perform ADL: walking across a room, bathing or showering, eating, getting into or out of bed and using the toilet (0 without difficult in anyone of the activities and 1 if have difficult in one or more ADL); functionality in IADL: fixing a hot meal,

shopping, taking medications and managing its own money (0 without difficult in anyone of the activities and 1 if have difficult in one or more IADL); intensity of difficulty on ADL and IADL is measure through help in this activities, two dummy variables were create (0 if nobody helps and 1 if receiving help); the body mass index with four variables underweight, normal, overweight and obesity ; falls in the last two years (0 without falls and 1 with falls); depression (0 without depression and 1 with depression); nights hospitalized in the preceding year of the interview, three dichotomous variables were created, the first one for without nights hospitalized, the second from 1 to 9 nights, and the third if there were 10 or more nights in a hospital.

Socio-demographic variables like sex, age, education, place of residence, health services, marital status, self-perception of economic situation and retirement were also included. Preliminary descriptions emphasize that social inequality, individual behaviors and socio-demographic characteristics have effects in health change of individuals, and that changes do not occur at the same time or with the same intensity, which therefore were inputs in the regression models. Regressions were computed using Stata 9.0. Random effects models were used in order to catch heterogeneity among individuals, as well as the effect of certain characteristics that do not vary over time.

Results.

Family transfers.

From the surveyed diseases hypertension, diabetes, stroke and arthritis have an effect on family transfers as measured by odds ratios (OR) from 1.12 to 1.28. For those who have difficulty to perform the ADL, the OR is less than 1, which means less probability to receive income from family transfers compared with those who have no difficulty. Along with the difficulty in ADL and IADL, received help to carry out such activities were use to measure intensity. Those who received help in ADL increase the odds ratio of perceive family transfers by about 48%, compared with those who do not receive; and for those needing help with the IADL probabilities are 27%. This difference may be due to requiring assistance in IADL implies the need for personal care rather than economic transfers from the family. Those who have depression are 10% more likely to receive family transfers. Being single has negative impact on economic resources, they are less likely to receive family transfers, and on that several hypotheses are discussed in the literature: they never had children, they have a limited family network, their relatives are also aged thus requiring help for themselves. On the other widowhood increases the likelihood of receiving such transfers. Such conditions are reflected in an OR estimated in 1.27.

People retired from the labor market are less likely to receive income by family transfers. It seems that they do not need a supplementary income or at least not in the same extent as those who do not have a retirement income. Being a woman increases the probability of receiving family transfers by 51%. By age, population between 50-64 years old compared to 65-74 and 75 and over, have lower probabilities of receive family transfers. OR for this group is 0.67. Higher education allows individuals to remain independent for longer periods and to get higher income, thus affording to live without financial support from relatives. OR for those with complete elementary school is 0.84 and become lower for those with high school and higher education, with an OR of 0.42. Place of residence makes a difference to receive financial assistance from relatives; those living in urban localities are 33% less likely to receive such support as compared

with those living in less urban areas. Conditions in each type of localities are different therefore making a difference, in terms of time and age enjoying job income, schooling, social benefits, and kind of diseases.

Lack of job income

There are several factors influencing the decision of an individual to quite a job and stop receiving income. Among them are health status, the need to help other people, the kind of job and fringe benefits, as well as sex, age, education, and place of residence.

About diseases, hypertension, diabetes, lung disease, stroke and arthritis have a significant effect on the lack of job income. Stroke has the largest effect with an OR of 1.53; those who are diagnosed with such disease have 53% more probabilities to stop receiving income than those without the disease. Some findings show the interaction between having difficulties and the need of help for IADL, the second one captures a higher degree of disability and the necessity of others to carry out essential activities, hence the individuals are obligated to retirement from the labor market and therefore to not receive a salary. The odds ratio of difficulties with IADL are not significant on the likelihood of lack of job income, those who needs help to perform IADL has an OR of 1.63. Stay hospitalized is indicative of deterioration in health status and a cause of disruption in economic activity; people who stay more than 10 nights in a hospital are 61% more likely to stop receiving income than that those who stay 10 or less nights in a hospital. People with bad self-reported health have an OR 1.34 of stop receiving income.

Among the socio-demographic characteristics, being single or married has a dissuasive effect on the lack of job income. Perhaps obligations towards a spouse or absence of other economic resources may be mediating the decision to stop working, even when health status shows deterioration. Having a retirement income has a significant impact on stop receiving a salary, the most significant with an OR of 4.81. Those who are retired have almost five times more probabilities of stop receiving a salary than those who are not. Being a woman and age increases two-fold the likelihood of no longer receive a job income, whereas higher schooling and living in the urban areas diminish it.

Living in an extended household.

Household strategies to avert problems caused by health deterioration are diverse. Like family support through a larger household, since it reduces housing costs, distribute economic and no economic support among the members, and provides better use of resources. Interestingly, about diseases only diabetes and arthritis have a significative impact on the likelihood to belong to an extended household. Those who need help to perform the ADL or IADL have higher probabilities of living in an extended household, the OR for this two indicators are 1.58 and 1.35. Other diseases, as well as difficulties in ADL, IADL, BMI, depression, falls, nights of hospitalization, and self-perception of health status have no effect on the likelihood of belong to an extended household.

It is expected that people without a spouse have to live with their sons or daughters and/or other relatives or non-relatives. Those who are single have an OR of 1.85 of living in an extended household. For widowhood the OR is 1.33. Women have more probabilities than men

to live in this kind of households. Education has important effect on the chances of living in an extended household. When we consider higher degrees of schooling the OR diminish substantially from 0.78 to 0.20. Again the place of residence has a significative effect, this time over the extended household. Those residing in an urban locality have 30% more probabilities of living in this kind of arrangement.

Discussion.

This paper shows that health is a main determinant of economic conditions and living arrangements of the elderly and their family. Findings agree with those obtained by Waite and Hughes (1999) who have reported that bad health and impairments in ADL imply higher probability of living with second degree kinship or with people without kinship links at all. Speare at al. (1991) found that a way the elderly have to cope with impairments to perform ADL it is to seek aid of other people living in the same household, or by modifying living arrangements either by moving to other place or by bringing in new residents. Research suggest that when economic conditions and health of the elderly allow, a preference of independent living prevails (Saad, 2003). Sickles and Taubman (1986) find that keeping an income from a job is strongly affected strongly by health individual status and that it is differently affected by kind of job, sex, marriage status and education.

MHAS presents some research limitations. One is that time between surveys rounds is quite short and does not allow to fully estimate how changes in health reflect on economic conditions and living arrangements. Having just two rounds is also a limiting fact. But there are more good characteristics than shortcomings. For example the number of useful registers is high; the sections on health, economic characteristics and household roaster are sound; and it allows to a longitudinal study of the aged population.

Although research on which this paper is based is quite advanced, although there still work to be done. It is mainly in the organization of statistical results, some further analysis and report writing. By September 2009 research and report will be reasonable finished. References mentioned are those used in this summary but already consulted and used is quite extent.

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Odds ratio of receiving family transfers, lack of job income and living in an extended household, 2001-2003. (Obs=21,890, groups=11,741)

Variables	Family transfers			Lack of income			Extended household		
	OR	SE	p-value	OR	SE	p-value	OR	SE	p-value
Hypertension	**1.235**	0.052	0.000	**1.228**	0.066	0.000	1.085	0.065	0.171
Diabetes	**1.143**	0.060	0.011	**1.275**	0.088	0.000	**1.234**	0.094	0.006
Cancer	1.095	0.153	0.519	0.956	0.174	0.806	1.077	0.219	0.715
Heart attack	1.086	0.110	0.415	**1.432**	0.201	0.010	1.276	0.185	0.093
Lung disease	1.121	0.084	0.125	1.095	0.109	0.364	1.146	0.123	0.205
Stroke	**1.275**	0.156	0.047	**1.534**	0.263	0.013	0.966	0.172	0.847
Arthritis	**1.123**	0.052	0.012	**1.206**	0.074	0.002	**1.163**	0.077	0.022
ADL	**0.760**	0.072	0.004	1.151	0.148	0.275	1.034	0.128	0.785
IADL	0.992	0.102	0.941	0.914	0.128	0.522	0.812	0.111	0.125
Help in ADL	**1.484**	0.195	0.003	1.343	0.256	0.121	**1.581**	0.273	0.008
Help in IADL	**1.276**	0.106	0.003	**1.631**	0.174	0.000	**1.347**	0.148	0.007
Underweight	0.969	0.126	0.812	1.021	0.184	0.908	1.261	0.221	0.186
Normal	0.990	0.054	0.858	0.993	0.067	0.914	0.995	0.075	0.948
Overweight	0.992	0.049	0.864	**1.148**	0.070	0.025	0.959	0.065	0.531
Depression	1.071	0.042	0.082	0.927	0.045	0.118	0.969	0.050	0.550
Falls	1.058	0.042	0.152	0.935	0.046	0.173	1.048	0.055	0.372
Hospital (zero nights)	0.888	0.060	0.076	1.028	0.088	0.746	1.005	0.088	0.954
Hospital (10+ nights)	1.148	0.161	0.324	**1.613**	0.306	0.012	1.098	0.203	0.614
Self reported bad health	0.955	0.050	0.380	**1.342**	0.092	0.000	0.958	0.067	0.534
Single	**0.183**	0.026	0.000	**0.732**	0.107	0.033	**1.858**	0.299	0.000
Married	0.886	0.065	0.097	**0.330**	0.031	0.000	**0.419**	0.043	0.000
Widow	**1.268**	0.103	0.004	**2.534**	0.284	0.000	**1.328**	0.152	0.013
Retirement	**0.828**	0.042	0.000	**4.813**	0.325	0.000	1.056	0.075	0.444
Sex (women)	**1.534**	0.068	0.000	**2.009**	0.114	0.000	**1.235**	0.080	0.001
50-64 years	**0.672**	0.047	0.000	**0.102**	0.012	0.000	**1.532**	0.160	0.000
65-74 years	0.921	0.067	0.256	**0.383**	0.046	0.000	**1.395**	0.152	0.002
Incomplete elementary school	0.957	0.050	0.396	1.080	0.076	0.277	**0.776**	0.060	0.001
Complete elementary school	**0.844**	0.054	0.008	0.958	0.080	0.605	**0.622**	0.059	0.000
More than elementary school	**0.421**	0.029	0.000	**0.560**	0.047	0.000	**0.204**	0.020	0.000
Urban residence	**0.672**	0.030	0.000	**0.370**	0.022	0.000	**1.305**	0.087	0.000

Source: Own elaboration with data from MHAS 2001-2003.