Perceived Morbidity and Disability Among Older Egyptians: Levels and Correlates

Zeinab Khadr *

September, 2002

* Department of Statistics, Faculty of Economics and Political Science, Cairo University

Introduction

Egypt is the most populous country in the Middle East, with one sixth of the region's population (United Nations, 1998). In the last Forty years, demographic changes in Egypt have fueled an accelerated aging process in the population. On one hand, in the last twenty years, population policies and family planning programs paid off in the form of substantial declines in fertility levels, almost 35% between 1980 and 2000 (from 5.3 in 1980 to 3.5 in 2000) (El Zanaty et al, 2001). On the other hand, improved health services, medical advancement and public health policies have increased life expectancy at birth by more than 30% during the last forty years, from 52 years in 1960 to 69 in 2001 (CAPMAS, 2001). These changes have produced a rapid shift in the relative size of older persons in the Egyptian population. At present, 5.7% of the total population is aged 60 and older, as compared to 37.8% under age 15(CAPMAS, 2001). The United Nations projects that by the year 2020 the proportion of persons aged 60+ will reach 10% and by the year 2050 this proportion will exceed 20%. Furthermore, the absolute numbers of older persons will also grow faster than these percentages, from 4.2 million in 2000 to 23 million by the year 2050 (figure 1).

Figure 1: Number of older persons (60+) in Egypt (1980-2050)
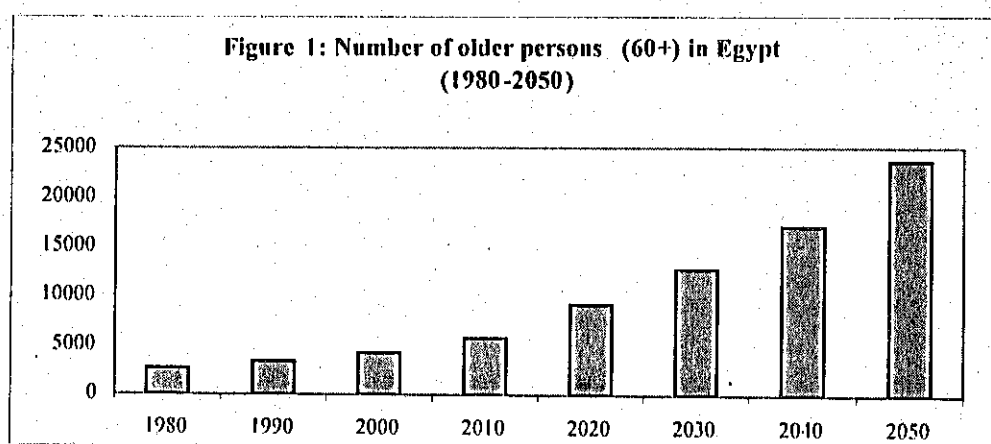
Until now there has been relatively little research in Egypt and the Arab world focused on the impact of recent demographic changes on the population structure and the aging process. Research on the demographic, health and socio economic aspect of the older persons in the region is sparse. The relatively small numbers of older persons and the priority given to other

important demographic issues have contributed to this limited interest. This is also reflected in the lack of comprehensive datasets that address socioeconomic and health issues of older persons. The author knows only of two data sets with pertinent information for Egypt, the 1989 WHO Flinder University multinational dataset on "Health and Social Aspects of Aging," and the 1994 United Nation office in Vienna multinational dataset on "The Developmental Impact of Demographic Changes: Global aging." [1]

This paper attempt to fill the gap in research on aging in Egypt by examining the health status of older persons in Egypt and their levels of morbidity and disability using data from the UN study. With increases in life expectancies in Egypt and many developing countries, health status and levels of disability among older persons play a significant role in determining their quality of life and overall well-being. As stated by Hauser (1953) with reference to aging in developed countries: "we have... succeeded in adding years to life; we are only beginning to turn to the task of adding life to years". The analysis explores levels of morbidity and disability, and their major correlates among older Egyptians

Thus, we can summarize the main objectives of this paper in the following points:

1) Examine the levels of perceived morbidity and disability among older persons in Egypt

2) Examine gender differences in levels of perceived morbidity and disability among older persons in Egypt

3) Identify main socioeconomic, health, psychosocial correlates to perceived morbidity and disability among older persons in Egypt

---

[1] The project on "Health and Social Aspects of Aging" was carried out by the World Health organization in 1989 under the auspices of the Center for Aging Studies, FlinderUniversity of South Australia. This project included four Arab countries, Bahrain, Egypt, Jordan, Tunisia, and five South East Asian countries, Burma, the Democratic People's republic of Koreas, Indonesia, Sri Lanka and Thailand.

The project on "Developmental Impact of Demographic Change: Global Aging" was carried out by the United Nations office in Vienna in 1994. This project included five countries, Egypt, Chile, The Dominican Republic, Sri Lanka and Thailand

Morbidity Correlates: Theoretical Considerations

Correlates to morbidity and disability are drawn from many dimensions of individuals' lives, for older persons no less so than younger. In this section, I provide a brief overview of key findings from previous empirical research on these correlates. Note that most of this research has been conducted in high-income societies.

The impact of the demographic attributes on morbidity has been well documented in the literature. Many studies confirm the persistence of a significant age gradient in levels of morbidity even with controls for chronic conditions (Shanas and Maddox, 1985; Smith and Kington, 1997). Research on gender differences in levels of morbidity also reveals that men routinely show higher rates of mortality, while women show higher levels of morbidity and use of health services (Verburrge, 1989). Verburrge (1985) attributes these differences to men suffering more from life threatening diseases that cause more permanent disability and earlier death, whereas women are frequently exposed to non-life threatening illness and disabilities that increase their morbidity levels but decrease their mortality compared to men (Verburrge, 1985). Gender was also found to be significantly related to many health aspects in old age in the Arab countries. Healthy life expectancy, prevalence of disability and perceived health status were generally lower among older women compared to their men counterparts in these countries (Andrews, 1991; Lamb, 1992) even with control for other attributes of older persons such as age, health conditions, economic status and living arrangements (Lamb, 1997 and Yount et. Al. 2001)

Marital status also exerts significant effects on morbidity, with married persons reporting fewer chronic conditions than those in other marital statuses, though they are characterized by higher levels of functional limitations and disability.

Relationship between individuals' socioeconomic attributes and health status and mortality has been extensively examined (Antonovsky 1967; Fox 1989; Williams and Collins, 1995). This literature confirms the existence of a

significant inverse gradient in health status over the entire socioeconomic status hierarchy. With the global phenomena of population aging, increasing attention has been directed to the relationship between socioeconomic status and health among older adults. Persisting socioeconomic differentials are reported in advanced ages (Guralnik et al., 1993; Kaplan et al., 1993; Victor 1991). Nevertheless, some researchers claim that these differences diminish among the oldest old in high-income societies, where government guarantees of income maintenance and health care available to older persons (65+) may mitigate the impact of health hazards in later old age (House et al, 1990; House et al, 1994). In most of these studies, education and income are the most frequently examined aspects of socioeconomic status, whether used together or separately. Existing evidence indicates that differences in health status by socioeconomic factors are mediated through factors such as lifestyle and health behaviors, health care resources and utilization, environmental and occupational exposure to hazardous materials, exposure to stressors, and differential availability of coping resources among different socioeconomic strata (Wu and Rudkin, 2000).

The impact of psychosocial risk factors on health status has also been the subject of extensive research. House et al. (1994) argue that some of the socioeconomic differentials in health are mediated through a group of psychosocial risk factors. They contend that high prevalence of psychosocial risk factors among members of the lower socioeconomic strata can explain most of the socioeconomic differentials in levels of morbidity. Furthermore, active engagement with life was considered as the third main component for successful aging, along with avoiding disability and maintenance of physical functioning (Rowe and Kahn, 1997). Active engagement with life is defined in terms of social activity and social support. Engagement in social activity is strongly associated with increased well-being, and physical function and slower decline in functional status (Everard, 1999; Zimmer et al., 1995; Unger et al., 1997). Furthermore, leisure activities, such as volunteering and participation in social and family events, are associated with better functioning and survival among older adults (Seeman et al. 1995, Berkman, 1995). There is also little doubt that health is related to social support (House et al., 1982;

House et al., 1988). Research in this area discloses that the impact of social support on the health and well being of older adults varies by the type of support provided. Emotional support has been found to positively enhance health status and reduce mortality risks among older adults. Familial interaction and exchange, particularly between adult children and their aged parents, promote the well-being and health status of the older persons. On the other hand, instrumental support has been associated with increased disability and mortality (Weinberger et al., 1990; Penninx et al, 1997).

According to the previous discussion, six main groups of correlates can be identified. The following describes these groups of correlates and summarizes their respective main hypotheses

a. Background and personal characteristics

- There is a positive relationship between age and the levels of morbidity and disability.

- Women are likely to experience higher levels of disability and morbidity than men

- There is a negative relationship between older persons' level of education and disability and morbidity levels

- Active older persons are likely to report lower levels of disability and morbidity than those who are inactive.

b. Social context measured by place of residence.

- Older persons residing in rural areas are likely to report higher levels of disability and morbidity than urban residents.

c. Older persons' social support is comprised many elements, nevertheless the most important element is their children.

- Older persons with more children are likely to report lower levels of disability and morbidity

d. Economic status, that defines older persons' ability to obtain the appropriate health care when needed, is defined in terms of the standard of living of their current residence in the current analysis.

- Economic status is negatively related to both disability and morbidity.

e. Current health status measured in terms of recent experience of diseases and levels of disability where relevant.

- Recent disease experience is positively related to morbidity.

- Higher levels of disability and physical limitations are associated with a perception of poorer health status.

g. Psychosocial factors defined in terms of older persons' psychological status and their satisfaction with their current social network.

- Depressed, lonely and unsatisfied older persons with their social relations are more likely to report higher levels of disability and morbidity

Data and Methodology

This study analyzes survey data collected in 1994 in Egypt as part of the project "Developmental Impact of Demographic Change: Global Aging" (EDIDC:GA), an international project of United Nations office in Vienna. The local collaborating institution in Egypt was the Social Research Center of the American University. The overall aim was to provide a portrait of Egypt's aging population (60+) and their contribution to the development process. The sample for the survey was drawn from three governorates (Cairo, Giza, and Menoufia), whose population together comprises almost one-quarter of the population of Egypt).

The sample was stratified sample in the three governorates. Locality, gender and age were the stratification factors. Age was classified into three main age groups 60-64, 65-69 and 70+, whereas for the locality, the sample was planned to incorporate a representation of villages, and small, medium and

large cities. To identify the sample population a quick count of the households in the selected localities was carried out and then a sample was drawn. The planned sample was 900 respondents and the fieldwork yielded 867 completed interviews with a response rate of 96%.

The United Nations Office in Vienna developed the survey questionnaire. It covered various aspects of older persons' lives and social context and included separate sections on background and demographic characteristics, domestic activities, social and cultural activities, occupation and work history, family and community activities, housing facilities, health status and disability and psychological and personal feeling.

Of particular relevance for this research, the health and disability section included a comprehensive assessment of the older person's health status. Depending on the older person's perception of their own health, it consisted of questions regarding an assessment of their current health and their health relative to other people of the same age. It also inquired about the older person's experience with twelve different health problems within the last twelve months and whether they exerted some effects on his/her activities of daily living. It further investigated physical limitations and levels of disabilities in eight activities of daily living as well as hearing and visual disability. Smoking and drinking behaviors were also examined.

Although this data set is consider the most recent set of the only two comprehensive datasets that portraits different aspects of the life of older persons in Egypt, it is slightly outdated specifically within the Egyptian context which is currently undergoing significant economic and social changes in particular economic restructuring and its consequent implications on the various facets of social life in the country. Furthermore, the limited geographical coverage of the survey (covering only three out of the 21 governorates in Egypt) can restrict the generalization of final results.

As noted above, to date there has been limited research on levels of morbidity and disability among older persons in Egypt. To this end, in the current paper,

I analyze self-perceived morbidity and disability using the EDIDC:GA 1994 survey data. Self-perceived morbidity and disability is assumed to be a good proxy for actual health status (Davies and Ware, 1981; Idler and Kasl 1991; Liang 1986).

In this paper, I use both descriptive and regression analysis in examining correlates to morbidity and disability among older Egyptians. Aspects of health, morbidity and disability among older persons in Egypt are assessed using descriptive analysis. Examination of the main correlates to levels of disability and morbidity is carried out using ordered logit regression due to the ordinal nature of the dependent variables considered. The dependent variables are perceived disability that has three ordinal values 0, 1-4, and 5 or more disabilities in Activities of Daily Living (ADL), and perceived health status that has the values "good or excellent", "fair", and "poor". Ordered logit model is defined as follows (Greene, 2000)

$$Logit \ (p_i) = \log \frac{\sum_i^c p_i}{1 - \sum_i^c p_i} = \alpha_c + \beta ' x$$

Where P_i the probability of category i and

$$\sum_i^k p_i = 1$$

k   number of categories

α_i & β coefficients to be estimated

x a vector of independent variables

The independent variables in this analysis are grouped into six main factors following earlier theoretical discussion (see Appendix a for definition and distribution of these variables). Accordingly, the regression analysis is

organized in terms of series of models, each one nested within the next. The explanatory variables in the first model are limited to the older persons' demographic and socioeconomic characteristics, with the second model introducing the social context indicators. Social network is added in the third model, and household economic status in the fourth model. Psychosocial factors enter in the fifth model, and disease experience and disability in the sixth and final model. Tests for the significance of the nested models are examined using the log likelihood ratio

$$G^2 = -2\{\log(L_1) - \log(L_2)\}$$

Where $\qquad$ log (L_i) is the log likelihood of model i

G^2 has a Chi-squared null distribution with i-j degrees of freedom where i and j are the degrees of freedom of model 1 and 2

Levels of Perceived Morbidity among older Egyptians

Older persons' perceptions of their health status and morbidity are investigated in this section with a control for gender. The underlying reasons for this control is as we alluded before gender has been found to be significantly related to many health aspects in old age in Egypt and the Arab world. Furthermore, the 1996 census also shows that gender differences among older persons are significant with regard to their socioeconomic characteristics. Although illiteracy is prevalent among older persons in general, it is more common among older women. More than 88% of older women are illiterate, whereas among older men the corresponding percentage is 61%. Additionally, similar to the experience in many developing countries, more than-one third of the older men continues to work beyond age 60, a fact that can be attributed to the limited coverage of public and private pension systems (Kinsella and Taeubar, 1992), whereas among older women, this percentage is less than 1.5% reflecting their low life-long participation in the

labor market2. Moreover, the majority of older men are currently married, whereas widowhood is the most prevalent marital status among older women in Egypt.   Furthermore, present-day older women are the cohort who experienced early marriage and high levels of fertility (Omran and Standley, 1981). Their total fertility rate mounted to more than 5 children per woman according to 1980 Egypt fertility survey (El-Zanaty et al., 2000) and their median age at marriage was less than 16 years (Gadalla, 1978), both of which can contribute to depleting their health more than their men counterparts.

Table 1 presents levels of self-perceived morbidity among older Egyptians, by gender. It reveals that almost two out of every five older persons perceive their current health status as "good" or "excellent," with men tending to report better health than women.   More than 43% of men describe their current health as "excellent" or "good", while 33% of women fall into these categories. Furthermore in comparing their current health status with other persons of their age, more than two-thirds of the older persons report their health to be the same or better than the others. The table also shows that while one-fifth of men reports better health than others of his age, while only one-tenth of women report the same.

An examination of disease experience during the preceding 12 months reveals that four diseases are most prevalent among older Egyptians: high blood pressure, heart attack, arthritis and falls. Arthritis ranks first, with almost one out of every four persons experiencing it in the reference period. High blood pressure comes next at 17%, followed by falls at 13%.

Table 2 also shows that there is no significant difference in disease experience between men and women except for these four main diseases. Women report a far higher prevalence of arthritis, high blood pressure and heart attack among women, whereas men report a higher rate of falls. Women 's apparent greater susceptibility to disease is also reflected in the

---

² The 1996 census provided an activity rate of 13.2% for women aged 25-44 compared to 96% among males in the same age group.

larger fraction who experience at least one disease during the reference
period (69%, versus 53% among men).

Table 1 Levels self perceived morbidity and experience of disease among older Egyptian by
gender.

Morbidity measures	Male	Female	Total
Self perception of health			
Excellent	6.4	2.6	4.5
Good	37.7	29.2	33.5
Fair	43.9	57.2	50.4
Poor	12.0	11.1	11.6
Health compared to others in same age			
Better	21.8	11.3	16.6
About the same	50.0	55.8	52.8
Worse	11.6	15.5	13.5
Cannot say	16.6	17.4	17.0
Disease experience			
High blood pressure*	12.3	22.4	17.2
Heart attack*	7.0	13.4	10.2
Any other heart problems	6.4	7.5	6.9
Arthritis or Rheumatism*	16.6	32.5	24.4
Stroke or paralysis	3.6	1.9	2.8
Diabetes	6.8	8.2	7.5
Cancer	0.5	0.5	0.5
Broken or fractured bones	5.0	2.8	3.9
Falls*	15.9	11.8	13.9
Lung disease such as Asthma	0.9	0.2	0.6
Burns	0.7	0.2	0.5
Tuberculosis	5.2	7.8	6.5
Foot problems	2.0	3.5	2.8
Stomach ulcer	1.8	2.4	2.1
Infectious or parasitic disease	3.6	2.8	3.2
Others	9.5	10.8	10.2
Number of diseases experienced in the past 12 months*			
0	47.0	31.3	39.3
1-3	48.4	63.5	55.9
4+	4.6	5.2	4.8
Number of disease experienced in the previous 12 months			
Average	1.02	1.32	1.17
St. dev.	1.42	1.44	1.44
Total	440	425	865

• significant at 0.001

Similarly, women exhibit an average of 1.3 diseases during the preceding
year, while their male counterparts average almost exactly one disease during
the same period.

The prevalence of disability and physical limitations are examined in Table 2. More than one-third of this sample of older Egyptians has some limitations or total disability in performing specific activities. Disability in five of the indicated activities -- traveling, preparing meals, pushing and pulling large objects, stooping and lifting five kilograms -- is experienced by almost one-half the older populations, while disability in the remaining three activities is reported by almost one-third of them. Furthermore, only one-quarter of the sample reports having no difficulty with any of these activities, with the average number of limited activities equaling 3.47 out of the list of 8 activities.

Table 2 Levels disability and physical limitation among older Egyptian by gender.

Measures	Male	Female	Total
% who have some difficulty or unable to do			
Travelling arround and shopping*	40.5	64.0	52.0
Prepare meals *	60.2	50.4	55.4
Pushing and pulling large objects *	35.9	56.5	46.0
Walking*	27.5	38.4	32.8
Stooping /crouching/kneeling*	39 5	57.6	48.4
Lifting weights (>5 kg)*	36.1	60.0	47.9
Reaching or extending arm*	25.7	43.1	34.2
Handling or fingering small objects*	21.8	39.1	30.3
Number of activities with at some difficulty in doing them*			
0	31.6	20.5	26.1
1-3	33.0	26.6	29.8
4-6	16.3	18.8	17.6
7-8	19.1	34.1	26.5
Average number of activities	2.87	4.08	3.47
St. Dev.	2.95	3.12	3.09
%Having visual problems*	36.4	42.8	39.5
%Need glasses but can not afford them*	21.4	27.8	24.5
%Having hearing problems	12.3	14.1	13.2
%Need hearing aids but can not afford them	8.2	6.6	7.4
Risk behavior			
% currently smokers*	41.1	0.7	21.3
Total	440	425	865

- significant at 0.001

Higher levels of disability and physical limitations prevail among older women as compared to their men counterparts. The only activity that is an exception to this pattern is preparation of meals. While 31% of men report no physical disability, the comparable percentage among women is 20%. Moreover, the

percentage of women who have difficulty carrying out at least seven activities out of eight amounts to 34%, while the corresponding fraction for men is 19%. In addition, women on average report total disability or some limitation in four activities, whereas the average among men is less than three.

Table 2 also reveals that although visual and hearing problem were reported by 39% and 13% of the older persons, respectively, the percentage of persons who report visual problems and need for glasses, which they cannot afford, is markedly higher among women than that among men.

Risky behaviors were captured by only one item, smoking. Table 2 shows that 20% of the older persons is current smokers. Nevertheless, smoking is more prevalent among men than women with almost 2 out of every five men are current smokers, whereas there is only one out of every hundred women who are current smokers. Moreover, men tend to smoke more intensely since more than 43% of the smokers consume more than 15 cigarettes a day.

Morbidity correlates among older Egyptian

Levels of disability

Table 3 presents the ordered logit coefficients for the six models for disability. Note first that the likelihood ratio tests comparing the successive nested equations indicate no significant effects (at the .01 level) on disability of social network and economic status (entering in models III and IV, respectively).

The coefficients in Table 3 also show that age exerts a significant impact on disability, with much higher levels among those aged 70+ and slightly higher levels among those 65-69, as compared to persons 60-64 years old.. The effect of being 65-69 diminishes in magnitude and significance level once disease experience is controlled. Being a woman also significantly increases an older person's perception of disability, an effect that persists with the addition of other variables. Table 3 also reveals the strong and significant negative relationship between activity in the domestic sphere and disability

As expected, disability is less common in urban areas. This effect becomes larger with controls for psychosocial profile and disease experience. Disability levels are lower in Menoufia, a differential that disappears with the control for psychosocial profile.

Except for having one or two sons, the size of the social network (as captured by number of living children) has no relationship to disability. Those with one or two sons have slightly lower levels of disability, as compared to those with three or more sons (an outcome not entirely consistent with the expectation of a simple positive association between number of children and disability)..

Contrary to my expectation, in models III and IV economic status is not related to disability. Nevertheless, in model V (i.e. with a control for psychosocial status) a statistically weak and positive relationship emerges. The relationship, however, is positive – those of higher economic status are more likely to be disabled – which is the opposite of what was hypothesized.

More in keeping with the research hypotheses, those older persons with a lower psychosocial profile are more likely to be disabled.. That is, depressed, lonely and person's dissatisfaction with their social network are more likely to report disability. Within this subset of variables, depression has the largest effect on disability, with a coefficient of 1.58 as compared to 0.93 for being lonely and 0.55 for being unhappy with social relationships with friends and family.

As expected, ill health significantly increases the probability that older persons' perceive disability. The effect is monotonic, with a coefficient of 0.77 for 1-2 diseases and 1.35 for 3+ diseases.

In sum, the regression analysis reveals that disability is significantly related to age, place of residence, level of activity in the domestic sphere, number of sons, psychosocial profile, and disease experience in the preceding year. Older rural women, aged seventy and older, who are less active in their domestic sphere and had some disease experience in the preceding year and who suffer from low psychological conditions (indicated by feeling lonely,

depressed and dissatisfied with their social network) are more likely to report disability conditions.

Perceived health status

Table 4 presents the ordered logit coefficients for the six models of self-perceived health. Considering first likelihood ratio tests of the successive nested models, these indicate that each block of variables adds significantly (at the .01 level) to the explanation of health status, with the exception of social context (model II vs. model I) and social network (model III vs. model II).

Table 4 reveals that many factors affect the health status of older Egyptians. The perception of poor health increases with age; an effect that diminishes in magnitude and significance once a control for disease experience is added. This indicates that disease experience is one means through which age affects self-perceived health. Women perceive themselves in poorer health, an effect that diminishes substantially with a control for psychosocial profile. Apparently the gender differential is due in part to psychosocial factors. Widowhood, although exhibiting no impact on self-perceived health through the first five models, becomes significant in the larger models (models VI and VII). Those who are uneducated are more likely to perceive themselves to have poor health, an effect that disappears with the control for household economic status in model IV. This suggests that educational differentials in health status are mainly due to the higher standards of living of the more educated, perhaps because of their greater ability to make use of medical services.

Those older persons who are more active older persons are less likely to perceive themselves in poor health. However, this effect is sensitive to the inclusion of other factors. In particular, the effect of being domestically active on perceived health status drops substantially with a control for the level of disability. Similarly, the effect of being socially and culturally active declines with controls for the psychosocial factors, disease experience and disability.

There is evidence of social context effects on health. Urban residents are less likely to report poor health. Region of residence, in contrast, shows no effect.

Considering next the indicators of social support, the number of sons is negatively associated with a perception of poor health. As expected, those with no sons and those with 1 to 2 sons are more likely to report poor health than those with 3 or more sons. Even so, the impact of having no sons diminishes in magnitude and significance with controls for the standard of living.

As expected, standard of living is negatively associated with a perception of poor health. There are a number of possible explanations for this effect, including the availability of resources required to make effective use of health services and medical facilities. This effect is large and robust to the inclusion of other explanatory variables.

The psychosocial factors play a substantial and significant role in defining older persons' health perceptions. Those who are depressed, lonely, and dissatisfied with their social network are more likely to report themselves in poor health, as hypothesized.

Finally, the intensity of recent disease experience and the number of reported disabilities are negatively associated with health status (i.e. positive effects on poor health).

One conclusion from Table 4 is that the effects of older persons' personal characteristics operate mainly through factors such as standard of living, psychosocial profile, and disease experience and levels of disability.

Discussion

In this paper, I have explored the determinants of morbidity and disability among older persons in Egypt. While less than 6% of Egypt's current population is aged 60 and older, within the next few decades Egypt is almost certain to experience an accelerated aging process, both in percentage terms and in the absolute size of the elderly population. With its continuing efforts

towards social and economic development, rapid population aging will present a significant challenge. Policies that secure the welfare of this population and those who care for them will need to be developed.

Health status, which is an unavoidable concern in old age, is the focus of this paper. The data analyzed here show that only one-fifth of older Egyptian perceive their health to be good or excellent, though when asked to compare their health to others, two-thirds respond that their health is as good or better than other persons of their age. Regarding their disease experience in the preceding year, the most prevalent diseases are high blood pressure, heart attack and arthritis. These diseases are more common among older women, whereas among older men falls are the most common experience. Furthermore, one-fourth of older persons reported no disability, and the average number of reported disabilities was 3.5 (out of a maximum of 8).

In an analysis of the correlates of disability and self-perceived health status, disability is more likely among those older in age, females, persons living in rural areas, those with lower levels of activity in the domestic sphere, those of low psychological status, and those with some experience of disease in the previous year. Self-perceived health, in turn, is significantly related to disability and disease experience, as well as psychosocial status. Through these three factors, a substantial portion of the effects of the other factors -- such as demographic and socioeconomic characteristics, social networks, and social context -- are mediated. Most of these results conform with a priori hypotheses.

The results underscore the strong association between the psychological profile of older persons and their health (both disability and self-perceived health status). Regardless of controls for other factors, a low psychological profile is persistently associated with a perception of poor health. Since throughout this analysis, I insisted on establishing no causality between the analyzed factors, this result has one main implication, namely the need for more attention of the psychosocial profile of older cohorts. In other words, although the levels of morbidity and disability of the aging population play a

key role in their well-being and welfare, their psychosocial security is also important and should not be neglected.

Finally, the study reveals segments of the population that should be priorities for expanded health services. One such segment is the rural elderly. I suspect that in rural areas insufficient geriatric health care, along with the norms and traditions in these settings, have led to poorer health among older persons, even taking account of actual disease experience. This in turn points out the need for more comprehensive health services for older persons that address their psychological needs and are sensitive to effects of cultural and social context.

Recommendation and policy implications

The previous research highlights the following major points

a) With the rapid pace aging process in Egypt, there is a significant need for more representative studies that examine the various aspects of the older persons in Egypt. These studies will set the proper scientific base for information required for planning different policies that aim at the welfare of the aged population and their family members in Egypt.

b) Health of the aged is a significant aspect of the older persons life and required more extensive studies in order to identify the main determinants of their health in their old age.

c) Gender differences in disease experience and perceived morbidity and disability call for more investigation to identify the main reasons for these differences.

d) There is a significant need to expand the geriatric health service to under privileged areas in particular rural areas.

e) The significant correlation between psychosocial factors and levels of perceived morbidity and disability pinpoints the need to provide our older population with more comprehensive care and support services that address all their needs whether health, social or economic.

References

Andrew G. 1991. World Health Organization collaborative study on social and health aspects of aging in Bahrain, Egypt, Jordan, and Tunisia, 1991

(ICPSR 6250). Ann Arbor, Michigan, Inter-university Consortium for Political and Social Research.

Antonovsky, A. 1967. "Social Class, Life Expectancy, and Overall Mortality." Milbank Memorial Quarterly, 45:31-73.

Berkman, L., Seeman, T., Albert, M., Blazer, D., Kahn, R., Mohs, R., Finch, C., Schneider, E., Colman, C., McClearn, G., Nesselroade, J., Featherman, D., Garmezy, N., McKhann, G., Brim, G., Prager, D., Rowe, J. 1995. "High, Usual, and impaired Functioningin Community-dwelling Older Menand Women: Findings from the MacArthur Foundation Research Network on Successful Aging." Journal of Clinical Epidemiology, 46:1129-40.

Central Agency for Mobilization and statistics (CAPMAS). 2001. "The Statistical Year Book." Cairo, Egypt.

Davies, A., and Ware, J. 1981. Measuring Health Perceptions in the Health Insurance Experiment. Rand Corporation, Santa Monica, CA.

El–Zanaty, F and A. Way. 2001. Egypt Demographic and Health Survey 2000. Calverton, Maryland (USA): Ministry of Health and Population (Egypt), National Population Council and ORC Macro.

Everard, K. 1999. "The Relationship Between Reasons for Activity and Older Adult Well-being." Journal of Applied Gerontology, 18:325-340.

Fox, J. 1989. Health Inequalities in European Countries. Aldershot, Gower.

Gadalla, M.S. 1978. Is There a Hope? Fertility and Famil Planning in Rural Egyptian Community. American University in Cairo Press, Cairo.

Greene, W. H. 2000. Econometric Analysis. 4th ed. Upper Saddle River, NJ: Prentice–Hall.

Guralnik, J. M., and Simonsick, E. M. 1993. "Physical Disability in Older Americans." Journal of Gerontology: 48 (Special Issue) 3-10.

Hauser, Philip M. 1953. « Facing the Implications of an Aging Population. " Social Review, 26:162-76.

House, J., Kessler, R., Herzog, R., . Mero, R., Kinney, A., and Breslow, M. 1990. "Age, Socioeconomic Status and Health." Milbank Quarterly, 68:383-411.

House, J., Landis, K., and Umberson, D. 1988. "Social Relationships and Health." Science, 241:540-45.

House, J., Lepkowski, J. Kinney, A., Mero, R. Kessler, R.,and Herzog, R. 1994. "The Social Stratification of Aging and Health." Journal of Health and Social Behavior, 35:213-34.

House, J., Robbins, C., and Metzner, H. 1982. " The Association of Social Relationships and Activities with Mortality. Prospective Evidence from the Tecumseh Community Health Study." American Journal of Epidemiology, 116: 123-140.

Kaplan, G., and Keil, J. 1993. "Socioeconomic Factors and Cardiovascular Disease: A Review of Literature." Circulation, 88: 1973-98.

Kinsella, K and C.M. Taeubar. 1992. An Aging World II. US Bureau of Census, International Population Reports, US Government Printing Office Washington, DC.

Lamb, V.L. 1992. "A Cross-national Study of Disability among the Elderly in Less Developed Countries: Implications for the Epidemiologic Transition." Durham, North Carolina, Duke University.

Lamb, V.L. 1997. "Gender differences in correlates of disablement among the elderly in Egypt." Social Science and Medicine 45:127-136

Omran, A and Standley. CC. 1981. Family Formation and Health: Further Studies. World Health Organization, Geneva.

Penninx, B. W., Van Tilburg, T., Kriegsman, D.M. , Deeg, D.J., Boeke, A.J., and Van Eijk, J.T. 1997. "Effects of Social Support and Personal Coping Resouceson Mortality in Old Age: The Longitudinal Aging Study." American Journal of Epidemiology. 145:510-19.

Rowe J. W. and Kahn R. L. 1997. "Successful Aging." The Gerontologist, 37:433-40.

Seeman, T., Berkman, L., Charpentier, P., Blazer, D., Albert, M., and Tinelli. M. 1995. "Behavioral and Psychosocial Predictors of Physical Performance: MacArthur Studies of Successful Aging." Journal of Gerontology: Medical Sciences, 50A:M177-M183.

Shanas, E., and Maddox, G. 1985. "Health Resouces and the Utilzation of Care." In Binstock and Shanas (eds) Handbook of Aging and Social Sciences, Second Edition, New York: Van Nostrand Press.

Smith, J. and Kington, R. 1995. "Race, Socioeconomic Status and Health in Later Life." Rand Labor and Population Program. Working Paper Series 95-10.

Unger, J., Johnson, C., and Marks, G. 1997. "Functional Decline in the Elderly: Evidence for Direct and Stress-buffering Protective Effects of Social Interactions and Physical Activity." Annals of Behavioral Medicine, 19:152-60.

United Nations. 1998. World Population Prospects: The 1996 Revision. Department of Economics and Social Affairs, Population Division (ST/ESA/SER.A/167). United Nations, New York, NY.

Verbrugge, Lois M. 1985. "An Update on Hypotheses and Evidence." Journal of Health and Social Behavior, 26:156-82.

Verhrugge, Lois M. 1989. "The Twain Meet: Empirical Explanations of Sex Differences in Health and Mortality." Journal of Health and Social Behavior, 30: 282-304.

Victor, C. 1991. "Continuity or Change: Inequalities in Health in Later Life." Ageing and Society, 11:23-39.

Weinberger, M., Tierney, W. M., Booher, P., and Hiner, S.L. 1990. Social Support, Stress and Functional Status in Patients with Osteoarthritis. Social Science and Medicine, 30:503-508.

Williams, D., and Collins, C. 1995. "US Socioeconomic and Racial Differences in Health: Patterns and Explanations." Annual Review of Sociology, 21: 349-86.

Wu, H. and Rudkin, L. 2000. "Social Contact, Socioeconomic Status and the Health Status of Older Malaysians." The Gerontologist, 40:228-34.

Yount, K.M., E. Agree, and C. Rebellon. n.d. Gender, health, and use of formal care among the elderly in Egypt and Tunisia (under review at Demography) paper presented at the Population Association of America Meeting, 6-9 May, Atlanta, Georgeria.

Zimmer, Z., Hickey, T., and Searle, M. S. 1995. "Activity Participation and Well-being among Older People with Arthritis." The Gerontologist 35:463-71.

Table 3 Order logit regression coefficients of the correlates to low levels of disability among older persons (DIDC:GA Egypt. 1994)

Variable	reference category	Model I		Model II		Model III		Model IV		Model V		Model VI	
age 65-69	age 60-65	0.37**	0.16	0.34**	0.16	0.35**	0.16	0.35**	0.16	0.32*	0.17	0.25	0.18
age 70 and older		1.01***	0.17	1.02***	0.17	1.03***	0.17	1.03***	0.17	1.28***	0.19	1.19***	0.19
female	male	1.48***	0.22	1.48***	0.22	1.50***	0.22	1.51***	0.22	1.43***	0.24	1.31***	0.25
widow	other marital status	0.16	0.17	0.24	0.17	0.26	0.17	0.25	0.17	0.00	0.19	0.00	0.19
uneducated	educated	0.00	0.16	-0.10	0.18	-0.11	0.18	-0.12	0.18	-0.18	0.20	-0.14	0.20
domest. active	not active domestically	-1.28***	0.16	-1.33***	0.16	-1.33***	0.16	-1.33***	0.16	-1.26***	0.17	-1.22***	0.18
soc. and cult. active	not active soc.	-0.01	0.14	-0.18***	0.14	-0.19***	0.14	-0.18***	0.14	-0.06	0.16	-0.06	0.16
urban	rural			-0.80***	0.16	-0.79***	0.16	-0.79***	0.16	-1.02***	0.18	-1.21***	0.19
Giza	Cairo			-0.18	0.23	-0.19	0.23	-0.23	0.25	0.28	0.28	0.37	0.28
Menoufia				-0.36	0.22	-0.38*	0.23	-0.41*	0.23	-0.06	0.25	-0.13	0.26
having no son	having 3+ sons					0.01	0.24	-0.01	0.25	-0.30	0.26	-0.35	0.27
having 1-2 sons						-0.27*	0.15	-0.27*	0.15	-0.26*	0.16	-0.27*	0.16
having no daughters	having 3+ daughters					0.06	0.23	0.06	0.23	0.01	0.25	0.08	0.25
having 1-2 daughters						0.16	0.15	0.16	0.15	0.23	0.16	0.22	0.16
standard of living								-0.01	0.04	0.07*	0.04	0.07**	0.04
depressed	not depressed									1.65***	0.15	1.58***	0.15
feel lonely	not lonely									1.00***	0.19	0.93***	0.19
dissatisf. w. soc. network	satisf with social network									0.47***	0.16	0.55***	0.17
illness 1-2	no illness											0.77***	0.17
illness 3												1.35***	0.27
cut1		0.02	0.16	-0.64	0.88	-0.68	0.85	-0.78	0.74	-1.07	0.88	-0.62	1.40
cut2		1.50	0.17			0.26	0.26	0.28	0.28	0.42	0.42	0.47	0.47
Loglikelihood		-845.05		-831.19		-828.57		-828.52		-701.98		-684.92	
df		7		10		14		15		18		20	

*** significan at 0.001   ** significant at 0.05   * significant at 0.1

Table 4 Order logit regression coefficients of the correlates to older persons' perception of poor health (DIDC:GA Egypt. 1994)

Variable	reference category	Model I		Model II		Model III		Model IV		Model V		Model VI		Model VII	
age 65-69	age 60-65	0.13	0.16	0.12	0.16	0.10	0.17	0.12	0.17	0.04	0.18	-0.02	0.18	-0.08	0.18
age 70 and older		0.34**	0.17	0.33***	0.17	0.32*	0.17	0.31*	0.17	0.32*	0.18	0.23	0.18	0.02	0.18
female	male	0.37*	0.21	0.40*	0.21	0.40*	0.21	0.50**	0.21	0.25	0.22	0.11	0.23	-0.13	0.23
widow	other marital status	0.07	0.17	0.13	0.17	0.09	0.17	-0.02	0.17	-0.28	0.19	-0.31*	0.19	-0.34*	0.19
uneducated	educated	0.57***	0.17	0.41**	0.18	0.40**	0.19	0.21	0.19	0.16	0.20	0.20	0.20	0.24	0.20
domest. active	not active domestically	-0.64***	0.15	-0.69***	0.15	-0.71***	0.15	-0.77***	0.15	-0.59***	0.16	-0.53***	0.16	-0.56***	0.16
soc. and cult. active	not active soc.	-0.46***	0.14	-0.54***	0.14	-0.46***	0.15	-0.34**	0.15	-0.30*	0.16	-0.28*	0.16	-0.27*	0.16
urban	rural			-0.31**	0.16	-0.38**	0.16	-0.46***	0.16	-0.63***	0.18	-0.77***	0.18	-0.29*	0.16
Giza	Cairo			-0.31**	0.16	-0.34**	0.15	-0.30*	0.16	-0.28*	0.16			-0.27*	0.17
Menoufia				0.26	0.23	0.24	0.16	-0.46***	0.18	-0.63***	0.18	-0.77***	0.18	-0.56***	0.16
having no son	having 3+ sons			-0.05	0.23	-0.06	0.23	0.02	0.26	0.28	0.28	0.26	0.10	0.19
having 1-2 sons						-0.42*	0.24	-0.07	0.24	0.25	-0.13	0.26	-0.08	0.28
having no daughters	having 3+ daughters					0.64***	0.24	0.58	0.24	0.19	0.25	0.21	0.25	0.26	0.26
having 1-2 daughters						0.37***	0.15	0.30**	0.15	0.35*	0.16	0.38**	0.16	0.45***	0.16
standard of living						-0.18	0.22	-0.25	0.22	-0.40*	0.24	-0.36	0.24	-0.34	0.24
depressed	not depressed					0.13	0.15	0.06	0.15	0.03	0.15	-0.01	0.16	0.00	0.16
feel lonely	not lonely					-0.20***		0.04	-0.15***	0.04	-0.15***	0.04	-0.17***	0.04
dissatisf. w. soc. network	satisf. with social network							0.93***	0.13	0.89***	0.13	0.61***	0.14
illness 1-2	no illness							0.62***	0.16	0.69***	0.16	0.58***	0.16
illness 3								1.11***	0.19	1.02***	0.19	0.90***	0.16
1-4 ADL disability	no ADL disability											0.60***	0.19	0.46**	0.19
5+ ADL disability												0.17	0.46**	0.17
cut1		0.25	0.17	0.12	0.27	0.30	0.28	-1.52	0.44	-1.96	0.47	-1.62	0.48	-1.04	0.69
cut2		2.94	0.20	2.83	0.29	3.05	0.31	1.31	0.44	1.32	0.47	1.70	0.48	1.01***	0.25
Loglikelihood		-794.83		-789.70		-784.13		-768.50		-687.74		-677.74		-659.97	
df		7		10		14		15		18		20		22	
cut1										0.47	-1.62	0.48	-1.04	0.76***	0.25
cut2								0.44	1.32	1.70	0.50	2.39	0.69***	0.20

*** significant at 0.001   ** significant at 0.05   * significant at 0.1

Appendix A definitions and distributions of the independent and dependent variables for the statistical analysis of levels of disability and perceived health status

Variables	Definition	Mean	Std
no ADL disability	peron has 0 disability affecting ADL activities	36.1	
1-4 ADL disability	peron has 1 -4 disability affecting ADL activities	34.6	
5+ ADL disability	peron has 5+ disability affecting ADL activities	39.3	
poor health	perception of poor current health status	11.6	
fair health	perception of fair current health status	50.4	
good health	perception of good or excellent current health status	38.1	
age 60-65	age between 60 and 65	33.7	
age 65-69	age between 65 and 69	33.1	
age 70 and older	age >=70	33.3	
female	female	49.1	
widow	widow	38.0	
uneducated	uneducated	70.8	
domest. active	continuous variable	-2.0	0.56
soc. and cult. active	continuous variable	-1.3	0.52
urban	urban residents	45.1	
Giza	Giza residents	41.5	
Menoufia	Menoufia residents	40.8	
having no son	number of sons=0	11.9	
having 1-2 sons	number of sons=1 or 2	43.2	
having no daughters	number of daughter=0	13.9	
having 1-2 daughters	number of daughters=1 or 2	47.6	
standard of living[3]	continuous variable	5.8	2.39
index of being depressed[4]	continuous variable	1.0	0.64
dissatisf. w. soc. network	peron is dissatisfied with friends and relative visits	27.8	
feel lonely	peron feels lonely often or sometimes	44.5	
illness 1-2	peron has 1-2 illnesses affecting ADL activities	47.4	
illness 3	peron has 3+ illnesses affecting ADL activities	13.3	

[1]This index is calculated as the average responses of seven items asking if the respondent provide 1) child care, 2) personal care, 3) household cleaning, 4) sewing and mending , 5) washing and ironing, 6) animal tending and 7) household shopping. Individual items in this scale were standardized and average accross all items (coefffcient alpha=0.68)

[2] This index is calculated as the average responses of ten items asking if the respondent provide 1) child entertainment, 2) talk about family and community history, 3) assistant in children's education, 4) vocational training to others, 5) emotional supportfor others, 6) discuss religious matters, 7) leads religious rituals, 8) advice matrimonial arrangements, and 9) serve as mediator or counselor. Individual items in this scale were standardized and average accross all items (coefffcient alpha=0.73)

[3]This index is calculated as the sum of possession of consumer durable good such as washing machines, fridge, televison and radio, and household facilities such as availability of fresh water, cooking space, plumbing and bathrooms

[1] This index is calculated as the average responses of six items asking 1) having trouble with sleeping, 2) sleeping is irregular, 3) worry more than usual, 4) lost interest in doing things, 5) feeling sad and depressed and 6) feeling tired all time. Individual items in this scale were standardized and average accross all items (coefficient alpha=0.71)