

# Mental Health in the Elderly and Its Predictive Factors

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## Abstract

**Background & Aim:** Estimation of mental health in elderly is an important issue in order to identify the physical and mental problems of such a critical period. The current study has been performed to address the elderly's mental health needs and then determine its predictive factors.

**Method & Materials:** This is a descriptive-analytical study with a sample size of 400 old people aged 60 years or over, chosen in a multi-stage cluster sampling from the five districts of Tehran. Instruments used for collecting data were questionnaires consisting of two parts: demographic and public health -28 GHQ. The data were analyzed via statistical tests, by using SPSS software (Ver.19).

**Results:** 65% of the elderly are in healthy condition, while 35% of them are suspected to have mental disorders. Variant tests revealed that there is a significant correlation between the elderly's mental health and their gender, education, coexistence type, job and suffering from chronic diseases ( $P < 0.001$ ). The results of the regression analysis indicated that adding one year to the age of the old people, significantly impairs their social functioning ( $P < 0.05$ ) and enhances the level of disorder up to 0.05.

**Conclusion:** With regard to the relation between the mental health and some predictive variables in this age group, it is suggested that the health-care administration pay more attention in educational programs toward the essential role of relative and predictive factors in improving the elderly's health. It would be a practical way to alleviate the prevalence and development of chronic mental and physical diseases.

**Key words:** mental health, the elderly, Tehran

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## Introduction

Mental health is considered as one of the triple dimensions of health. However, it is not a new concept; recently it has been surveyed technically (1). The World Health Organization (WHO) recognizes health as complete mental-social welfare, not only lacking disease. In fact, this concept involves complete physical and mental development as well as the abilities of a person (2). In addition to the importance of triple dimensions of health, the prevalence of contagious diseases and deaths induced by them, have caused physical health to be prioritized in most countries. The findings of previous research represents the importance of mental health is undeniable and as awareness and knowledge increase in this regard, the society may undergo less cost in different economical-curative dimensions and moreover, for the person who passes through this period with further enjoyment (3). The elderly are subject to increasing threats, generally due to retirement, loneliness, rejection, and also stress induced by industrial societies, which finally leads to the emotional and mental isolation (4). In this regard, Nejati (2009) reported in his research, which was performed on the elderly living in Qom city, that 48% of old people suffer from depression, 86% of them experience sleep disruption, 9% have disruption in social performance and 87% of the aged have disruption in physical performance (5).

The number of elderly is increasing by the day and it is predicted that their population will triple over the 50 next years. In such a situation, if the elderly have lower mental health status, and its side effects such as economic activity at a low rate (or zero) and high costs of health care imposed on society and individuals, then it can be regarded as a threat. Therefore, the promotion of elderly's mental health in addition to being a goal to improve the level of public health on one hand, would help economic stability on the other (6).

Being informed of the old people's mental health can assist to achieve their real requirements and also assist the planners to make plans in accordance with their needs (7).

The importance of the present study is out of respect to the importance of mental health issues in the elderly, and its inevitable role in the quality of their lives, as well as the growth of their population. In fact, the researchers believe that by understanding the mental health of elderly and its predictive factors, their general health of them is better provided for via the correct programs.

## Method

The present research is a descriptive-analytical research, and all the aged people living in Tehran and lacking cognitive disorders constitute the research society.

With the supposition that 50% of aged people have desired mental health, the sample size was estimated at 200, and by considering clustered sampling, this number was raised to 400 people.

The sampling was randomly performed in a multistage clustering classification method. Firstly, all of the districts in Tehran were divided into five zones (north, south, east, west, and center). Then a specific region was picked randomly from each zone and based on aged population of each region, their municipality statistics were recorded, and regarding the proportion of the elderly, the sample size was estimated in every region. After that, a health-care center was marked as head-cluster in each region. The health-care staff were taught the way of communicating with samples and also filling out the questionnaires in an educational session, and then they delivered the questionnaires to the elderly with scores more than 7 in the AMT test. The literate samples filled out the questionnaires by themselves, and questionnaires were filled out by interviewers for the illiterate. In the case that the person was not qualified to be involved in the study based on random sampling, the sampling was done for the next family.

All the information was collected by using demographic information questionnaire (including age, gender, marital status, job, dwelling, coexistence state, suffering from chronic disease and education) and GHQ-28 general health questionnaire which is a multiple test for evaluation of mental health (8). This questionnaire was designed by Goldenberg et al. (1979) and includes 28 questions and 4 micro-scales including physical signs, anxiety, social performance disorder and also depression. Different studies have proven the high reliability and validity of this questionnaire for the Iranian people (9, 10).

After scoring the questions, health classification was performed by setting a breakpoint at 23 points. Then the elderly were divided into two groups namely healthy (under 23) and suspected psychological disorders (24 and higher), in a way that higher scores indicated less psychological health (9). The participants were aware of the study's purposes, and personal satisfaction was obtained by taking part in the study. In addition, they were assured that personal information will be used only for research purposes.

Finally, the information was analyzed by SPSS software (Ver.19), and using the methods of statistical- descriptive, one-way variance analysis, independent T-test and multi-factorial linear regression.

## Results

400 old people (over 60 years) who were living in Tehran participated in this research and men comprised about 44% of the entire sample (176 samples). Most of the elderly (62%) were in a range of 60 through to 70 years old. The average age of men was  $68.61 \pm 6.71$  and it was  $66.98 \pm 8.22$  for women. From all the participants who answered the questions, 322 cases (84.3%) had health insurance, while 60 people (15%) lacked any form of health insurance coverage. 38% of participants had original insurance, 38% of them had complementary insurance, 3% of the old

**Table 1. General characteristics of participants in the current study and the average score of mental health and its subscales by separating their demographic variables**

Variant	division	Number (percent)	anxiety	depression	Disorder in social performance	Disorder in physical performance	Total mental health	
			average	average	average	average	average	p-value
Gender	Man	176 (44)	7.52	4.65	3.80	3.40	19.38	<0.001
	woman	224 (56)	8.46	6.35	4.47	4.48	23.77	
Married life	married	336 (85.3)	7.98	5.58	4.18	3.86	21.51	<0.001
	single	58 (14.7)	8.80	6.13	4.30	4.85	24.07	
Education	Illiterate	61 (15.3)	11.84	10.02	5.38	5.66	32.89	<0.001
	Just can read and write	55 (13.8)	7.44	5.54	4.88	3.68	21.54	
	Elementary	50 (12.5)	9.06	5.40	3.70	5.00	23.16	
	High school education	30 (7.5)	9	4.88	3.54	4	21.42	
	Diploma	16 (29)	6.41	4.59	3.86	3.60	18.47	
	University education	88 (22)	7.14	4.37	3.86	3.02	18.29	
Employment	Government job	18 (4.6)	5.72	3.94	3.83	2.89	16.39	<0.001
	Employer	53 (13.5)	8.02	3.81	2.81	4	18.44	
	Business	146 (37.2)	8.87	6.93	4.75	4.42	25.17	
	Housekeeper	14 (3.6)	9.08	5.92	4.77	5.62	25.38	
	Unemployed	25 (6.4)	10.16	8.64	4.72	4.16	27.68	
	Pensioner	119 (30.4)	7.61	4.57	4.29	3.42	19.89	
	Voluntary job	17 (4.3)	3.18	4.59	2.24	2.88	12.88	
Life accompanies	Alone	56 (14.3)	12.54	9.50	5.41	5.44	32.89	<0.001
	With spouse	177 (45.3)	7.06	4.76	3.70	3.72	19.24	
	With spouse and offspring	72 (18.4)	7.16	4.13	3.71	3.46	18.46	
	With single offspring	67 (17.1)	7.64	5.19	4.29	3.77	20.98	
	With married offspring	17 (4.3)	8.88	9.50	6.44	5.56	30.38	
Living location	District 2 of Tehran	66 (17.5)	9.02	6.45	3.86	3.94	23.27	0.126
	District 5 of Tehran	59 (15.6)	7.14	4.54	3.86	3.78	19.32	
	District 6 of Tehran	106 (28.1)	7.54	5.26	4.10	3.63	20.54	
	District 8 of Tehran	88 (23.3)	8.34	5.92	4.47	4.36	23.09	
	District 19 of Tehran	58 (15.3)	8.36	5.84	4.53	4.43	23.17	
Suffering from chronic diseases	Not suffering from chronic disease	316 (81.09)	6.24	3.36	4.43	2.76	15.79	<0.001
	At least suffering from one chronic disease	70 (18.1)	8.52	6.15	4.38	4.33	23.39	

**Table 2. The frequency distribution of mental health scores and its subscales in studied units**

Subscales	Average	Deviation criteria
Anxiety	8.04	4.26
Depression	5.60	4.50
Disorder in social performance	4.17	2.23
Disorder in physical performance	4.00	2.17
Total mental health	21.82	11.37

**Table 3. The relationship between mental health and its subscales with independent variables in multi-factorial linear regression in studied units**

Predicting factor	level	B	Dependent variant	Predicting factor	level	β	Dependent variant
Age	-	0.05***	disorder in social performance	businessman	housekeeper	-1.64***	disorder in social performance
Being woman	man	0.85***	disorder in physical performance	unemployment	housekeeper	1.82**	disorder in physical performance
Singleness	married	1.29***	disorder in physical performance	Receiving pension	housekeeper	2.44*** 5.79**	depression general health
Illiteracy	Diploma	2.08***	Anxiety	Living in District 2 of Tehran	District 6 of Tehran	1.11***	anxiety
		2.29***	Depression				
		1.83***	Disorder in physical performance	Living in District 8 of Tehran	District 6 of Tehran	0.67***	disorder in physical performance
		6.88***	Total mental health	Suffering from chronic disease	Not suffering from chronic disease	-1.14***	depression
						-4.01***	disorder in physical performance
-1.29***	general health						
Living lonely	Living with spouse	3.08***	Anxiety	Having Imam Khomeini Committee insurance	Original insurance	5.99***	anxiety
		3.08***	Depression			4.85***	depression
		1.19***	Disorder in social performance			3.65***	disorder social performance
						2.62**	disorder in physical performance
						17.15***	general health
Living with married offspring	Living with spouse	2.89***	Depression	Not having therapeutic insurance	Original insurance	1.40***	disorder in physical performance
		1.43***	Disorder in social performance				

\* p<0.05- \*\* p<0.01- \*\*\* p<0.001

people had self-employed insurance and about 1% of this population had Imam Khomeini commission insurance. The other general characteristics of participants and also the average score of mental health and its sub-scales are shown in Table 1, disaggregated by demographic factors. Further, the average scores of mental health can be seen in Table 2, by separating its sub-scales.

Based on the breakpoint (i.e. 23) for GHQ-28, among 377 people who answered the mental health questionnaire, 245 of them (65%) were in a healthy condition and 132 of them (35%) were suspected to have mental disorders.

After carrying out 2-variant tests, significant and independent variables were embedded into a multi-factorial linear regression model and then analyzed. The related results are presented in Table 3.

## Discussion

According to the findings of the current research, the majority of the elderly living in Tehran were in acceptable mental health. Such results are in accordance with the study of Yazdani (2010) in Tehran, the study of Barati et al. (2012) in Hamedan, and research of Nejati (2009) in Qom (5, 11 and 12). Average score of mental health in the studied elderly was less than the breakpoint which was 23 (desirable level of health) and it is not in compliance with the results of Khomarnia and Baghbanian (2013) and Pasha et al.'s research (2007) (10, 13). In the study of Khomarnia and Baghbanian (2013), which was carried out in urban and rural areas in Zahedan, the mental health was reported in a low level within two societies and the researchers categorized the reduction of elderly's health to the low quality of health services and not paying enough attention to their health, particularly in rural areas (13).

In addition, this study revealed that 35% of the studied old people are suspected of mental disorders and are not in an acceptable level of mental health. Therefore, caring about the elderly's social position and health should be a top priority. In this lifetime, it is proved that firstly helplessness feeling, then aging feeling and wasting time have a substantial role in raising physical complaints, anxiety, sleeplessness, insufficiency in social performance and also depression in this group (14). Pasha et al. (2007) have reported in their study done on the elderly of Ahwaz city that the average score of their mental health is 16 (10), and this value is less than the mean of the present study and it shows that the old people of this city have relatively better mental health.

The obtained results based on subscales of mental health indicated a high score of anxiety in the present study compared to the other similar papers (11, 15). Such differences may be due to the growth of anxiety level in Tehran, specifically in recent years. Moreover, the findings showed that the average score of social performance in this research is less than two other items of research (less social performance indicates better condition) and it represents better social performance of the elderly in Tehran, especially in recent years.

The results of this paper indicate that the score of mental health in old women, as a whole and in all subscales, is more than the old men. In other words, women have less mental health than the men (higher scores indicate lower performance).

The distinction between men and women's mental health was significant in all subscales of anxiety ( $P=0.03$ ), depression ( $P<0.001$ ), social performance ( $P=0.004$ ) and physical performance ( $P<0.001$ ), which is in compliance with the findings of Barati et al. (2012), Tanaka et al. (2011), Habibi Sola (2007) and Khomarnia and Baghbanian's research (2013) (12, 13, 16, 17). This can be attributed to the structural factors of society as well as the role and social bases of men within society. Therefore, they feel more self-sufficiency and it helps their mental health improvement. The other reason for such difference can be found in personal improvement, their capacity in communicating with others and also their ability to overcome the problems and daily pressures.

The studies have proved that the accurate meeting of needs and more safety in society for men cause them to develop better mental health. To confirm this matter, Mortazavi et al. (2012) asserted that the old women are more depressed than the old men, and this can be related to the more sensitivity of women against daily problems of life and also having more responsibilities in the family (18). According to Sheikh Al-Islami et al. (2011), women experience more loneliness compared to men, and the results of the studies showed that there is a significant relationship between loneliness feeling and mental health of the elderly (19).

The variable of gender has an increasing effect on stress, anxiety and depression of the old people, in a way that old women are depressed and anxious 1.7 times more than the old men (20). Tanaka et al. (2011) asserted in their study that there is a difference between the depression of men and women (16).

In the study of Momeni and Karimi (2010) as well as Sohrabi et al. (2008), there was a significant difference only in social performance of women and men. In this case, the men had better status than women but there was no significant difference between them in terms of depression signs, physical performance and anxiety (15, 21). By considering that both men and women live in the health centers, the author believes that the equality between the signs of depression and anxiety for both groups can be the result of stressful and anxiousness (21). The previous results of regression analysis in our research showed that gender is a predictive factor in physical performance, so that being woman increases physical performance around 0.85% and this negative relationship is statistically significant ( $P<0.001$ ).

The results of this research showed however that the average score of mental health in married adults was less than single ones (i.e. they had better mental health); this difference was not significant ( $P=0.14$ ). The mental health

had a considerable difference between two genders in the study of Barati et al. (2012) and married adults had better mental health. They categorized its reason to the loneliness and depression of singles more than the married (12). In the study of Alizadeh (2008), there was a significant relationship between marital status with anxiety and depression, and the results showed that the married elderly lived in a superior position than the single in this regard. Similarly, in the study of Heidari et al. (2013) performed in Qom, married adults had been living in a relatively higher suitable status and this was due to the loneliness and depression in single adults (23). By comparison the married variable with mental health subscales of this research, findings represented that being married had only a substantial relationship with subscales of physical performance ( $P=0.002$ ).

The results of the present research showed that education is an effective factor in the mental health of the elderly, in a way that there was a considerable difference between the score of mental health between literate and illiterate cases ( $P<0.001$ ). Moreover, there was a significant correlation between education and all subscales ( $P<0.001$ ). This issue has been confirmed in the survey of Saberian et al. (2009) and also Barati et al. (2012) (7, 12). It may be the consequence of spending free-time with more various entertainments in old age, and furthermore, having an enjoyable life among literate adults (22).

Shankar et al. (2010) found out that there is a positive relationship between education and the health of the elderly. It means that in order to achieve and interpret the information, the ability of the individuals has been promoted by virtue of creating a personal control feeling, wisdom and knowledge, and consequently it may lead to improvement in their mental health (24). The results of the regression analysis exhibited that literacy in the form of reading and writing can add 6.88 and 3.45 points to the score of mental health, respectively. It is predicted that there is a significant correlation between illiteracy and anxiety, depression, and physical performance.

There was a meaningful difference between coexistence and the mental health score in all subscales, so that the average scores of the mental health for the elderly who live alone, is higher than those people who get along with their family.

These results are in accordance with other studies such as Pasha et al. (2007), Barati et al. (2012) and Heidari et al. (2013) (10,12,23). Alamdarloo et al. (2009) concluded that loneliness has a considerable relationship with depression and performance deficiency, and confirmed that loneliness is a cognitive factor in various individuals, and also has long term effects on health (25). In the present study, the highest anxiety is related to the elderly living with their married children, while the lowest anxiety is attributed to the elderly living with their spouse.

According to the results of regression analysis (Table 3), it is predicted that if the elderly who are living with their spouse become alone, their general health score can increase

up to 8.54 numbers (higher score means lower mental health). This effect is statistically significant ( $P<0.001$ ) and is extended among other subscales such as depression, anxiety and disruption in social performance ( $P<0.01$ ). The studies have showed that men mainly consider their wives as a source of support. The results of the current study indicate that the elderly who are living with their spouse or single offspring, are in a desired mental health. This may be due to the influence of living together which enables them to overcome their disability as well as mental and physical dysfunction, in a better way.

This survey has shown that there is a meaningful relationship between the scores of mental health and job. Furthermore, it is pointed out in the present survey that the old people who are independent economically, have relatively better mental health.

These results are in agreement with the research of Barati et al. (2012), Heidari et al. (2013) and Aihara et al. (2011) (12,23,26). Heidari et al. (2013) asserted in their study that being in a suitable economical position and having enough money are essential factors in order to have a quality life, not only for covering the fundamental needs of life but also as a key factor for taking part in social activities and enjoying from entertainments and holidays.

The elderly with relatively low economic conditions suffer from more chronic diseases and their side-effects, and this may affect physical and social performance (23). In this regard, the present study indicated that the elderly with a volunteer job, are in the best condition of mental health among other working groups. Moreover, the average of mental health score was in a desirable level among the self-employed elderly as well as those with governmental jobs or even pensions. However, this score was at an undesirable level among the old ones who were unemployed or housekeeper.

Regarding the regression analysis (Table 3), volunteer opportunity for the elderly is a predictive factor in reduction of anxiety ( $P<0.001$ ) up to 3.37 scores. Based on the results, if an old person with a housekeeping job follows a business, her social performance would be promoted significantly ( $P<0.001$ ) by 1.64. Also regarding the results of this study, it is determined that there is a meaningful relationship between the scores of mental health (and all its subscales) with suffering from chronic disease ( $P<0.001$ ). This conclusion is in agreement with the studies of Alizadeh (2008) and Mortazavi et al. (2012) (18, 22). The findings of multi-factorial regression revealed that suffering from chronic disease can raise the mental health about 4.01 scores and therefore it makes mental health weaker.

Disease can disrupt health. In higher ages, disability would become clearer and show itself with reduction of physical activity and also limitations in movements. There are more possibilities to suffer from chronic disease, and they can decline the health level and increase depression and anxiety (27). Regression test exhibited that the lack of suffering from chronic disease is a predictive factor for depression ( $P<0.001$ ), physical performance ( $P<0.001$ )

physical performance ( $P<0.001$ ) and general health ( $P<0.001$ ) in the elderly.

Other interpretations from this study indicate that there is a significant correlation between the age of the elderly with social performance ( $P<0.05$ ), in a way that as an old person gets one year older, disruption in social performance increases 0.05 score. The housing situation is also able to be a predictor of mental health in elderly people, in such a way that if an old person who lives in their own house, lives with relatives or children, their mental health would increase by 14.57 and 16.2, respectively and as a result the old person would have weaker mental health. In this case, the anxiety level would significantly increase 7.82 and 8.05 scores in the two above conditions, respectively ( $P<0.001$ ) and disruption in social performance would enhance 2.90 and 2.57 scores in a meaningful way ( $P<0.01$ ). The results showed that living in the house of offspring significantly increases depression by about 6.25 scores ( $P<0.001$ ). Based on such results it can be claimed that nowadays, living in the house of children or relatives, would be a predictor of weaker mental health in the elderly by considering the negative effect on anxiety, depression and their social performance.

The other results of regression analysis represented that moving into a new place could not be a predictive factor in the general mental health of the elderly. In some cases only changing the place of living in Tehran had a relationship with the subscales of mental health so that living in district 2 increased significantly the anxiety about 1.11 compared to the base district of 6 ( $P<0.05$ ). Another statistically significant difference ( $P<0.001$ ) raising about 0.67 score in disorder of physical performance within district 8, compared to the base district (district 6).

Another outcome of regression analysis suggested that lack of any therapeutic insurance significantly increases disorder in physical performance ( $P<0.001$ ). It was predicted that mental health would increase 17.15 scores for the elderly with Imam Khomeini Committee insurance and consequently, their mental health would be in an undesirable condition ( $P<0.001$ ). Having Imam Khomeini Committee insurance had a considerable relationship ( $P<0.05$ ) with increasing in anxiety, depression and physical and social dysfunction. These results indicate that the elderly with Imam Khomeini Committee insurance are not in suitable mental health.

This study has some limitations. The mental and physical health of the elderly affected their answering the questions in filling out the questionnaire, and this matter could not be controlled. In addition, some old people being illiterate (about 15%) caused a delay in filling out the questionnaire by the examiner.

According to the results of the present study, 35% of the aged people in Tehran are not in a desired condition in terms of mental health, so it is highly recommended to care more about the social and health condition of the elderly in this city. Furthermore, based on the relationship between mental health and some predictive factors in aged

people it is suggested that the essential role of relative and predictive factors in educational programs to be considered in health planning and management, in order to decrease the prevalence and growth of chronic physical and mental diseases.

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