THE INJECTOR

DOI: 10.5281/zenodo.8414010
The Injector 2023;2(3):203-215

Original Article

Investigation of factors related to anxiety and depression levels in elderly Syrian migrants: A survey study

Muhammed Atak[1], Mehmet Akif Sezerol[2], Mehmet Sait Değer[3]

[1]İstanbul University İstanbul Faculty of Medicine, Department of Public Health, İstanbul, Turkey
[2]İstanbul Medipol University Institute of Health Sciences, Epidemiology Program, İstanbul, Turkey
[3]Hitit University Faculty of Medicine, Department of Public Health, Çorum, Turkey

Abstract

Objective: The world's migrant population is nearing 300 million, leading to a growing migrant elderly population. Mental health problems affect the well-being and quality of life of migrant elders, resulting in serious costs globally. This study aimed to examine anxiety and depression levels and related factors in elderly Syrian immigrants.

Methods: This is a cross-sectional study. It included Syrian immigrants over the age of 65 years residing in Sultanbeyli, a district of Istanbul. The research was conducted face-to-face with elderly immigrants visited at home between January and July 2023. The participants completed a questionnaire consisting of sociodemographic characteristics, health and disease status, Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI). The questionnaire was administered face-to-face by a team consisting of psychologists, social workers, nurses and Arabic interpreters.

Results: The mean age of the participants was 70.74±4.96 years. Of the participants,47.4% were female, 17.9% were 75 years of age or older, 80.7% had a primary school education or less, 64.1% were married, 51.3% had low income levels, and 47.4% lived in the same house with five or more people. In the study group, 76.2% were above normal weight (BMI≥25), 84.6% had chronic diseases (hypertension, diabetes mellitus, coronary artery disease, urologic problems), 39.7% had gait and balance disorders, and 56.4% had regular medication use. The median value of the BDI was 7 (min:0, max:31), and the mean±SD values of the BDI were 12.0±6.03. Anxiety and depression were found to be associated with sex, education level, BMI, gait-balance disorder, history of falls, chronic disease and polypharmacy ($p<0.05$).

Conclusion: While 10.4% of the participants had a moderate or high risk of anxiety, 20.5% had moderate or severe depression. Sociodemographic characteristics and health problems, which increase in frequency with age, affect the mental health of immigrants. For effective mental health interventions for immigrant elders, it would be useful to conduct field studies with wider participation.

Keywords: Anxiety, Beck Anxiety Inventory, Beck Depression Inventory, depression, elderly, immigrant.

Address for correspondence: Muhammed Atak, İstanbul University İstanbul Faculty of Medicine, Topkapı, 34093, İstanbul, Turkey..
Phone: +90 554 237 19 67 **E-mail:** muhammed.atak@istanbul.edu.tr **ORCID:** 0000-0002-8545-3660
Received: 11 September 2023 **Revised:** 24 September 2023 **Accepted:** 28 September 2023 **Published:** 7 October 2023

INTRODUCTION

More than 970 million people around the world maintain their lives with mental health problems (1), which are an important cause of morbidity and mortality. The most common mental health problems in society are anxiety and depression. Their prevalence around the world is estimated to be approximately 9-10% (2). According to World Health Organization (WHO) data, anxiety and depression are important global public health problems affecting more than 264 million and 320 million people, respectively (1-3).

Developments in health and socioeconomic fields extend life expectancy at birth. Accordingly, the elderly population is increasing daily (4). In old age, there is a loss of physical and cognitive functions and a decline in social and cognitive skills. This increases the incidence of a number of health problems in old age (5,6). Anxiety and depression rates are increasing with the effect of aging and population growth. In 2015, anxiety increased by 14.9% and depression by 18.4% compared to 2005 (2). Factors such as good health, family ties, number of close friends and presence of emotional support are associated with depression in old age (7). Ethnicity, age, sex, socioeconomic status, culture and migration affect the emergence of mental health problems in the elderly (8).

According to the International Organization for Migration (IOM) 2020 report, there are estimated to be more than 272 million migrants around the world. Approximately 1/3 of these are in the status of forced migrants (refugees, asylum seekers, internally displaced) (9). Approximately 3.5 million Syrian immigrants live in Turkey. A total of 2.1% of Syrian immigrants are in the 65 age group (10). In Turkey, Syrian immigrants are provided with nutrition, shelter, health, security and education services through public and nongovernmental organizations (11,12).

Forced migration and displacement negatively affect the physical and mental well-being of individuals. Older immigrants are more vulnerable to mental health problems due to other age-related risk factors (13). In the process from the beginning of migration to integration in the target country, immigrants are more exposed to various difficulties and challenges. This increases the incidence of various mental problems, especially anxiety and depression, in immigrants (14-16). Various studies have shown that the prevalence of depression in immigrants varies between 13.7-71.0% and the prevalence of anxiety between 5.0-68.0%(17-19). Factors such as difficulty in assessment, economic, social and language problems and difficulty in seeking help make it difficult to identify mental problems in migrant elders (20-22).

The social relationship network before and after migration, cultural factors and economic status affect the severity of anxiety and depression experienced by immigrant elders (23,24). Increased levels of anxiety and depression lead to worsening of immigrants' general health levels and quality of life, as well as a decrease in their ability to meet their health and psychosocial needs (25,26). Therefore, it is necessary and important to identify the mental health problems faced by elderly immigrants and the factors associated with them to implement psychosocial interventions that can protect and improve the mental health of elderly immigrants. We conduct our study to examine anxiety and depression levels and related factors in elderly immigrants.

MATERIALS AND METHODS

Ethics committee approval

Ethics committee approval was obtained from the İstanbul Medipol University Non-Interventional Clinical Research Ethics Committee on 11.24.2022 with decision number 991. The study participants were asked to participate after being informed about the research and getting necessary permissions. We conducted the study in accordance with the Declaration of Helsinki principles, and obtained informed consent from all participants.

Study population

This is a cross-sectional study. Its population consisted of Syrian immigrants over the age of 65 years residing in Sultanbeyli district of İstanbul. The total population of Sultanbeyli is 358,201, with approximately 6% consisting of Syrian immigrants. It is estimated that there are approximately 500 Syrian immigrants aged over 65 years in Sultanbeyli, which is the district with the lowest socioeconomic level in İstanbul.

To live in Turkey and benefit from health and social services, Syrian immigrants must be registered in the region where they reside. Teams consisting of nurses, psychologists, social workers, and interpreters made visits to

assess the general health status and living conditions of Syrian immigrant elders in their homes. Those who were registered in the district were first contacted by phone, and then visited at home. Afterwards, a face-to-face questionnaire was administered at the registered addresses, and some measurements were made. The measurements and survey were conducted by trained nurses, social workers and psychologists, and accompanied by an interpreter. The research was conducted between January and July 2023. The flow chart for the inclusion of the study group in the study is shown in Figure 1.

Within the scope of the research, home visits were made to 153 households. However, bedridden and cognitively impaired participants were not suitable for face-to-face administration of anxiety and depression scales. As a result, the mental health level of some participants could not be determined, and they were excluded from the study (Figure 1).

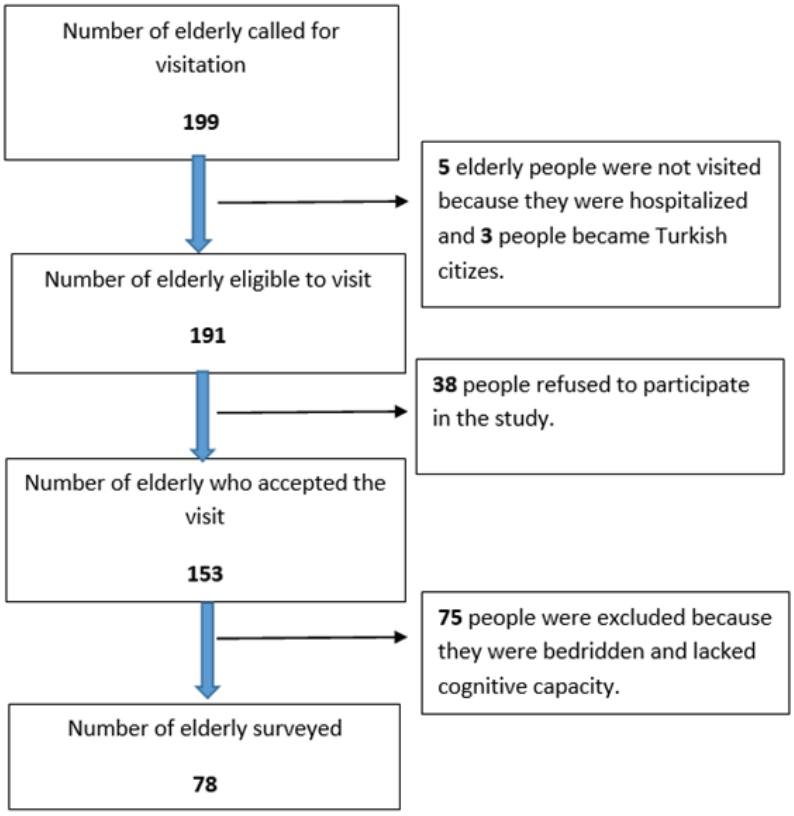

Figure 1. The process of inclusion of the participants in the study

Measurement Tools

For the study, a questionnaire, consisting of three sections, was prepared based on the literature. The first part of the questionnaire included statements evaluating sociodemographic characteristics, health and disease conditions related to old age. The Arabic version of the Beck Anxiety Inventory was included in the second section, and the Arabic version of the Beck Depression Inventory was included in the third section. The questionnaire was administered through face-to-face interviews with immigrant elders.

Beck Depression Inventory (BDI)

The scale was developed to measure the symptoms and level of physical, mental and emotional depression. It is 4-point Likert type and consists of 21 items in total. The options are scored between 0 and 3, and the scores that can be obtained from the scale vary from 0 to 63. The scale is a subjective assessment of how the individual has felt in the last week. Scores obtained from the scale indicate that there are no symptoms of depression between 0 and 9 points, mild depression between 10 and 16 points, moderate depression between 17 and 29 points, and high depression between 30 and 63 points (27-29).

Beck Anxiety Inventory (BAI)

This scale allows subjective assessment in terms of anxiety symptoms (restlessness, fear, feeling of distress, trembling, sweating). It evaluates how the individual has felt in the last week in terms of anxiety. The Beck Anxiety Inventory is a 4-point Likert scale (none, 0; mild, 1; moderate, 2; severe, 3) and consists of 21 questions. A score between 0 and 63 is obtained from the scale. The anxiety level increases as the score increases. Scores obtained from the scale were evaluated under four groups in terms of anxiety: 0-10 points were considered no risk, 11-19 points were considered low risk, 20-30 points were considered moderate risk, and 31 points and above were considered high risk (30).

Statistical analysis

Statistical Package for the Social Sciences (SPSS) software version 26.0 was used for statistical analysis. The Beck Anxiety Inventory and Beck Depression Inventory were accepted as dependent variables for statistical analysis. Sociodemographic characteristics and age-related health and disease conditions of immigrants were considered independent variables. Continuous variables were expressed as mean±standard deviation (SD) and median (min–max). Categorical variables are expressed as numbers and percentages (%). Kolmogorov–Smirnov and Shapiro–Wilk tests were performed for normality analysis of the data, and skewness and kurtosis values of the scales with $p<0.05$ were analyzed. The values with skewness and kurtosis values in the range of±2 were considered normally distributed, and parametric tests were applied. Nonparametric tests were used for values not falling within the range of±2. Chi-square and Fisher's exact tests were used to compare categorical variables between groups. Student's t test and one-way ANOVA were used for statistical analysis of normally distributed data, and the Mann–Whitney U test and Kruskal–Wallis test were used for analysis of nonnormally distributed data. Post hoc analyses were conducted. Correlation (Spearman) analysis was used for the correlation between continuous variables. Logistic regression analysis was conducted to predict the level of anxiety and depression based on the independent variables. Model fits were evaluated, and the variables that contributed significantly to the model were examined. In statistical analyses, $p<0.05$ was considered significant.

RESULTS

Seventy-eight Syrian immigrants participated in the study. The mean age of the participants was 70.74±4.96 years. In the study group, 82.1% were aged between 65 and 74 years, 47.4% were female, 64.1% were married, 80.7% had a primary school education or less, 51.3% had low income, and 47.4% lived in the same house with five or more people. The sociodemographic characteristics of the participants are shown in Table 1.

In the study group, 78.2% of the participants were above normal weight, 84.6% had chronic diseases, 71.8% had hypertension (HT), 25.6% had diabetes mellitus (DM), 6.4% had neurological problems, 39.7% had gait-balance disorders, 28.2% had a history of falls and 43.6% had polypharmacy. Table 2 shows data on the health and disease status of the participants.

The mean±SD value of the BDI score was 12.0±6.03, and the median and min–max values of the BAI score were 7 (0-31). While 35.9% (28) of the participants had no symptoms of depression, 43.6% (34) had mild depression, 65.4% (51) had no risk of anxiety, and 24.4% (19) had low risk. Table 3 shows data on the depression and anxiety scores of the study group.

In the study group, females scored significantly higher than males, those who were overweight scored higher than obese, those with gait-balance disorders and a history of falls scored higher than those without, those with chronic diseases scored higher than those without, and those with polypharmacy status scored higher than those without. Those with less than a primary school education had significantly higher scores than those with more than a primary school education, those with balance disorders had significantly higher scores than those without, and those with chronic diseases had significantly higher scores than those without. Table 4 shows one-way comparisons of BAI and BDI scores with various factors.

A logistic regression model was created to evaluate the effect of independent variables on anxiety and depression. In the model, an education level of primary school and below (OR:6.253; 95% CI:1.352-28.909; p=0.019), gait-balance problems (OR:5.456; 95% CI:1.445-20.595; p=0.012) and the presence of chronic disease (OR:1.755; 95% CI: 11.038-66.803; p=0.009) made significant contributions to the model. Table 5 shows the results of the multivariate analysis of independent variables and anxiety and depression.

Table 1. Sociodemographic characteristics of the participants

Age (Mean±SD)	**70.74±4.96**	
	n	%
Age group		
65-74 Years	64	82.1
≥ 75 Years	14	17.9
Sex		
Female	37	47.4
Male	41	52.6
Education level		
Below primary school	31	39.7
Primary school	32	41.0
Secondary school and above	15	19.2
Marital status		
Married	50	64.1
Widow	28	35.9
Employment status		
Yes	4	5.1
No	71	94.9
Income status		
Low (Below minimum wage)	40	51.3
Moderate (Minimum wage-poverty line)	36	44.9
High (Above poverty line)	2	3.8
Household size (Mean±SD)	4.76±2.66	
1-2 people	21	26.9
3-4 people	20	25.6
5-6 people	17	21.8
7 or more people	20	25.6

Table 2. Health and disease characteristics of the immigrant elderly

BMI (Mean±SD)	29.72 ±5.52	
	N	**%**
Underweight (≤18.5)	1	1.3
Normal Weight (>18.5-24.9)	16	20.5
Overweight (≥25-29.9)	25	32.1
Obese (≥30)	36	46.1
Hypertension		
Yes	56	71.8
No	22	28.8
Diabetes Mellitus		
Yes	20	25.6
No	58	74.4
Neurological problem		
Yes	5	6.4
No	73	93.6
Gait and balance disorder		
Yes	31	39.7
No	47	60.3
History of fall in the last year		
Yes	22	28.2
No	56	71.8
Chronic disease status		
Yes	66	84.6
No	12	15.4
Specific chronic diseases		
Hypertension	51	65.4
Diabetes mellitus	34	43.5
Coronary artery disease	21	26.9
Urological problem	11	14.1
Herniated disc	6	7.6
Asthma-bronchitis	6	7.6
Regular medication use (Min:1 Max:14)	**Mean±SD: 3.68±3.11**	
Less than four medications (no polypharmacy)	44	56.4
Four or more medications (polypharmacy)	34	43.6

Abbreviation: BMI: Body Mass Index

Table 3. The participants' Beck depression inventory and Beck anxiety inventory scores

Beck Depression Inventory-BDI (Mean±SD)	**12.0 ±6.03**	
	N	**%**
No symptoms of depression (0-9 points)	28	35.9
Mild to severe depression (10-16 points)	34	43.6
Moderately severe depression (17-29 points)	15	19.2
Very severe depression (30-63 points)	1	1.3
Beck Anxiety Inventory–BAI (Median Min–Max)	**7 (0-31)**	
No risk (0-10 points)	51	65.4
Low risk (11-19 points)	19	24.4
Medium risk (20-30 points)	7	9.1
High risk (31-63 points)	1	1.3

Table 4. The participants' sociodemographic characteristics and health-disease status in comparison with BDI and BAI

Features			**BAI**	**Test Statistic**	**p**	**BDI**	**Test Statistic**	**p**
Sex	**n**	**%**	**Rank Mean**			**Mean±SD**		
Female	37	47.4	45.80	U=525.5	**0.019**	12.86±4.59	t=1.429	0.157
Male	41	52.6	33.82			10.93±7.21		
Age								
65-74 years	64	82.1	40.66	U=373.5	0.331	12.14±6.21	t=0.939	0.359
≥75 years	14	17.9	34.18			10.50±5.85		
Education level								
Below primary school[1]	31	39.7	46.65	X^2=5.699	0.058	12.94 ±4.73	F=2.684	**0.027** [1-3]
Primary school[2]	32	41.0	36.48			12.28 ±6.92		
Secondary school and above[3]	15	19.3	31.17			8.67 ±6.32		
Marital status								
Married	50	64.1	36.99	U=574.5	0.190	11.36±6.59	t=-0.994	0.324
Not married	28	35.9	43.98			12.71±5.25		
Income status								
Low	40	51.3	41.42	X^2=2.129	0.546	12.70 ±6.41	F=1.242	0.295
Middle	36	44.9	36.63			10.51 ±5.65		
High	2	3.8	38.50			12.50 ±2.12		

Number of people in household								
1-2 Person[1]	21	26.9	37.14	$X^{2=}$1.469	0.690	12.05±5.20	F=0.722	0.542
3-4 People[2]	20	25.6	39.10			10.70±7.37		
5-6 People[3]	17	21.8	45.21			13.06±5.86		
≥7 People[4]	20	25.6	37.52			12.80±6.09		
BMI								
Weak-normal[1]	17	21.8	35.21	$X^{2=}$8.126	**0.017**	10.35±5.59	F=1.555	0.218
Overweight[2]	25	32.1	31.28		2-3	11.00±7.84		
Obese[3]	36	46.1	47.24			13.85±4.83		
HT status								
Yes	56	71.8	42.18	U=466	0.095	12.21±6.54	t=0.945	0.349
No	22	28.2	32.68			10.91±5.01		
DM status								
Yes	20	25.6	40.27	U=1.565	0.457	11.90±4.38	t=0.150	0.881
No	58	74.4	38.75			11.70±6.67		
Neurological problem								
Yes	5	6.4	51.50	U=122.5	0.229	15.60±3.50	t=2.319	0.060
No	73	93.6	38.68			11.59±6.22		
Balance disorder								
Yes	31	39.7	46.23	U=520	**0.033**	14.03±5.92	t=2.647	**0.010**
No	47	60.3	35.06			10.40±5.92		
Fall story								
Yes	22	29.1	47.82	U=433	**0.042**	13.09±6.39	t=1.094	0.281
No	56	70.9	36.23			11.06±6.03		
Chronic disease								
Yes	66	84.6	42.83	U=176.5	**0.002**	12.76±6.03	t=4.186	**<0.001**
No	12	15.4	21.21			6.83±4.17		
Polypharmacy								
Yes (≥ 4)	44	56.4	32.56	U=1053.5	**0.002**	11.02±6.48	t=-1.378	0.172
No (< 4)	34	43.6	48.49			12.91±5.60		

Abbreviations: t: Student's t test. F: One-way ANOVA. U: Mann–Whitney U. $X^{2:}$ Kruskal–Wallis. BAI: Beck Anxiety Inventory. BDI: Beck Depression Inventory. p: Significance level.

Table 5. Logistic regression analysis of variables associated with anxiety and depression status

		BAI			BDI		
		O.R	**%95 CI**	**P**	**O.R**	**%95 CI**	**P**
Education Level	Middle School & Above						
	Primary School & Below	1.524	0.340-6.840	0.582	6.253	1.352-28.909	0.019
Walking-Balance Issue	No						
	Yes	2.497	0.902-6.913	0.078	5.456	1.445-20.595	0.012
Chronic Illness	No						
	Yes	7.472	0.844-66.157	0.071		1.824-66.803	0.009
Constant		0.058		0.035	0.050		0.018

Abbreviations: O.R: Odds Ratio. 95% CI: Confidence interval. p: Significance level

DISCUSSION

The mean age of the participants was 70.74 years. Of those in the study group, 82.1% were between the ages of 65 and 74 years, 47.4% were female, 64.1% were married, 80.7% had a primary school education or less, 51.3% had low income, and 47.4% lived in the same house with five or more people. In Turkey, Syrian immigrants have been provided with the "Open Door Policy" in terms of nutrition, shelter, health, security and education services. Nevertheless, the integration of older and less educated immigrants in both work and social life has been negatively affected due to language barriers (31).The inability to find a job may lead older immigrants to live their lives largely dependent on others. This may lead to low-income levels of those in the study group and their living in crowded family environments.

Of the participants in the study group, 78.2% were above normal weight (BMI≥25). In addition, 84.6% had chronic diseases, 71.8% had HT, 25.6% had DM, 6.4% had neurological problems, 39.7% had gait-balance disorders, 28.2% had a history of falls, and 43.6% had polypharmacy. Chronic diseases such as HT (5.4%), DM (43.5%), CAD (26.9%), urological problems (14.1%), herniated disc (7.6%) and asthma-bronchitis (7.6%) were the most common diseases in the study group. The decrease in physical and cognitive capacity and functions with aging increases the incidence of chronic diseases. In the presence of chronic diseases, the use of medication increases to maintain a smooth daily life. In our study group, the mean±SD value of daily medication use of the immigrant elderly was 3.68±3.11, which is high for this age group. Polypharmacy may lead to undesirable side effects; therefore, rational drug use for effective treatment of diseases and quality of life in the elderly is a crucial consideration that should not be ignored (32). Factors such as migration and related living conditions, stress, and the environment in which they live can be predisposing factors for chronic diseases (HT, DM, obesity, metabolic syndrome, etc.) that may occur in immigrants (33). Poor physical health, limited access to health services and inadequate social support trigger higher anxiety and depression levels in elderly immigrants (22).

The mean±SD value of the BDI score was 12.0±6.03, and the median and min–max values of the BAI score were 7 (0-31). While 35.9% of the participants had no symptoms of depression, 43.6% had mild depression, 65.4% had no risk of anxiety and 24.4% had low risk. The anxiety and depression levels of the study group were lower than those in other studies. Socioculturally, Syrian elders live with their children or close relatives. The people they live with take responsibility for their basic needs including shelter and nutrition, and create a natural social space for them. Social communication within the family prevents elderly individuals from experiencing loneliness. In addition, residing at a distance where they can communicate and interact with each other in the community and maintain this social relationship network may have contributed to the lower incidence of mental problems among

immigrants. Furthermore, the social support programs of public and nongovernmental organizations in Turkey for immigrants may have an impact on this. In previous studies conducted, anxiety (6-44%) and depression (3-72%) levels of immigrants were found to be higher than those of residents (15,34-36). In addition, economic and psychosocial factors affected the health status of immigrants (34). A study conducted in Turkey showed that the traumatic events, family relationships, and economic status of Syrian immigrant elderly people during or after the migration process affected their mental and physical health (37). In another study conducted with Syrian immigrants in Turkey, anxiety and depression levels were found to be 39.6% and 41.1%, respectively (38). These results are higher than those of our study. A meta-analysis showed that the prevalence of depression was between 26.4% and 60% and that female gender, being unmarried and low social support were associated with depression (39).

In the study group, the BAI scores of female participants with a BMI≥25, gait-balance disorder, and a history of falls, chronic disease and polypharmacy were found to be significantly higher. Participants with an education level below primary school, gait-balance disorder and chronic disease had significantly higher BDI scores. Physical and mental health problems, traumatic events, and chronic diseases may increase anxiety and depression levels. Immigrant women may be more susceptible to mental health problems because they are more fragile both physically and psychologically. BMI≥25, gait-balance problems and falls can lead to mobility limitations, limiting immigrants' living spaces and reducing their social communication networks. This may negatively affect the physical, mental and social well-being of immigrant elders. Our study yielded similar results for the study group. Studies have shown that anxiety and depression are associated with sex, age, education, employment, and marital status (40,41). In a meta-analysis study, the prevalence of depression was lower in immigrants who had a good level of education, were employed, and had a longer period of residence in the country of immigration (16). Other studies have shown that the prevalence of anxiety and depression in immigrants is associated with negative social interactions (exclusion, crowded living environment, fear of deportation), lack of psychosocial support and economic conditions (24,42). In another meta-analysis, anxiety and depression rates were higher in elderly immigrants than in the society to which they migrated. In addition, anxiety and depression were associated with various sociocultural factors, such as social isolation, lack of social support, and language problems (13). Implementation of policies that can ensure easy access of immigrants to psychosocial support services is important in combating mental health problems such as anxiety and depression (20).

The low mobility of the elderly limits their contact with the external environment. In addition, language problems, income level, and insufficient social opportunities hinder immigrant elders' relations with the society and cause them to lead a more isolated life. This negatively affects the health perception, quality of life and mental health of immigrant elders. Our study showed that low education level, gait-balance problems and the presence of chronic diseases increased the likelihood of developing depression. Individuals with higher education levels are more capable of establishing and maintaining social relationships. Immigrant elderly people with gait-balance problems and chronic diseases have relatively lower mobilization capacities and are able to communicate with fewer people because they have to live in a limited space. A narrow living space and contact/communication with a limited number of people may have caused immigrant elders to experience loneliness and be susceptible to depression. Studies with immigrants have shown that living spaces and social and economic conditions are related to health perceptions and mental health (43,44).

Poor living conditions, exposure to discrimination and difficulty accessing mental health services negatively affect the mental health of immigrants (45). In a study conducted with Somali immigrant elders in Finland, participants had higher levels of anxiety and depression and lower levels of health status, functional capacity, and subjective quality of life (24). Implementing psychosocial interventions appropriate to the sociocultural structure of immigrants can be beneficial for protecting their mental health (46). In this sense, digital health applications aimed at protecting and improving the mental health of immigrants may be beneficial, as they can facilitate access to health services and prevent stigmatization (47).

Strengths and limitations:

Turkey is one of the countries accepting the largest number of immigrants in the world. Therefore, studies on immigrants in Turkey can make important contributions to the literature. In addition, immigrant women, children, and the elderly constitute the most disadvantaged groups. We conducted our study face-to-face in the home

environments of immigrant elders in a district with a high number of immigrants. This study, conducted with real-time measurements in the environments of the participants, consisting a group that is difficult to reach, fills an important gap in the literature. The inability to reach the unregistered immigrant population can be considered a limitation of our research. Nevertheless, some immigrants refused to participate in the study, and some of the immigrant elders reached were found unsuitable for inclusion in the study. Consequently, the number of participants was limited, which requires caution in terms of generalizability.

CONCLUSION

The majority ofthe participants (79.4%) had mild or no depression, and 89.8% had no or low anxiety risk. Anxiety was associated with sex, BMI≥25, gait-balance disorder, history of falls, chronic disease, and polypharmacy. Depression was found to be associated with educational level, balance disorder, and chronic disease. Multicenter and multiparticipant field studies are needed to identify the risk factors associated with anxiety and depression in elderly immigrants in Turkey and to plan appropriate interventions.

Mental health problems increase with age, and their individual and social costs reach serious levels. Mental health studies for elderly immigrants are important public health issues that should be prioritized. The design and implementation of effective and comprehensive mental health interventions are important for the protection of the mental health of elderly immigrants, particularly in low-income countries. Conducting periodic mental health screenings for immigrants in Sultanbeyli district and developing and implementing intervention programs for all target groups in the district canbe beneficial for improving the health status of immigrants. In addition, planning mental health interventions for immigrants based on their health literacy levels and sociocultural characteristics may contribute to the immigrants' utilization of mental health services and the success of the intervention.

Conflict of interest: The authors declare no conflicts of interest.
Ethics committee approval: Prior to the research, ethical approval was obtained from the Ethics Committee of Istanbul Medipol University on November 24, 2022, under protocol number 991. All individuals involved in the study were comprehensively informed about the research aims and procedures, and then were invited to participate. We conducted our research in full accordance with the Declaration of Helsinki, and we obtained informed consent from every participant.
Financial disclosure: This research received no external funding.
Peer review: Externally peer reviewed.
Authorship contributions: Concept; M.A.S., M.S.D. and M.A -Design; M.A.S., M.S.D. and M.A -Supervision; M.A.S. and M.A - Funding; None -Materials; M.A.S -Data collection &/or processing; M.A.S., M.S.D. and M.A - Analysis and/or interpretation; M.A.S., M.S.D. and M.A - Literature review; M.A.S., M.S.D. and M.A - Writing; M.A.S., M.S.D. and M.A - Critical review; M.A.S., M.S.D. and M.A.

References

1. Moitra M, Owens S, Hailemariam M, Wilson KS, Mensa-Kwao A, Gonese G, et al. Global Mental Health: Where We Are and Where We Are Going. Curr Psychiatry Rep. 2023;25:301–11.
2. World Health Organisation (WHO). Global and Regional Estimates of Depression Prevalence. Depression and Other common mental disorders: global health estimates. Geneva. 2017;8-24.
3. Sousa RD, Henriques AR, Caldas de Almeida J, Canhão H, Rodrigues AM. Unraveling Depressive Symptomatology and Risk Factors in a Changing World. Int. J. Environ. Res. Public Health. 2023;20:6575.
4. World Health Organization (WHO). Health Conditions in Older Age. World report on aging and health. 2015;57-65.
5. Uysal-Bozkir Ö, Parlevliet JL, de Rooij SE. Insufficient cross-cultural adaptations and psychometric properties for many translated health assessment scales: A systematic review. Journal of clinical epidemiology. 2013;66:608-18.
6. Stuck AE, Walthert JM, Nikolaus T, Büla CJ, Hohmann C, Beck JC. Risk factors for functional status decline in community living elderly people: a systematic literature review. Social science &medicine. 1999;48:445-69.
7. Shibusawa T, Mui AC. Stress, coping, and depression among Japanese American elders. In Social Work Practice with the Asian American Elderly. 2018;63-81.
8. Black SA. The mental health of culturally diverse elderly: Research and clinical issues. In Handbook of multicultural mental health. 2000;325-39.
9. International Organization for Migration (IOM). World migration report 2020, https://publications.iom.int/system/files/pdf/wmr_2020.pdf, Date accessed: 08.23.2023
10. Gürbüz B, Altındiş E. Göç Sonrası Katmanlı dezavantajlılık: Yaşlı Göçmenler. Göçmen Refahı Disiplinler arası Bakış. 2022;105-07.

11. Coşkun E, Yilmaz Ç. Sığınmacıların toplumsal uyum sorunları ve sosyal hizmetlere erişimi: Düzce uydukent örneği. In Journal of Social Policy Conferences. 2018;75:269-305.

12. Yılmaz FK, Ergül S. Sağlık Politikası Analizi: Göçmen Sağlığı Kapsamında Suriyeli Sığınmacılar. Sağlık ve Sosyal Refah Araştırmaları Dergisi. 2021;3:119-28.

13. Virgincar A, Doherty S, Siriwardhana C. The impact of forced migration on the mental health of elderly individuals: A scoping review. International Psychogeriatrics. 2016;28:889-96.

14. Isaac M, Filipčić I. Refugees, immigrants and displaced populations need better mental health support. Current Opinion in Psychiatry. 2023;36:345-46.

15. Singh K, Dewan R. Depression and Stress among Tribal Immigrant Rural Women of Ranchi District in Jharkhand. IOSR Journal of Humanities and Social Sciences. 2018;23:1-8.

16. Foo SQ, Tam WW, Ho CS, Tran BX, Nguyen LH, McIntyre RS, et al. Prevalence of Depression among Migrants: A Systematic Review and Meta-Analysis. Int. J. Environ. Res. Public Health. 2018;15:1986.

17. Stevenson K, Fellmeth G, Edwards S, Calvert C, Bennett P, Campbell OM, et al. The global burden of perinatal common mental health disorders and substance use among immigrant women: a systematic review and meta-analysis. The Lancet Public Health. 2023;8:e203-e16.

18. Lindert J, von Ehrenstein OS, Priebe S, Mielck A, Brähler E. Depression and anxiety in labor immigrants and refugees–a systematic review and meta-analysis. Social science & medicine. 2009;69:246-57.

19. Andersson L, Hjern A. Ascher H. Undocumented adult immigrants in Sweden: mental health and associated factors. BMC Public Health. 2018;18:1369.

20. Antoniades J, Mazza D, Brijnath B. Efficacy of depression treatments for immigrant patients: results from a systematic review. BMC psychiatry. 2014;14:1-12.

21. Balsamo M, Cataldi F, Carlucci L, Padulo C, Fairfield B. Assessment of late life depression via self-report measures: a review. Clinical interventions in aging. 2018;13:2021-44.

22. Guo M, Stensland M, Li M, Dong X, Tiwari A. Is Migration at Older Age Associated With Poorer Psychological Well-Being? Evidence from Chinese Older Immigrants in the United States. The Gerontologist. 2019;59:865–76.

23. Deisenhammer EA, Çoban-Başaran M, Mantar A, Prunnlechner R, Kemmler G, Alkın T, et al. Ethnic and migrational impact on the clinical manifestation of depression. Soc Psychiatry Psychiatr Epidemiology. 2012;47:1121-29.

24. Mölsä M, Punamäki RL, Saarni SI, Tiilikainen M, Kuittinen S, Honkasalo ML. Mental and somatic health and pre and postmigration factors among older Somali refugees in Finland. Transcultural Psychiatry. 2014;51:499-525.

25. Abu-Siam IKS. Healthcare utilization among urbanized Syrian refugees in Jordan: exploring access, needs, barriers and adaptation strategies. Doctoral dissertation, Universidad de Granada. 2023;49-50.

26. Siddiq H, Darvishi M, Najand B. Self-Rated Health of US Older Adults in the General Social Survey (GSS) 1972-2021: Complexity of the Associations of Education and Immigration. Healthcare (Basel). 2023;11:463.

27. Beck AT, Steer RA, Ball R, Ranieri W. Comparison of Beck Depression Inventories -IA and -II in psychiatric outpatients. J. Pers. Assess. 1996;67:588–97.

28. Lipowski M, Walczak-Kozłowska T, Lipowska M, Kortas J, Antosiewicz J, Falcioni G, et al. Improvement of Attention, Executive Functions, and Processing Speed in Elderly Women as a Result of Involvement in the Nordic Walking Training Program and Vitamin D Supplementation. Nutrients 2019;11:1311.

29. Solís-Ortiz S, Arriaga-Avila V, Trejo-Bahena A, Guevara-Guzmán R. Deficiency in the Essential Amino Acids L-Isoleucine, L-Leucine and L-Histidine and Clinical Measures as Predictors of Moderate Depression in Elderly Women: A Discriminant Analysis Study. Nutrients. 2021;13:3875.

30. Dantas EHM, Figueira OA, Figueira AA, Höekelmann A, Vale RGS, Figueira JA, et al. The Association between Physical Activity and Anxiety in Aging: A Comparative Analysis. Healthcare. 2023;11:2164.

31. Yaylagül NK, Aslan M. Yaşlılık, mültecilik ve sosyal dışlanma: Suriyeli yaşlı mültecilerin deneyimleri. Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi. 2020;29:406-22.

32. Elkin N. Yaşlılarda Polifarmasi ve Akılcı İlaç Kullanımına Aile Hekimliği Yaklaşımı. İstanbul Gelişim Üniversitesi Sağlık Bilimleri Dergisi. 2020;11:279-90.

33. Rosenthal T, Touyz RM, Oparil S. Migrating Populations and Health: Risk Factors for Cardiovascular Disease and Metabolic Syndrome. Curr Hypertens Rep. 2022;24:325–40.

34. Kiropoulos LA, Klimidis S, Minas H. Depression and Anxiety: A Comparison of Older-Aged Greek-Born immigrants and Anglo-Australians. Australian & New Zealand Journal of Psychiatry. 2004;38:714-24.

35. Familiar I, Borges G, Orozco R, Medina-Mora ME. Mexican migration experiences to the US and risk for anxiety and depressive symptoms. Journal of affective disorders. 2011;130:83-91.

36. Tsetseri MN, Keene DJ, Silman AJ, Dakin SG. Exploring the Burden of Chronic Musculoskeletal Pain in immigrant Populations: A Scoping Review. 2023;1-20.

37. Apak E, Artan T, Ozucelik DN. Evaluation of biopsychosocial and sociocultural problems of Syrian elderly living in Turkey. Int J Soc Psychiatry. 2023;69:454-66.

38. Kurt G, Ventevogel P, Ekhtiari M, Ilkkursun Z, Erşahin M, Akbiyik N, et al. Estimated prevalence rates and risk factors for common mental health problems among Syrian and Afghan refugees in Turkey. BJPsych Open. 2022;8:E167.

39. Bedaso A, Duko B. Epidemiology of depression among displaced people: a systematic review and meta-analysis.

Psychiatry research. 2022;311:114493.

40. Kim BJ, Linton K, Cho S, Ha JH. The Relationship between Neuroticism, Hopelessness, and Depression in Older Korean immigrants. PLoS ONE. 2016;11:e0145520.

41. Mirzaei M, Yasini Ardekani SM, Mirzaei M, Dehghani A. Prevalence of Depression, Anxiety and Stress among Adult Population: Results of Yazd Health Study. Iran J Psychiatry. 2019;14:137-46.

42. Kaiser BN, Keys HM, Foster J, Kohrt BA. Social stressors, social support, and mental health among Haitian immigrants in the Dominican Republic. Rev Panam Salud Publica. 2015;38:157–62.

43. Soriano E, Ruíz D, Cala VC. Perception of Health and Healthcare among Senegalese Immigrants in Andalusia. Procedia – Soc Behav Sci. 2017;237:70–6.

44. Vissandjee B, Desmeules M, Cao Z, Abdool S, Kazanjian A. Integrating Ethnicity and Migration As Determinants of Canadian Women's Health. BMC Womens Health. 2004;4:S32.

45. Eleftherakos C, van den Boogaard W, Barry D, Severy N, Kotsioni I, Roland-Gosselin L." I prefer dying fast than dying slowly", how institutional abuse worsens the mental health of stranded Syrian, Afghan and Congolese immigrants on Lesbos island following the implementation of EU-Turkey deal. Conflict and health. 2018;12:1-11.

46. Sayegh P, Kellough J, Otilingam PG, Poon CY. South Asian and Middle Eastern American older adults: Dementia, mood disorders, and anxiety disorders. Clinical gerontologist. 2013;36:216-40.

47. Liem A, Natari RB, Jimmy Hall BJ. Digital health applications in mental health care for immigrants and refugees: a rapid review. Telemedicine and e-Health. 2021;27:3-16.