



Late-Life Depression in the Older Adults Living in an Institution and at Home

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Abstract

Psychological well-being in older adults is an important issue in Geropsychology and there is an increasing interest about the older adults living in the community and at home. Understanding markers of well-being associated with either living in an institution or at home would help to explore certain unique variables that make the older adults' life difficult. Among older adults, depression decreases the quality of life and affect the individual's lifespan significantly. However, there have been few studies investigating institution-specific or home-specific markers of depression which are the aims of the current study. The present study aims to make comparison between 924 the older adults residing in institutions to 846 the older adults residing at home in terms of socio-demographic variables and health related variables. Women living at home had higher depression scores than women in the institution. Conversely, men living in institutions were more depressed than living at home while married older adults at home have lower depression scores. Education and income are inversely associated with depression scores. As the number of illnesses increases so does the level of depression. Finally, there is a negative relationship with perceptions of prognosis and perceptions of threat regarding their medical conditions and depression. The interaction of gender, income and residence type is discussed in detail within a cultural context. Possible implications are suggested to improve the psychological well-being of older adults and specific needs of different populations of older adults based on their residence type are addressed.

Keywords: Older adults, depression, residence type, gender, education, income, marital status, health related variables, perceptions about illness

Key Practitioner Messages

- Investigating the influence of residence type (institution versus home) on the older adults' psychological well-being helps practitioners to understand the psychological effect of environment.
- Examining the association between socio-demographic variables (gender, education, income, marital status) or health related variables (perceptions of prognosis and threat regarding their medical conditions) and late-life depression reveals individual markers in relation to depression.
- Older adults residing at home are more vulnerable to suffer from depression due to their difficulty in accessing health services and tendency to disregard their health care needs.
- Older adults having physical illnesses had higher scores than their counterparts
- Perceptions regarding the physical illness might be one of the important topics for health care professionals.
- Perceptions about physical illness might be focal point to explore relationship with mental health.

Psycho-social and physical markers in old age make the older adults more vulnerable to suffer from psychological disorders. One of the most commonly examined psychological disorders in the older adults is depression (Panza et al., 2010).

Assessing depression in the older adults population is considered important since their physical problems are sometimes part of their psychological well-being (Wetherell & Areán, 1997). Also, depression in these individuals has its specific nature

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and would differ from depression in any other developmental life periods (Rohde, Lewinsohn, Klein, Seeley, & Gau, 2012). In this respect, unlike depression seen in other life periods, geriatric depression is characterized by and expressed as somatic symptoms (Sheehan & Banerjee, 1999), cognitive and neurological symptoms (Steffens & Potter, 2008), and it is more frequent. Despite the frequency of geriatric depression, it is often underestimated by physicians while examining the general health of the older adults. One reason for this underestimation is somatic expressions of geriatric depression constitute a challenging dilemma for physicians (Drayer et al., 2005). Furthermore, symptoms indicating late-life depression are often considered as normal and inevitable results of aging.

Most of the older adults live in community. The concept of the "late-life" brings institutional care (i.e., rest homes, assisted living and nursing homes) to mind, however, the number of the older adults residing in institutions is likely to be less than the older adults living at home (Kotlikoff & Morris, 1990). Along with such factors as limited beds in institutions and the high cost of institutional care, unwillingness to leave the environment where they live in, there are lower number of the older adults residing in institutions.

There is an increasing interest about the older adults living in the community and their problems (Hawton et al., 2011). Understanding markers of well-being associated with either living in an institution or at home would help to explore certain unique variables that make life challenging for older adults. Additionally, studies investigating psychological well-being in the older adults are limited in terms of its determinants or limited access to the older adults living at home. Although the majority of the older adults live in their homes, geropsychological studies have generally been conducted with the older adults residing in institutions or receiving treatment in health and/or care facilities. Pragmatically, recruiting data from these samples has advantages in terms of saving resources and time or ease of transportation. However, much published research with the older adults living in an institution might not be generalized to the older adults living at home since factors

associated with home or institution are different. In literature, related studies have mostly focused on depression in the older adults living at home, the older adults residing in institutions, or investigated the differences or/and similarities between these two in terms of depression. However, geriatric literature is lack of studies investigating institution-specific or home-specific markers of depression which are the aims of the current study.

Due to limitations of previous studies mentioned above, comprehensive studies are needed to clarify determinants of depression and to reveal significant implications by means of examining environmental factors, life conditions, physical disabilities or/and psychological patterns must be addressed so as to identify geriatric depression.

Regarding one of environmental factors related to the late-life depression, the older adults residing in institutions reported more depressive symptoms than the older adults residing at home (Jongeneelis et al., 2004). When comparing the prevalence among these two groups, 27.1% of institutionalized the older adults and 9.3% of the older adults living at home had significant depression scores (McDougall, Matthews, Kvaal, Dewey, & Brayne, 2007). Moving in an institution is a difficult decision. When explaining the difference between older adults living at institutions, limited studies focus on other variables such as satisfaction of place of residence, socio-demographic variables and health status. For instance, among the older adults residing in an institution, participants who were unsatisfied with the institution showed significantly higher depression scores than participants who reported they were satisfied (Hacihanoglu & Yildirim, 2009). In a study conducted with the older adults residing in institutions, age, gender, marital status, ethnicity, educational level, job, and health status did not significantly correlate with depression (Hughes & Peake, 2002).

Recent studies, in which data were collected from older people at home, revealed several risk factors for geriatric depression. Being a woman (Heun & Hein, 2005; Javed, 2014; van der Wurff et al., 2004; Yaka, Keskinoglu, Ucku, Yener, & Tunca, 2014), lacking a spouse (Javed, 2014; Yaka et al., 2014) or spousal support (Okabayashi, Liang, Krause, Akiyama, & Sugisawa, 2004), lower in-

come (Rajkumar et al., 2009), having lower levels of education and physical chronic illnesses (van der Wurff et al., 2004) are seen as risk factors of depression. Contradictory findings have been seen in the literature. For instance, there were no significant correlation between gender, age, cognitive impairment and disability status and depression in the older adults residing at home (Rajkumar et al., 2009). On the other hand, health concerns were significantly related with mental concerns. Particularly, older adults having physical illness are reported to have higher depression scores (Casey, 2012). Also, physically inactive men were at a greater risk for both healthy aging (Blazer, 2005) and geriatric depression (Tanaka, Sasazawa, Suzuki, Nakazawa, & Koyama, 2011).

Depression not only decreases the quality of life, but also increases the death rates in a direct or indirect way. Thus, determining all of the risk factors, including the environmental factors as more as possible is crucial to identify and treat depression in the older adults. Referring the older adults, place of residence seems to be key to the environmental variables. In this paper the features of depression in the older adults residing at home or in an institution will be compared. Applying the literature mentioned above, the present study hypothesized the following:

The hypothesis related with residence type:

H1: The older adults residing in the institutions will be more depressive than those residing at the home

The hypotheses related with socio-demographic variables:

H2: Consistent with the literature of gender difference in depression, the women will be more depressive than the men both in the institutions and at the home

H3: There will be a significant difference among the older adults who are university graduated, high school graduated, elementary education graduated, and uneducated both in the institutions and at home; the higher educated older adults reports lower depression scores than lower educated older adults respectively.

H4: There will be a significant difference among the older adults with high levels of income, low levels of income and moderate

levels of income both in the institutions and at home; the older adults having higher income reports lower depression scores than lower income respectively.

H5: There will be a significant difference among the older adults who are married, single, divorced, and widowed both in the institutions and at home; married the older adults reports lower depression scores than the other groups while there is no significant difference between the other groups.

The hypotheses related with health related variables:

H6: There will be a significant difference among the older adults who do not suffer from any medical conditions, suffered from a medical condition, suffered from two medical conditions, and suffered from three or more medical conditions in the institutions and at home; the suffered from more medical conditions reports higher depression scores than lower (or no) medical condition the older adults respectively.

H7: There will be a significant difference among the older adults who perceived prognosis of the medical condition as good, average and bad in the institutions and at home; good reports lower depression than average and bad, average reports lower depression than bad.

Method

Participants

Data was recruited from 1770 non-cognitive impairment the older adults, 52.2 % residing in institutions (n = 924), 47.8 % residing at home (n = 846). The data were gathered from both urban and rural areas throughout Turkey. Among the participants residing in institutions, 56.4 % was men (n = 521), 43.6 % (n = 403), and at home % 52 was woman (n = 440) and 48 % was men (n = 406). Participant age ranged between 60 and 100 in both groups (M = 76.42, SD = 7.37; M = 70.99, SD = 7.63, for institutions and home, respectively).

Measure

Geriatric Depression Scale (GDS): The GDS (Ye-savage et al., 1983) is one of the most widely used methods to evaluate the depression levels of the older adults. GDS is a 30-item questionnaire with a yes/no response format. Subjects are asked items based on how they felt over the past week. Scores ranged between 0-30. The responses were categorized under three groups; such as normal (0-9), mild (10-19) and severe depression (20-30). It was adapted into Turkish culture by Sağduyu (1997) with acceptable levels of psychometric qualities, (i.e. test-retest reliability is .87, internal consistency is .72, sensitivity is .90, and specificity is .97).

The Standardized Mini Mental State Examination (SMMSE): The SMMSE was developed (Folstein, Folstein, & McHugh, 1975) and standardized (Molloy & Standish, 1997) to assess global neuropsychological functions. It was adopted into Turkish culture for educated and older adults (Gungen, Ertan, Eker, Yasar, & Engin, 2002) uneducated older adults (Keskinoglu et al., 2009). In the present study, the cut-off point for the SMMSE was taken as 24 and participants whose score is below 24 was disregarded.

The Demographic Information Form: Demographic Information Form aimed to obtain information about, gender, education level, income, marital status, place of residence, number of physical illnesses from participants. Also, based on previous studies (Bellizzi & Blank, 2006; Senol-Durak & Ayvasik, 2010), subjects are asked to evaluate perceived health prognosis (1=good 2= average 3= bad) and perception of threat (1= not threatening, 2= moderately threatening, 3= immensely threatening).

Procedure

The older adults residing in institutions were reached with the help of the "Turkish Ministry of Family and Social Policy" and "General Directorate of Social Services and Child Protection (SHCEK)" and the older adults residing at home were

reached through the "Turkish Statistical Institute (DIE)". DIE also had an important contribution in data collection through providing a random assignment for the individuals living at home. The addresses of potential participants were provided by the institution. Also, data from the older adults living in institutions who were recommended by SHCEK were collected randomly. The participation was are voluntary and informed consents were obtained from all participants.

Ethical approvals were obtained from both Human Research Ethics Committee (Abant Izzet Baysal University) and Ankara Clinical Research Ethics Committee (Ministry of Health, General Directorate of Pharmaceuticals and Pharmacy.) The participants were informed about the aim of the study. Data were collected from the older adults by means of face to face interaction after they accepted to participate in the research voluntarily. It took 20-30 minutes to complete the questionnaires. Researchers read questions in order to help the completion of the questionnaires for the less educated older participants.

Results

The Prevalence Rate of Depression Based on the Residence Type

In the present study, data was gathered from 1770 the older adults people; 924 the older adults residing in institutions and 846 the older adults residing at home participated. Among the older adults residing in institutions, based on GDS scores, the frequency of normal, mild and severe depression are 510 (55.19%), 336 (36.36%), and 78 (8.44%) respectively. Among the older adults residing in institutions, based on GDS scores, the frequency of normal, mild and severe depression are 493 (58.27%), 238 (28.13%), and 115 (13.59%) respectively (see Figure 1).

We compare the older adults residing in institutions and residing at home in terms of socio-demographic variables, health related variables, institution specific variables, and home specific variables. For this, the analyses of the indepen-

dent samples t-test, One-Way ANOVA and Two-Way ANOVA were performed in order to see the group differences on geriatric depression score.

Residence Type and the Socio-Demographic Variables

Residence Type: Independent samples t-test were performed to explore whether geriatric depression differs according to residence type. The results demonstrated that depression scores did not differ significantly between two groups of 924 the older adults reside in institutions ($M = 9.60, SD = 6.39$) and 846 older adults residing at home ($M = 9.72, SD = 7.53$), $t(1768) = -.36, p = .716$. Contrary to the expectation that the older adults residing in institutions were more depressed than the older adults residing at home, it seems that the residence type was not an important variable for geriatric depression.

Gender: Independent samples t-test was performed to explore whether geriatric depression differs according to gender. Based on the results, the 440 women at home ($M = 11.27, SD = 7.76$) were more depressive than the 406 men at home ($M = 8.04, SD = 6.90$), $t(844) = 6.37, p = .001, d = .42, r = .21$; as expected, being a woman is a vulnerability factor for depression among the ones residing at home. On the other hand, there were no statistically significant differences between the 403 women residing in institutions ($M = 9.84, SD = 6.56$) and the 521 men residing in institutions ($M = 9.41, SD = 6.25$) as determined by Independent samples t-test $t(922) = 1.00, p = .317$; surprisingly, woman residing in institutions did not report much depression than the men residing in institutions (see [Figure 2](#)).

A 2 x 2 Factorial ANOVA was performed to see the main and interaction effects of gender and residence type. The main effect of gender is significant $F(1, 1766) = 30.92, p = .001, \eta^2 = .02$. The main effect of residence type was not significant $F(1, 1766) = .01, p = .931$. The interaction effect of gender and residence type was significant $F(1, 1766) = 18.22, p = .001, \eta^2 = .01$. In terms of interaction effect, women at home had higher scores than women in the institution. Conversely, men liv-

ing in institution were more depressive than living at home.

Educational Level: A one-way analysis of variance (ANOVA) was calculated on depression scores in terms of educational level. The results were significant for home $F(3, 842) = 27.46, p = .001, \eta^2 = .09$. According to the Bonferroni post-hoc comparison results the university graduated older adults ($M = 7.10, SD = 6.10$) and the high school graduated older adults ($M = 7.81, SD = 6.78$) reported lower depression scores than the elementary education graduated older adults ($M = 10.08, SD = 7.53$), and the uneducated older adults ($M = 13.81, SD = 7.88$), while there were no significant differences between the groups of the university graduated older adults and the high school graduated older adults. Moreover, the elementary education graduated the older adults reported lower depression scores than the uneducated the older adults (see [Figure 2](#)).

The results were also significant for institutions $F(3, 920) = 24.97, p \leq .001, \eta^2 = .08$. In institutions, similarly with home, the university graduated older adults ($M = 6.41, SD = 5.88$) and the high school graduated older adults ($M = 8.18, SD = 5.69$) reported lower depression scores than the elementary education graduated older adults ($M = 9.70, SD = 6.23$), and the uneducated older adults ($M = 12.13, SD = 6.38$). Furthermore, the elementary education graduated older adults reported lower depression scores than the uneducated older adults (see [Figure 2](#)). There were no significant difference between the university graduated older adults and the high school graduated the older adults.

A 4 x 2 Factorial ANOVA was performed to see the main and interaction effects of education and residence type. The main effect of education was significant $F(3, 1762) = 52.72, p = .001, \eta^2 = .08$. However, the main effect of residence type was not significant $F(1, 1762) = 2.95, p = .086$. The interaction effect of education and residence type was also not significant $F(3, 1762) = 1.42, p = .235$.

Income: A one-way analysis of variance (ANOVA) was performed on depression scores in terms of

monthly income level. The results were significant for home $F(2, 786) = 6.56, p = .001, \eta^2 = .02$. According to the Bonferroni post-hoc comparison results the older adults with high levels of income ($M = 8.80, SD = 7.72$) reported lower depression scores than the older adults with low levels of income ($M = 11.25, SD = 7.25$). On the other hand, there were no significant differences between the older adults with low levels of income and the older adults with moderate levels of income ($M = 9.85, SD = 7.07$), and the older adults with moderate levels of income and the older adults with high levels of income (see Figure 2).

The results were also significant for institutions $F(2, 827) = 20.17, p = .001, \eta^2 = .05$. In institutions, the older adults with high levels of income ($M = 7.09, SD = 5.85$) and the older adults with moderate levels of income ($M = 9.09, SD = 6.09$) reported lower depression scores than the older adults with low levels of income ($M = 10.87, SD = 6.58$), and the older adults with high levels of income reported lower depression scores than the older adults with moderate levels of income (see Figure 2). Therefore, increased levels of income were seen to be associated with decreased levels of depression.

Marital Status: A one-way analysis of variance (ANOVA) was performed on depression scores in terms of marital status. The results were significant for home $F(3, 842) = 14.50, p = .001, \eta^2 =$

.05. According to the Bonferroni post-hoc comparison results, at home, the married older adults ($M = 8.48, SD = 7.07$) reported lower depression scores than the single ($M = 10.32, SD = 8.09$), the divorced ($M = 11.71, SD = 7.76$), and the widowed ($M = 12.07, SD = 7.82$) the older adults. Moreover, there were no significant difference between single, divorced, and widowed older adults in terms of depression scores (see Figure 2).

The results were also significant for institutions $F(3, 920) = 9.49, p = .001, \eta^2 = .03$. According to the Bonferroni post-hoc comparison results, the married ($M = 7.80, SD = 5.98$) and the divorced ($M = 8.71, SD = 6.22$) older adults reported lower depression scores than the widowed older adults ($M = 10.57, SD = 6.47$), while there were no significant difference between the married, the divorced, and the single ($M = 9.77, SD = 6.13$) older adults. In addition, there also were no significant difference between the single and the widowed older adults (see Figure 2).

A 4 x 2 Factorial ANOVA was performed to see the main and interaction effects of marital status and residence type. The main effect of marital status was significant $F(3, 1762) = 20.66, p = .001, \eta^2 = .03$. The main effect of residence type was also significant $F(1, 1762) = 6.72, p = .010, \eta^2 = .01$. However, the interaction effect of marital status and residence type was not significant $F(3, 1762) = 1.06, p = .365$,

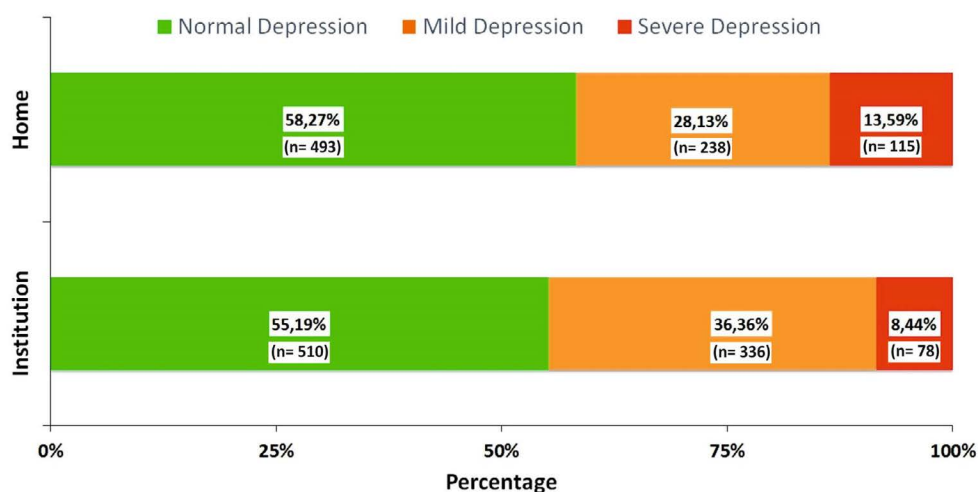


Figure 1: The prevalence rate of depression based on the residence type

Health Related Variables

The number of Medical Illnesses: A one-way analysis of variance (ANOVA) was performed on depression scores in terms of the number of medical illnesses. The results were significant for the older adults residing at home $F(3, 842) = 30.21, p \leq .001, \eta^2 = 0.10$. According to the Bonferroni post-hoc comparison results, the older adults who did not suffer from any medical illnesses ($M = 6.44, SD = 6.25$) reported lower depression scores than the older adults suffered from a medical illness ($M = 9.93, SD = 7.45$), the older adults suffered from two medical illnesses ($M = 12.25, SD = 7.45$), and the older adults suffered from three or more medical illnesses ($M = 16.48, SD = 7.25$). Moreover, the older adults suffered from a medical illness reported lower depression scores than the older adults suffered from two medical illnesses, and the older adults suffered from three or more medical illnesses; the older adults suffered from two medical illnesses reported lower depression scores than the older adults suffered from three or more medical illnesses (see [Figure 2](#)). Therefore, the increased number of medical illnesses increased the depression scores at home.

The results were also significant for institutions $F(3, 920) = 10.52, p \leq .001, \eta^2 = .04$. In institutions, the older adults who did not suffer from any medical illnesses ($M = 7.95, SD = 5.38$) reported lower depression scores than the older adults suffered from a medical illness ($M = 9.44, SD = 6.39$), two medical illnesses ($M = 11.23, SD = 6.50$), and three or more medical illnesses ($M = 12.16, SD = 7.67$). Furthermore, the older adults who suffered from a medical illness reported lower depression scores than the older adults who suffered from two medical illnesses and three or more medical illnesses. On the other hand, there were no significant differences between the older adults who suffered from two medical illnesses and three or more medical illnesses (see [Figure 2](#)).

A 4 x 2 Factorial ANOVA was performed to see the main and interaction effects of number medical illnesses and residence type. The main effect of number of medical illnesses was significant $F(3,$

1762) = 39.43, $p = 001, \eta^2 = .06$. The main effect of residence type was significant $F(1, 1762) = 5.06, p = .025, \eta^2 = .00$. The interaction effect of number of medical illnesses and residence type was significant $F(3, 1762) = 4.91, p = .002, \eta^2 = .01$. Addition to the group comparisons explained above, in terms of no illness and 1 illness condition the older adults at home was less depressive than the older adults in institutions, however, in terms of 2 illnesses and 3 or more illnesses condition the older adults at home was more depressive than the older adults in institutions.

Perceived Prognosis of the General Medical Condition: A one-way analysis of variance (ANOVA) was performed on depression scores in terms of perceived prognosis of the general medical condition. The results were significant for the older adults residing at home $F(2, 634) = 102.55, p \leq .001, \eta^2 = 0.26$. According to the Bonferroni post-hoc comparison results, the older adults perceived the general medical condition as good ($M = 7.12, SD = 5.39$) reported lower depression scores than the older adults perceived as average (sometimes good and sometimes bad) ($M = 12.02, SD = 7.26$), and the older adults perceived as bad ($M = 18.90, SD = 7.65$). In addition, the older adults perceived the medical condition as average reported lower depression scores than the older adults perceived as bad (see [Figure 2](#)).

The results were similar with home for institutions in term of significance $F(2, 737) = 45.83, p \leq .001, \eta^2 = 0.13$, and the comparisons. The older adults perceived the general medical condition as good ($M = 7.88, SD = 5.87$) reported lower depression scores than the older adults perceived as average ($M = 10.34, SD = 5.98$), and the older adults perceived as bad ($M = 14.23, SD = 6.93$). Furthermore, the older adults perceived the general medical condition as average reported lower depression scores than the older adults perceived as bad (see [Figure 2](#)).

A 3 x 2 Factorial ANOVA was performed to see the main and interaction effects of perceived prognosis of the general medical condition and residence type. The main effect of perceived prognosis of

the general medical condition was significant $F(2, 1371) = 148.77, p = .001, \eta^2 = .18$. The main effect of residence type was significant $F(1, 1371) = 23.14, p = .001, \eta^2 = .02$. The interaction effect of perceived prognosis of the general medical condition and residence type was significant $F(2, 1371) = 16.38, p = .001, \eta^2 = .02$. Addition to the group comparisons explained above, in terms of perceiving the prognosis of the general medical condition as bad and average, the older adults at home was more depressive than the older adults in institutions, however, in terms of perceiving the prognosis of the general medical condition as good, the older adults at home was less depressive than the older adults in institutions.

Perceived Dangerousness of the General Medical Condition: A one-way analysis of variance (ANOVA) was performed on depression scores in terms of perceived dangerousness of the general medical condition. The results were significant for the older adults residing at home $F(2, 588) = 39.17, p \leq .001, \eta^2 = 0.12$. According to the Bonferroni post-hoc comparison results, the older adults perceived the general medical condition as not life-threatening at all ($M = 8.48, SD = 6.17$) reported lower depression scores than the older adults perceived as moderately life-threatening ($M = 12.54, SD = 7.66$), and the older adults perceived as immensely life-threatening ($M = 14.96, SD = 8.99$). Moreover, the older adults perceived the general medical condition as moderately life-threatening reported lower depression scores than the older adults perceived as immensely life-threatening (see Figure 2).

The results were also significant for institutions $F(2, 657) = 6.06, p \leq .01, \eta^2 = .02$. In institutions, the older adults perceived the general medical condition as not life-threatening at all ($M = 9.23, SD = 6.47$) reported lower depression scores than the older adults perceived as immensely life-threatening ($M = 11.19, SD = 6.77$). On the other hand, there were no significant difference between the older adults perceived the general medical condition as not life-threatening at all, and the older adults perceived as moderately life-threatening ($M = 10.72, SD = 6.35$); and between the older adults perceived the general medical condition as

moderately life-threatening and the older adults perceived as immensely life-threatening (see Figure 2).

A 3 x 2 Factorial ANOVA was performed to see the main and interaction effects of perceived dangerousness of the general medical condition and residence type. The main effect of perceived dangerousness of the general medical condition was significant $F(2, 1245) = 41.74, p = .001, \eta^2 = .06$. The main effect of residence type was significant $F(1, 1245) = 14.43, p = .001, \eta^2 = .01$. The interaction effect of perceived dangerousness of the general medical condition and residence type was significant $F(2, 1245) = 11.27, p = .001, \eta^2 = .02$.

Discussion

The present study aims to examine the influence of residence type on the older adults' psychological well-being measured by the Geriatric Depression Scale. Comparison was made between 924 the older adults residing in institutions to 846 the older adults residing at home in terms of socio-demographic variables and health related variables. The data were analyzed by independent samples t-test, One-Way ANOVA and Two-Way ANOVA.

In the present study, prevalence rates of 'no depression' seems to be similar regardless of residence type. However, severe depression was higher among the older adults who live at home than those living in an institution, and mild depression was higher among the older adults who live in institutions than those living at home. Interestingly, the older adults residing at home were more vulnerable to suffer from severe depression, which might be due to their difficulty in accessing health services and tendency to disregard their health needs. Moreover, in case of a medical emergency, older adults residing in institutions can access to immediate health care which might increase their sense of safety regarding their medical conditions. If treatment opportunities are available, the effect of life challenges can be decreased for the older adults residing at home or in an institution. Therefore, special attention to early and continuous diagnosis or assessment of depression seems to be crucial for the older adults.

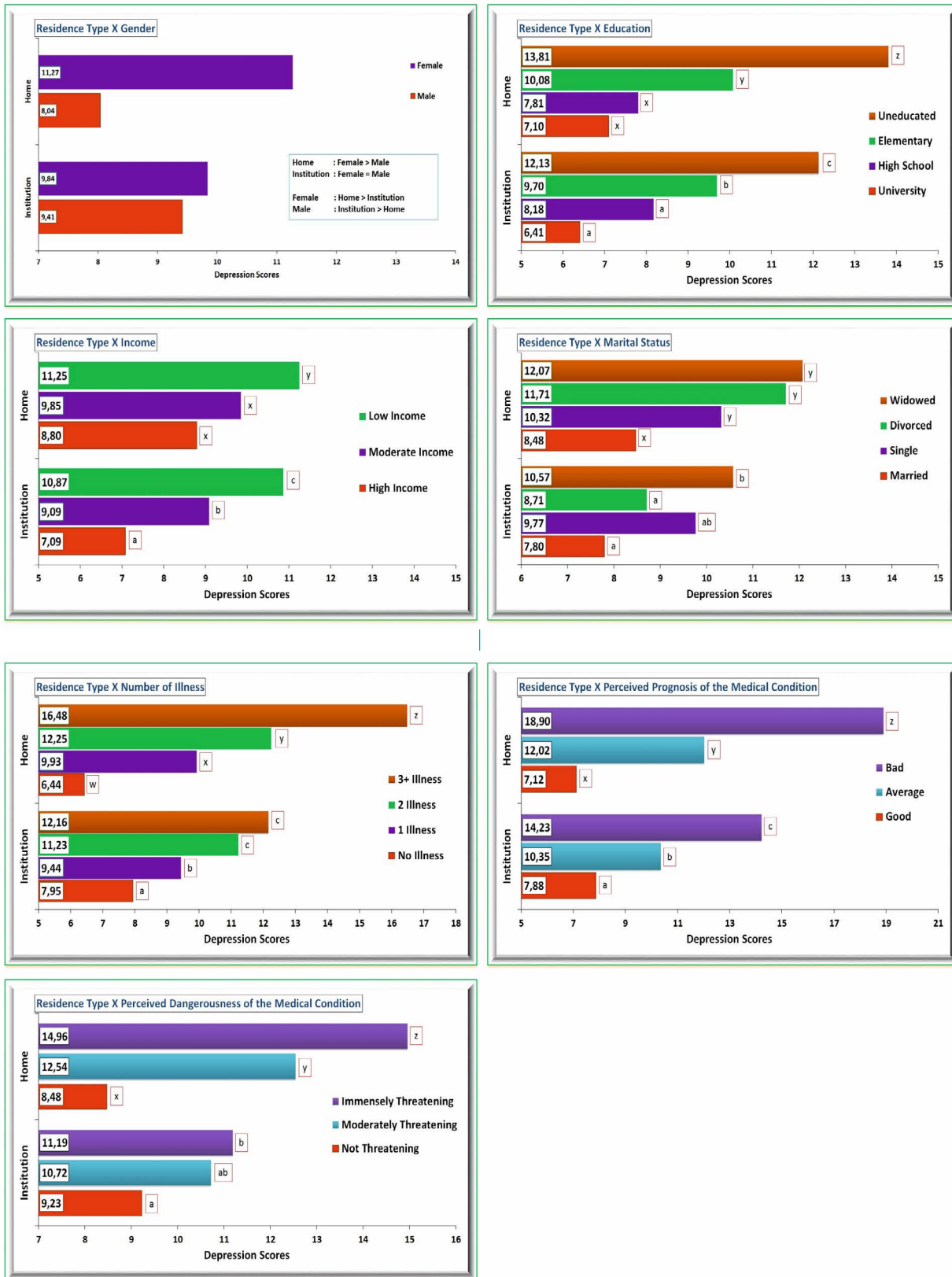


Figure 2: Group differences in depression scores

Based on the residence type, there was not any significant difference between the older adults residing in an institution versus at home. On the other hand, the differences between the categories of the general characteristics and the residence-specific factors in terms of geriatric depression, should be investigated in future studies.

In terms of gender-based comparison, in institutions, there was no significant difference among gender groups. On the other hand, the results of the current study contradict a finding in an earlier study. Jongenelis and his colleagues (2004) found that the older women were more vulnerable than the older men to suffering from depression while residing in an institution. However women had significantly higher depression scores than men at home.

Also, gender by residence type interaction was significant. Women at home had higher scores than women in the institution. The fact that older women living at home were more depressive can be explained by responsibilities and duties they have. In Turkish culture, regardless of their age, women are expected to do daily chores (cooking, cleaning, etc.). Due to physical changes related to aging, women might not feel competent enough in managing the daily chores. Moreover they are responsible for maintaining the wellbeing of their family members at all levels and they prefer to be socializing at their homes. In the institution, women have smaller responsibilities which might influence their lower depression scores and they have larger social network than they are at home.

Also, remarkably, men living in institutions were more depressed than those living at home. This interesting finding can be attributed to gender-oriented social norms and expectations. The reason for older men to be more depressed in institutions is that they feel more restricted there. They have less opportunity to socialize outside the institution and to do physical activities when compared to men living at home. Older men are not expected either to work outside or to do daily chores at home, so they have too much spare time. They prefer setting their social network outside their home. However, in the present study, likewise mentioned in some studies (Chen, 2010), the older adults living in institutions feel that they have restricted life style as enough physical activity is not part of their life styles which

might in turn influence their depressive symptoms. Therefore, as suggested (Chen, 2010), setting physical activity for those men are crucial for intervention. It is highlighted that these activities might be planned in institutions. However, when considering Turkish men's life styles, the activities planned outside the institutions might be more useful especially for men.

The education level attained by the older adults is a contributing factor for geriatric depression. For example those who achieved at least a high school diploma had lower levels of depression than those with less education. These findings are similar to previous findings in the literature which show that the less educated the older adults, the more depressive they tend to be (van der Wurff et al., 2004). These findings suggest that the older adults who have at least a high school diploma may be more knowledgeable and willing to access the health care services and/or they might have better coping skills to deal with difficulties during the transitions in life. Their awareness regarding their psychological well-being might also be higher which can lead them to seek professional help. When considering education by residence type interaction, only education effect was significant. This finding demonstrates that education is an important factor on the late-life depression.

A relationship between income levels and depression was also found to be significant according to residence type when three income levels (high, moderate, low) were categorized by means of range of income. When the older adults lived at home, just two of three groups results were significantly differ from each other. High income levels experienced less depression while those with low income levels experienced higher levels of depression. Similar results were obtained in other studies as well (Rajkumar et al., 2009). However, in the sample of older adults living in institutions, the differences among older adults reporting higher, moderate and lower income levels were significant based on their depression scores. The higher the income, the lower the depression scores among those living in institutions. For in Turkish institutions, higher income level is related to receiving more services and better living conditions (i.e., living alone or in a shared room, having their personal TV, radio, computer, etc.).

Therefore, the difference in their depression levels might be related to these factors.

In terms of marital status, being married and living at home appear to be a protective factor against depression, a finding that has been noted in previous research. This is probably due to spouses receiving support from each other (Okabayashi et al., 2004). As a group, those who are single, widowed or divorced and living at home show higher rates of depression compared to married counterparts. For the older adults residing in institutions, being widowed could contribute to higher levels of depression. Since widowed individuals have lost his/her spouse and the literature shows that loss is a contributory factor to depression (Costello, 1972), it is no surprise that their depression levels are higher than those with other marital statuses.

In terms of medical conditions, both the older adults living at home and in institutions with the presence of physical illnesses had higher scores than their counterparts. Similar findings were seen in the literature (van der Wurff et al., 2004). Since loss is a part of depression, this result can be interpreted as the perceived loss over their health. On the other hand, the results were different when looking at the effect of the number of physical illnesses that the older adults had. The older adults having three or more physical illnesses and living at home had higher scores of depression than those having two or fewer illnesses or none at all. These results might be due to the illnesses restricting the older adults' life and sense of control over their health. Providing professional support to these older adults living at home is crucial to helping them manage their health problems. Surprisingly, in institutions, the older adults having two illnesses had significantly higher depression scores than all other older adults individuals, including those with fewer and more illnesses. Additional illnesses might overwhelm them for which they have to be under regular medical control and it could also symbolize to be in the process of aging. Those having three or more illnesses may receive constant care and they know more how they control over diseases. Those having fewer illnesses or none at all were very close to each other in terms of depression scores which might be due to sense of control over their health in institution.

A relationship between perceived prognosis levels and depression was also found to be significant when three groups of perceived prognosis (good, average, bad) were examined. It is found that, when the older adults evaluated their health as bad, their depression scores were significantly higher than those evaluating their health as "good" or "average" in both at home and in institution conditions. Moreover, the older adults perceiving their health as "bad" at home condition had higher scores than those living in institution. Also, a relationship between perceived dangerousness levels and depression was also found to be significant when three groups of perceived dangerousness (none, moderately, immensely threatening) were examined. In both at home and in institution conditions, the older adults who reported their illnesses as "immensely threatening" had higher depression scores than who reported them as "moderately threatening" or "none threatening". Also, at home condition, the older adults perceiving their "immensely threatening" had higher scores of depression than those living in institution. This result shows that, perceptions regarding the physical illness might be one of the important topics for health care professionals and might be focal point to explore relationship with mental health. Similar results were obtained in other studies as well (Bellizzi & Blank, 2006; Denkinger, Lukas, Herbolsheimer, & Nikolaus, 2012; Panza et al., 2010; Senol-Durak & Ayvasik, 2010). The self-rated health status was found to influence health-care utilization (Denkinger et al., 2012). Therefore, perception about illnesses is important when helping their well-being.

The present study design is cross-sectional therefore, results did not reveal causality. Also, interpretations about Turkish older adults might not be generalizable to other older adults populations. Other variables helping to explore late-life depression such as functional status physical performance and activity, physical distress, time since from retirement, relationship difficulties (Lindner, Foerster, & von Renteln-Kruse, 2014), number of individuals living with are needed to be examined in future studies while explaining possible correlates of the late-life depression.

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