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# The Relationship Between Malnutrition, Depression and Quality of Life: A Descriptive Study Among Elderly Living at Home and Nursing Home Residents

## Malnütrisyon, Depresyon ve Yaşam Kalitesi Arasındaki İlişki: Evde ve Yaşlı Bakım Evinde Kalan Yaşlılarda Tanımlayıcı Bir Araştırma

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**ABSTRACT Objective:** This study was planned and conducted to evaluate the relationship between malnutrition, depression, and quality of life among elderly residents of homes and nursing homes. **Materials and Methods:** This descriptive study was conducted using a simple random sampling method and face-to-face interview technique with 210 elderly individuals, living in nursing homes (n: 104) and their own homes (n: 106) in Ankara. The questionnaire form applied to the elderly includes the sociodemographic characteristics, nutritional habits of elderly individuals and the "Mini Nutritional Assessment-Short Form (MNA-SF)", "WHO-Quality of Life Instrument-Older Adults Module (WHOQOL-OLD)" and "Geriatric Depression Scale-Short Form (GDS-SF)", which evaluate the malnutrition, quality of life and depression scores of elderly individuals, respectively. **Results:** Malnutrition and depression were found to be higher in nursing home residents compared to elderly living at home ($p<0.05$). The level of depression was higher; the quality of life scores were lower in malnourished elderly (11.0±2.2 and 58.7±7.4; respectively) compared to those who show normal nutritional status (4.4±3.1 and 89.6±12.5; respectively) ($p<0.05$), and nursing home residents (6.7±3.8 and 78.0±17.1; respectively) compared to living at home (5.3±3.7 and 87.5±14.1; respectively) ($p<0.05$). A strong positive correlation was found between malnutrition and quality of life scores of the elderly, and a strong negative correlation was found between malnutrition and depression scores ($p<0.05$). **Conclusion:** Multidisciplinary health professionals, especially dietitians, should be consulted to reduce depression and improve the quality of life that affects malnutrition in the elderly, and more comprehensive scientific research should be conducted on this subject.

**Keywords:** Nutrition; depression; malnutrition; quality of life; elderly

**ÖZET Amaç:** Bu araştırma evde ve yaşlı bakım evinde kalan yaşlılarda malnütrisyon, depresyon ve yaşam kalitesi arasındaki ilişkinin değerlendirilmesi amacıyla planlanmış ve yürütülmüştür. **Gereç ve Yöntemler:** Tanımlayıcı tipte planlanan bu araştırma, basit rastgele örneklem metodu ve yüz yüze görüşme tekniği kullanılarak Ankara'daki yaşlı bakım evleri (n:104) ile kendi evlerinde yaşayan (n:106) toplam 210 yaşlı ile yürütülmüştür. Yaşlılara uygulanan anket formu, yaşlı bireylerin sosyodemografik özelliklerini, beslenme alışkanlıkları ile malnütrisyon, yaşam kalitesi ve depresyon skorlarını değerlendiren sırasıyla "Mini Nütrisyonel Değerlendirme-Kısa Form (MNA-SF)", "Yaşlılar için Dünya Sağlık Örgütü Yaşam Kalitesi Modülü (WHOQOL-OLD)" ve "Geriatrik Depresyon Ölçeği-Kısa Form (GDS-SF)" ölçeklerini içermektedir. **Bulgular:** Bakım evinde kalan yaşlılarda malnütrisyon ve depresyonun, evde kalanlara kıyasla daha yüksek olduğu saptanmıştır ($p<0,05$). Malnütrisyonlu yaşlıların (11,0±2,2 ve 58,7±7,4; sırasıyla) normal nütrisyonel durum gösterenlere (4,4±3,1 ve 89,6±12,5; sırasıyla) kıyasla, bakım evinde kalanların da (6,7±3,8 ve 78,0±17,1; sırasıyla) evde kalanlara (5,3±3,7 ve 87,5±14,1; sırasıyla) kıyasla depresyon skorları anlamlı olarak yüksek, yaşam kalitesi skorları ise anlamlı olarak düşük bulunmuştur ($p<0,05$). Yaşlıların malnütrisyon ile yaşam kalitesi skorları arasında kuvvetli pozitif korelasyon, malnütrisyon ile depresyon skorları arasında ise kuvvetli negatif korelasyon belirlenmiştir ($p<0,05$). **Sonuç:** Yaşlılarda malnütrisyonu etkileyen depresyon düzeylerinin azaltılması ve yaşam kalitelerinin artırılması için başta diyetisyenler olmak üzere multidisipliner sağlık profesyonellerine başvurulması ve bu konuda kapsamlı bilimsel araştırmaların yapılması gerekmektedir.

**Anahtar Kelimeler:** Beslenme; depresyon; malnütrisyon; yaşam kalitesi; yaşlı

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Aging is a natural and inevitable process defined as being dependent on daily life activities, including all physiological, psychosocial, and cellular changes that continue throughout the life of every living thing and diminish most of the body's functions. In addition, there is an increase in birth rate and a decrease in mortality rate, due to preventive health practices such as sanitation, nutrition, and vaccination brought about by long life expectancy, there is an increase of approximately 5% in the elderly population every year.[1,2] According to the latest statistics, the elderly population increased by 17.1% from 2012 to 2016; while the old-age ratio compared to the total population, which was 7.3% in 2012, increased to 8.3% in 2016.[3]

Despite protective measures, the elderly population, which is increasing globally, brings with it problems of old age (neurological diseases, depression, decreased oral food consumption, inability to perform activities of daily living/immobility, and loss of appetite, etc.), these possible problems decrease the quality of life and lead to a decrease in productive potential. On the other hand, it is reported that the aging process leads to cognitive and mental disorders. It suppresses symptoms of many neuroendocrine-induced chronic diseases, leading to late diagnosis and economic losses.[4,5]

To maintain the quality of life of elderly individuals, it is known that healthy nutrition should be first alleviated. Healthy nutrition will alleviate or delay many geriatric syndromes such as malnutrition and depression, and may increase treatment success.[6] Physical and physiological changes that occur in the body with the aging process, and changes in nutrient consumption, and use of nutrients in the body are among the factors affecting the nutritional status of elderly individuals.[7]

This study was planned and conducted to evaluate the relationship between malnutrition, depression, and quality of life among elderly living at home and nursing home residents in Türkiye.

## MATERIAL AND METHODS

### STUDY DESIGN

This descriptive study was conducted using a simple random sampling method and face-to-face interview technique with a total of 210 elderly individuals over 65 years old (105 males and 105 females), living in 3 elderly nursing homes affiliated with the Ministry of Family and Social Services (n: 104) and living in their own homes (n: 106) in Ankara. To minimize the statistical error rate in the research results (80% power, 0.2 effect size, and 5% margin of error), the elderly living in their own homes in the 3 regions (Seyranbağları, Ümitköy, and Polatlı) where the nursing homes are located were selected by simple random sampling method. In this context, the sample size of elderly individuals living in nursing homes and those living in their own homes was ensured to be close to each other.

Data on the elderly population were obtained from the Ministry of Family and Social Services, and Provincial Health Directorate district by district. The sample and G-power computer-aided software (ver. 3.1.9.7; developed at Heinrich-Heine-Universität Düsseldorf, Germany) were determined accordingly. The elderly to be included in the research were determined by using the research results on the subject through G-Power computer-aided software, and a minimum of 120 elderly individuals were required with 80% power, 0.2 effect size, and 5% margin of error. Reasons for missing or inaccurate data and not volunteering to participate in the study were considered. To increase the power and effect size of the research, at least 200 elderly individuals were targeted and the study was completed with 210 elderly individuals.

Before participating in the research, the elderly individuals were provided with general information about the research through a questionnaire form. They were promised that the research data would be used only for scientific purposes. Elderly individuals who did not sign the informed consent form and whose data contained deficiencies/errors were not included in the research.

### DATA COLLECTION TOOLS

For research, firstly, ethics committee approval and a permission letter were obtained. At the beginning of the research, an informed consent form was signed for the elderly individuals. The data was obtained through a questionnaire using a face-to-face interview

technique. The questionnaire was created by the researchers by scanning the literature on the subject and delivered to the participants through repeated nursing home and home visits at certain intervals.

The questionnaire consists of 3 parts; in the 1st part, general informations and questions such as sociodemographic characteristics, in the 2nd part, questions such as nutritional habits, meal skipping etc., in the 3rd part of the questionnaire, Mini Nutritional Assessment-Short Form (MNA-SF); WHO-Quality of Life Instrument- Older Adults Module (WHOQOL-OLD) and Geriatric Depression Scale-Short Form (GDS-SF).

### MNA-SF

MNA-SF consists of six highly correlated questions for the assessment of nutritional status. In MNA-SF, changes in the patient's appetite status, weight loss in the last 3 months, mobility/dependence, psychological stress, or acute disease status in the last 3 months, the presence of neuropsychological problems, and BMI are scored and a total score is calculated. For patients who are unable to calculate BMI after revision of MNA-SF, an alternative calf circumference is offered instead of BMI. Calf circumference measurement was used in this study. In MNA-SF, 12-14 points are categorized as normal nutritional status, 8-11 points are at risk of malnutrition and 0-7 points are categorized as malnourished.[8] Sarikaya conducted a validity study of MNA-SF, and it was determined that MNA-SF is a valid method for the assessment of the nutritional status of elderly individuals in Türkiye.[9]

### WHOQOL-OLD

WHOQOL-OLD is a quality-of-life scale developed by taking into consideration the study data of the practical and easy-to-use WHOQOL-100. In the Turkish version of the scale, there are 26 questions in 5 sub-dimensions: general health, physical, psychological, social, and environmental. Each field represents the quality of life in its field independently of each other and the field scores are calculated between 4-20. The validity and reliability study of WHOQOL-OLD was conducted by Fidaner et al. The higher the score, the better the quality of life.[10]

### GDS-SF

GDS-SF is one of the most useful screening tools in the assessment of depression in elderly individuals. On the scale, 0-4 points are accepted as "no depression", 5-8 points as "mild depression", 9-11 points as "moderate depression" and 12-15 points as "severe depression". The scores obtained by the elderly individuals from all items were collected and the total scale score was obtained for each elderly individual.[11] The validity and reliability study of GDS-SF in the Turkish elderly population was conducted by Durmaz et al.[12]

### ETHICAL APPROVAL

Ethics Committee Approval was obtained from Gaziantep University Rectorate Clinical Research Ethics Committee (date: 27.11.2022, no: 2022/387) in line with the principles outlined in the Helsinki Declaration. In addition, research approvals were obtained from the Ministry of Family and Social Policies and the Provincial Health Directorate. Informed and signed consent forms were obtained from the volunteers who met the inclusion criteria of the study.

### STATISTICAL ANALYSES

The data obtained from the research were analyzed with appropriate statistical methods using the SPSS 25.0 software suite, developed by IBM Corporation, Armonk, New York, USA. Descriptive values are stated as number (n), percentage (%), minimum-maximum values, mean ($\overline{X}$), and standard deviation (±SD). The suitability of the variables for normal distribution was examined using visual histogram and probability graphs and analytical methods Kolmogorov-Smirnov. Fisher Exact chi-square was used to compare categorical data between groups, and one-way analysis of variance and "post hoc" Tukey tests were used to compare quantitative data between groups. The correlation of continuous quantitative data was evaluated using the Pearson Correlation test, and the significance level was accepted as $p<0.05$ in all statistical analyses.

## RESULTS

Table 1 shows the sociodemographic characteristics of the elderly living in nursing homes and their own

**TABLE 1:** Sociodemographic characteristics of the elderly living in nursing homes and their own homes in the study group according to gender (Ankara, 2022)

| | Male (n=105) | | Female (n=105) | | Total (n=210) | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Marital status | | | | | | |
| Married | 43 | 41.0 | 29 | 27.6 | 72 | 34.3 |
| Single | 17 | 16.1 | 6 | 5.7 | 23 | 11.0 |
| Divorced | 24 | 22.9 | 9 | 8.6 | 33 | 15.7 |
| His/her wife died | 21 | 20.0 | 61 | 58.1 | 82 | 39.0 |
| Education | | | | | | |
| Illiterate | 5 | 4.8 | 23 | 21.9 | 28 | 13.4 |
| Literate | 12 | 11.4 | 20 | 19.0 | 32 | 15.2 |
| Primary school graduate | 46 | 43.8 | 39 | 37.2 | 85 | 40.5 |
| Secondary school graduate | 13 | 12.4 | 7 | 6.7 | 20 | 9.5 |
| High school graduate | 13 | 12.4 | 12 | 11.4 | 25 | 11.9 |
| College/University graduate | 16 | 15.2 | 4 | 3.8 | 20 | 9.5 |
| Place of residence | | | | | | |
| Living at home | 43 | 41.0 | 63 | 60.0 | 106 | 50.5 |
| Nursing home | 62 | 59.0 | 42 | 40.0 | 104 | 49.5 |

homes in the study group according to gender. 34.3% of the elderly individuals stated that they are married. 58.5% of the elderly living at home and 9.6% of those nursing home residents are married, this difference is statistically significant ($p<0.05$). 40.5% of the elderly stated that they are primary school graduates; while 49.5% of them live in nursing homes, and 44.3% live with their spouse.

49.5% of the elderly individuals were diagnosed with hypertension, 45.7% with eye diseases, and 41.0% with cardiovascular diseases; 82.4% stated that they regularly use medicines. The meal consumption of the elderly living in nursing homes and their own homes in the study group according to gender is given in Table 2. According to, 70.0% of elderly individuals skip meals Table 2. The elderly individuals stated that the most skipped meal was the breakfast meal (49.7%); the reasons for skipping meals were stated as no habit (31.3%), unwillingness (27.2%), and getting up late (27.2%).

Table 3 shows the evaluation of malnutrition and depression status in elderly individuals over 65 years living in nursing homes and their own homes according to living conditions. The mean scores of the elderly individuals from the GDS-SF and MNA-SF scales were 6.0±3.8 and 11.3±2.4; respectively. It was found that 64.1% of elderly individuals staying at home and 46.2% of elderly living in nursing homes were in normal nutritional status ($p<0.05$). In addition, 51.8% of elderly individuals staying at home and 30.7% of elderly living in nursing homes had no depression ($p<0.05$) (Table 3).

Assessment of the quality of life of elderly individuals living in nursing homes and their own homes according to malnutrition status is given in Table 4. The quality of life scores of elderly living at home was higher than those living in nursing homes. In addition, the quality of life scores of the malnourished-elderly individuals (in all sub-dimensions) were lower than those with normal nutritional status ($p<0.05$) (Table 4).

Table 5 shows the evaluation of the correlation between age, malnutrition, depression, and quality of life scores of elderly individuals living in nursing homes and their own homes. A strong positive correlation was found between malnutrition and quality of life scores of the elderly individuals, ($r=0.560$; $p<0.05$) and a strong negative correlation was found between malnutrition and depression scores ($r=-0.563$; $p<0.05$). In addition, a strong neg-

**TABLE 2:** Meal consumption of the elderly living in nursing homes and their own homes in the study group according to gender (Ankara, 2022)

| | Male (n=105) | | Female (n=105) | | Total (n=210) | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Meal skipping | | | | | | |
| Yes | 72 | 68.6 | 75 | 71.4 | 147 | 70.0 |
| No | 33 | 31.4 | 30 | 28.6 | 63 | 30.0 |
| | n=72 | | n=75 | | n=147 | |
| Skipped meal | | | | | | |
| Breakfast | 37 | 51.4 | 36 | 48.0 | 73 | 49.7 |
| Lunch | 28 | 38.9 | 33 | 44.0 | 61 | 41.5 |
| Dinner | 7 | 9.7 | 6 | 8.0 | 13 | 8.8 |
| Reason for skipping meals* | | | | | | |
| No habit | 18 | 25.0 | 28 | 37.3 | 46 | 31.3 |
| Unwillingness | 21 | 29.2 | 19 | 25.3 | 40 | 27.2 |
| Get up late | 23 | 31.9 | 17 | 22.7 | 40 | 27.2 |
| Doesn't like the food at the nursing home | 5 | 6.9 | 8 | 10.7 | 13 | 8.8 |
| Shortage of time | 3 | 4.2 | 3 | 4.0 | 6 | 4.1 |
| No food preparation | 1 | 1.4 | - | - | 1 | 0.7 |
| Other | 1 | 1.4 | - | - | 1 | 0.7 |

*A single answer was received from the elderly regarding questions about skipping meals and the reasons

**TABLE 3:** Evaluation of malnutrition and depression status in elderly individuals over 65 years old according to living conditions (Ankara, 2022)

| | Living at home (n=106) | | Registered in nursing home (n=104) | | Total (n=210) | | |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | $\chi^2$ p value |
| Malnutrition status | | | | | | | |
| Malnourished | 2 | 1.9 | 11 | 10.6 | 13 | 6.2 | $\chi^2$=10.661 |
| At the risk of malnutrition | 36 | 34.0 | 45 | 43.2 | 81 | 38.6 | **p*<0.05** |
| Normal nutritional status* | 68 | 64.1 | 48 | 46.2 | 116 | 55.2 | |
| Depression status | | | | | | | |
| No depression¥ | 55 | 51.8 | 32 | 30.7 | 87 | 41.4 | $\chi^2$=10.532 |
| Mild depression | 27 | 25.5 | 35 | 33.7 | 62 | 29.6 | **p¥<0.05** |
| Moderate depression | 13 | 12.3 | 24 | 23.1 | 37 | 17.9 | |
| Severe depression | 11 | 10.4 | 13 | 12.5 | 24 | 11.4 | |

p*: Represents the difference in normal nutritional status between elderly living in nursing homes and those living at home.
p¥: Represents the difference without depression. Between the elderly living in nursing homes and those living at home.

ative correlation was found between age and malnutrition (r=-0.321; p<0.05), and quality of life scores (r=-0.279, p<0.05) of elderly individuals, and a strong positive correlation was also found between age and depression scores (r=0.281, p<0.05) (Table 5).

Figure 1 shows the correlation between age and malnutrition scores ($R^2$=0.103), Figure 2 shows the correlation between age and depression scores ($R^2$=0.079), Figure 3 shows the correlation between age and quality of life scores ($R^2$=0.078), Figure 4 shows the correlation between malnutrition and quality of life scores ($R^2$=0.314), Figure 5 shows the correlation between malnutrition and quality of life scores ($R^2$=0.317), and Figure 6 shows the correlation between depression and quality of life scores of elderly individuals living in nursing homes and their own homes ($R^2$=0.618).

**TABLE 4:** Assessment of the quality of life of elderly individuals living in nursing homes and their own homes according to malnutrition status (Ankara, 2022)

| WHOQOL-OLD sub-dimensions | | Malnourished (n=13)[1] | At risk of malnutrition (n=81)[2] | Normal nutritional status (n=116)[3] | Total (n=210) | F | p value |
|---|---|---|---|---|---|---|---|
| General health | X̄±SD | 3.7±0.8 | 5.2±1.4 | 6.3±1.4 | 5.7±1.5 | 29.069 | **<0.05*[1-2.1-3]** |
| | Minimum-maximum | 2.0-5.0 | 2.0-9.0 | 2.0-10.0 | 2.0-10.0 | | |
| Physical health | X̄±SD | 13.9±2.6 | 19.0±5.0 | 23.6±4.4 | 21.2±5.4 | 42.221 | **<0.05*[1-2.1-3]** |
| | Minimum-maximum | 10.0-18.0 | 10.0-33.0 | 11.0-35.0 | 10.0-35.0 | | |
| Psychological health | X̄±SD | 12.3±2.6 | 16.7±4.4 | 20.0±3.4 | 18.3±4.4 | 34.489 | **<0.05*[1-2.1-3]** |
| | Minimum-maximum | 7.0-16.0 | 9.0-28.0 | 7.0-30.0 | 7.0-30.0 | | |
| Social health | X̄±SD | 5.0±2.1 | 7.3±2.6 | 8.3±2.4 | 7.7±2.6 | 11.839 | **<0.05*[1-3]** |
| | Minimum-maximum | 3.0-9.0 | 3.0-12.0 | 3.0-14.0 | 3.0-14.0 | | |
| Environmental health | X̄±SD | 20.6±4.2 | 25.9±6.0 | 28.8±4.7 | 27.2±5.6 | 18.221 | **<0.05*[1-2.1-3]** |
| | Minimum-maximum | 15.0-29.0 | 10.0-37.0 | 17.0-39.0 | 10.0-39.0 | | |

p<0.05*[1-2]: Shows the statistical difference between malnourished elderly and the elderly at risk for malnutrition.
p<0.05*[1-3]: Shows the statistical difference between malnourished elderly and the elderly with normal nutritional status.
WHOQOL-OLD: WHO-Quality of Life Instrument- Older Adults Module

**TABLE 5:** Evaluation of the correlation between age, malnutrition, depression, and quality of life scores of the elderly individuals living in nursing homes and their own homes (Ankara, 2022)

| r value | MNA-SF | WHOQOL-OLD | GDS-SF |
|---|---|---|---|
| Age (year) | **-0.321*** | **-0.279*** | **0.281*** |
| MNA-SF | | **0.560*** | **-0.563*** |
| WHOQOL-OLD | | | **-0.786*** |

*p<0.05; r= Correlation coefficient; MNA-SF: Mini-Nutritional Assessment-Short Form; WHOQOL-OLD: WHO-Quality of Life Instrument- Older Adults Module; GDS-SF: Geriatric Depression Scale-Short Form

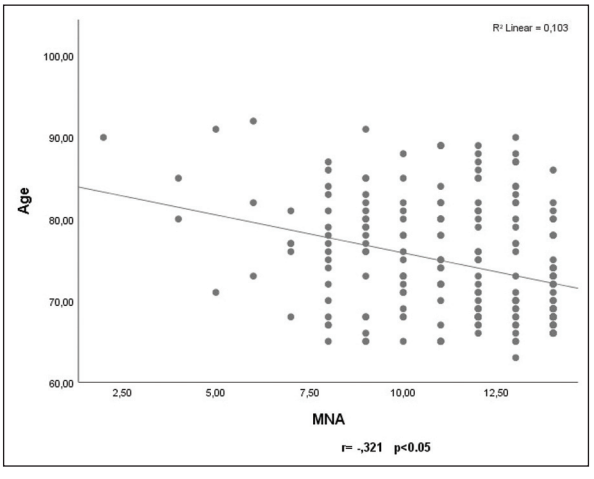


**FIGURE 1:** Correlation between age and malnutrition scores of the elderly individuals
MNA: Mini-Nutritional Assessment

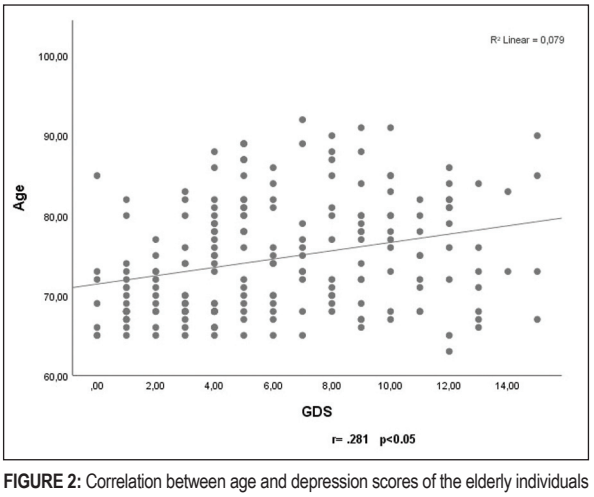


**FIGURE 2:** Correlation between age and depression scores of the elderly individuals
GDS: Geriatric Depression Scale

## DISCUSSION

Physiological and psychological changes in body structure and aging adversely affect the nutrient consumption of elderly individuals and the use of nutrients consumed in the body; this poses a risk for malnutrition, depression, and decreased quality of life scores. It is stated that chronic diseases that are frequently seen in elderly individuals are cardiovascular diseases, hypertension, kidney diseases, and diabetes; moreover, it is reported that the most important factor causing an increase in the prevalence of chronic diseases is poor eating habits of the elderly. In addition, elderly individuals living alone, reduced purchasing opportunities due to low economic income, indifference to food, not getting used to the nursing home environment, contraction of social environ-

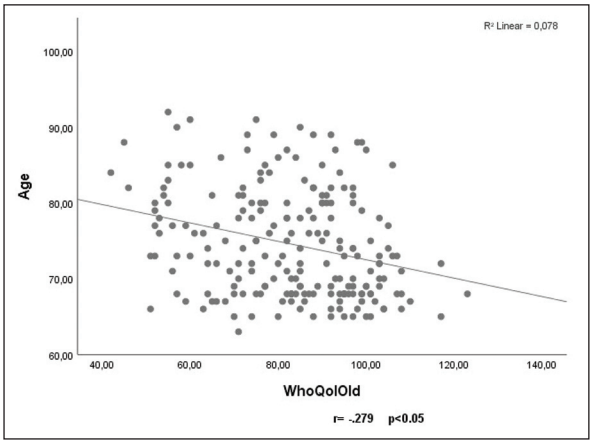


**FIGURE 3:** Correlation between age and quality of life scores of the elderly individuals
WHOQOL-OLD: WHO-Quality of Life Instrument-Older Adults Module

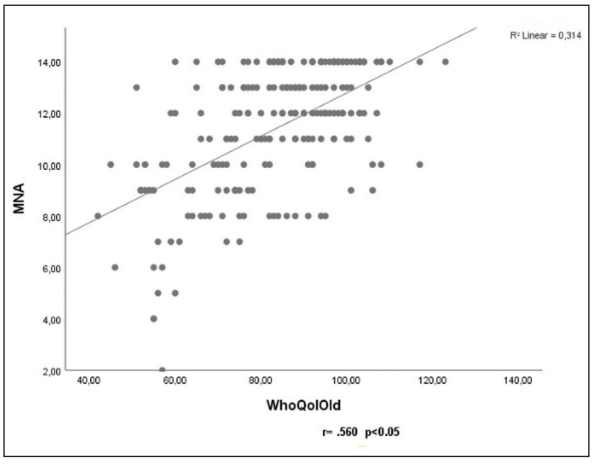


**FIGURE 4:** Correlation between malnutrition and quality of life scores of the elderly individuals
MNA: Mini-Nutritional Assessment
WHOQOL-OLD: WHO-Quality of Life Instrument- Older Adults Module

ment, oral and dental health problems, and decreased sense of taste and smell lead to a decrease in nutrient consumption of elderly individuals and inadequate and unbalanced nutrition.[13,14]

A total of 210 elderly individuals, 106 of whom were living at their homes and 104 in nursing homes were included in this study. Fifty percent of the elderly individuals were male and 49.5% were in nursing homes.

When the studies in the literature were examined, it was found that male individuals stayed more in nursing homes than female individuals. It is thought that male individuals who are divorced, whose spouse has passed away, or who are single, with the thought that they will not be wanted or comfortable with their relatives or children, can choose nursing homes. Female elderly; share their lives with relatives and children; by taking care of grandchildren in the family, and arranging the house, it is thought to be more useful in the family than male elderly.

Mealtimes and regular meal consumption are important to ensure adequate and balanced nutrition in elderly individuals. To make digestion easier in elderly individuals, the amount of food consumed in

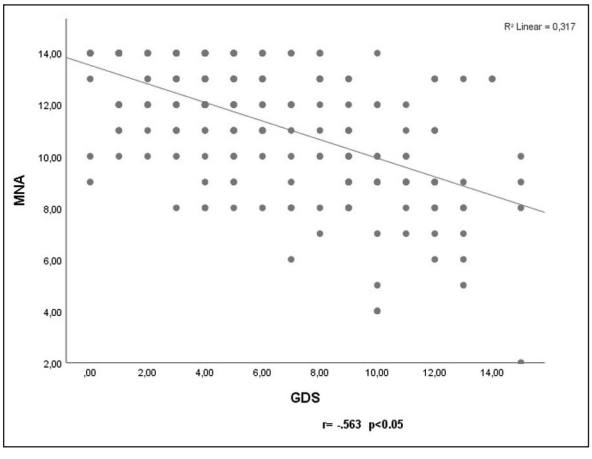


**FIGURE 5:** Correlation between malnutrition and depression scores of the eldely individuals
MNA: Mini-Nutritional Assessment; GDS: Geriatric Depression Scale

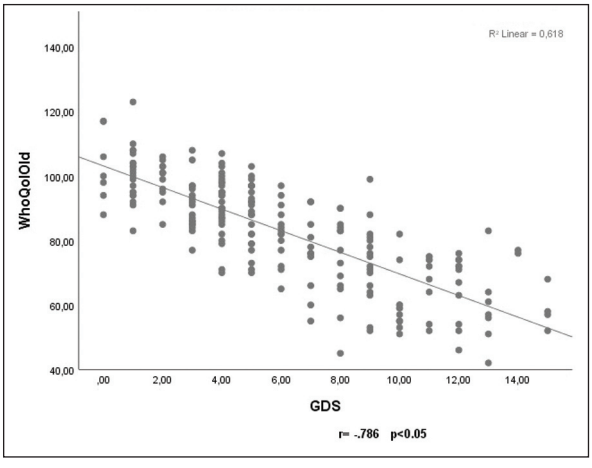


**FIGURE 6:** Correlation between depression and quality of life scores of the elderly individuals
WHOQOL-OLD: World Health Organization Quality of Life Instrument-Older Adults Module
GDS: Geriatric Depression Scale

meals should be reduced and the frequency of meals should be increased. The consumption of food is to be consumed at least 3 times a day and the time between meals does not exceed 4-5 hours ensuring the regular functioning of metabolism.[15] The consumption of fewer than 3 meals in elderly individuals may increase the number of nutrients to be eaten in one meal and may cause various digestive system disorders. For these reasons, it is important to eat less and less frequently.[16]

In this study, 70.0% of the elderly individuals stated that they were skipping meals; the most frequently skipping meals were breakfast (49.7%) and lunch (41.5%); as reasons for skipping meals, the elderly individuals stated that they had no habit (31.3%), unwillingness (27.2%) and getting up late in the morning (27.2%). When the literature is examined, there are studies with similar and different results. In studies conducted in Türkiye, Arslan Özkul stated that more than about 60.0% of elderly individuals had 3 meals or more per day.[17] Özgüneş stated that 74.7% of elderly individuals did not skip meals; 35.0% of elderly individuals who skipped meals, skipped breakfast meals.[18]

Meal skipping in the elderly is an indication of malnutrition. The fact that the most skipping meal is breakfast in elderly individuals may be because the elderly have sleep problems. To start a healthy day after fasting all night, breakfast must be made. In a study conducted on elderly individuals, it was determined that the most skipped meal was breakfast and it was found that breakfast skipping habits caused insufficient intake of 12 to 16 vitamins and minerals other than energy, protein, A, D, $B_{12}$ vitamins, and zinc.[19]

In this study, it was determined that 34.9% of elderly living at home were at risk of malnutrition and 1.9% of them were malnourished; 38.6% of elderly in nursing homes were at risk of malnutrition and 6.2% of them were malnourished.

Ergün et al. investigated the elderly in a nursing home and at home in terms of malnutrition and determined that 41.5% of elderly staying at home are at risk of malnutrition, 12.3% of them are malnourished and 35.5% of elderly in nursing homes are at risk of malnutrition and 12.9% of them are malnourished; in other studies with elderly living at home Bektas et al. determined that 35.1% of elderly individuals are at risk of malnutrition and 15.5% of them are malnourished; Şahin et al. stated that 49.2% of elderly individuals are at risk of malnutrition and 5.8% of them are malnourished; Bilge et al. stated that 20.5% of elderly in nursing homes are at risk of malnutrition and 3.3% of them are malnourished.[20-23]

The fact that the elderly living at home mostly with their spouses and have their favorite meals that they may consume; and the elderly living at home have fewer chewing and swallowing difficulties; these factors are thought to be effective in the formation of this situation.

In this study, it was found that 51.8% of the elderly living at home and 30.7% of the elderly in nursing homes did not have depression. The risk of depression in the elderly living at home was found to be significantly lower than in the elderly in nursing homes. Similar to this study, Gül et al. found that depressive symptom levels were higher in the elderly in nursing homes compared to those living at home.[24]

In the formation of these results, the elderly in nursing homes are thought to be more affected by depression because they are usually single or widowed, their children or relatives do not accept them, and they are asocial or lonely; in addition, it is thought that the elderly in nursing homes cannot get used to the conditions of nursing homes, it may be effective in this case.

Adequate and balanced nutrition is an important concern for all ages. With aging, changes in body composition, organ functions, energy needs, and uses, and nutrient requirements occur.[25] It has been reported that skipping meals and/or underfeeding are common due to psychological problems and care problems in the elderly and this may lead to malnutrition.[26] Approximately 40% of elderly individuals are not fed enough to meet their daily energy needs; mostly, more than 60% of elderly individuals are skipping meals and it poses a risk for malnutrition.[27] Neurological diseases, depression, decreased oral food consumption, neurological dysphagia, inability to independently obtain and consume food, inability

to perform activities of daily living/immobility, physiological changes, the effects of medications, and loss of appetite all may contribute to malnutrition in elderly individuals.[28-30]

With advancing age, changes occur in body composition including decreasing lean tissue mass, increasing fat mass, and decreasing bone mineral density. Increased physical activity in elderly individuals, and consumption of more energy and nutrients, help to improve the quality of life. However, physical activity and quality of life decrease due to decreased functional abilities in elderly individuals.[31,32] Regular physical activity increases functional capacity in elderly individuals; protects and improves mental health, and balances body weight and consequently improve the quality of life of elderly.[33]

Quality of life is also expressed as an increase in welfare; this is associated with many factors such as chronic disease, economic status, social relations, gender, and physical disabilities. The elderly individuals who lose their health and physical abilities are experiencing a decline in economic power with retirement. In addition to being an important factor in the loss of spouses, elderly living in nursing homes have difficulty in finding their home arrangements in nursing homes.[34]

All kinds of activities organized in nursing homes for the elderly improve the quality of life of the elderly and decrease their depression scores. In a study, it was determined that depression levels of elderly who spend their free time in activities decreased significantly. Nursing homes, which are considered the most important source for evaluating the quality of services provided to the elderly, are generally insufficient to increase the welfare level of the elderly. Nursing homes; are responsible for meeting all needs of the elderly, such as personal care, housekeeping, food, social activity, and treatment. Increasing the capacity and quality of care in nursing homes and similar institutions is important.[35]

## LIMITATIONS

Since this research is a descriptive study, the fact that an inference reflecting the general society cannot be made is among the limitations of the research. Another limitation of the research is that some data on the nutritional status of elderly individuals and the responses to the scales used are within the scope of the elderly's statements. Nutrition, depression, and quality of life scores of the elderly were obtained through relevant scales, which is another limitation of the study. In addition to these scales, the use of additional questions and scales that will comprehensively evaluate nutrition, depression, and quality of life is important in terms of shedding light on other future studies.

## CONCLUSION

Many physical and physiological changes occur in individuals with old age, and these changes reduce the food consumption of elderly individuals. In addition, chronic diseases that increase with age in the elderly may also reduce the individual's food consumption. For all these reasons, malnutrition is an important factor affecting health and mortality in all elderly individuals. To improve the health status of the elderly, social awareness and education activities regarding healthy aging should be increased, health, economic, and social policies should be determined, and solutions to their problems should be sought. It is known that elderly individuals must first eat healthily to increase and maintain their quality of life. In addition, it is suggested that healthy nutrition will alleviate or delay many geriatric syndromes such as malnutrition and depression, and may increase treatment success. Therefore, for elderly individuals to have a healthy old age, malnutrition, depression, and quality of life should be screened at regular intervals, immediate action should be taken when a problem is noticed, and these problems should be solved with systematic work.

It is thought that regularly evaluating the nutritional status of the elderly, regardless of where they live in hospitals, nursing homes, or their own homes, will be beneficial in preventing malnutrition, providing educational interventions on healthy nutrition and the aging process, planning projects and various social activities for their spiritual recovery will be beneficial in increasing their quality of life.

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### *Conflict of Interest*

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### *Authorship Contributions*

***Idea/Concept:*** *Çağdaş Salih Meriç;* ***Design:*** *Çağdaş Salih Meriç, Nurcan Yabancı Ayhan;* ***Control/Supervision:*** *Nurcan Yabancı Ayhan;* ***Data Collection and/or Processing:*** *Çağdaş Salih Meriç;* ***Analysis and/or Interpretation:*** *Çağdaş Salih Meriç;* ***Literature Review:*** *Çağdaş Salih Meriç;* ***Writing the Article:*** *Çağdaş Salih Meriç, Nurcan Yabancı Ayhan;* ***Critical Review:*** *Nurcan Yabancı Ayhan;* ***References and Fundings:*** *Çağdaş Salih Meriç;* ***Materials:*** *Çağdaş Salih Meriç.*

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