Austin Journal of Nursing & Health Care

Open Access

Austin Publishing Group

Research Article

# The Effect of Physical Activity Level of the Elderly on Depression and Quality of Life

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**Received:** September 29, 2022; **Accepted:** October 20, 2022; **Published:** October 27, 2022

**Abstract**

**Objective:** The effect of physical activity level of the elderly on depression and quality of life was investigated in the study.

**Methods:** This study was planned as a descriptive relational study. The study was carried out with individuals registered in a Family Health Center located in Selçuklu district of Konya province. It was collected from 154 elderly people who met the inclusion criteria of the study between February 1 and February 20, 2022 via Google Forms and face-to-face survey method. In the collection of data; Personal information form prepared by the researchers, questioning socio-demographic characteristics, International Physical Activity Questionnaire, Beck Depression Scale and SF 36 Quality of Life Scale were used. The results were evaluated at 95% confidence interval and $p<0.05$ significance level.

**Results:** When the physical activity questionnaire, depression and quality of life levels of the elderly were evaluated, it was seen that 69.5% were physically inactive (inactive) and 30.5% had low physical activity levels (Low active). When the depression level of the elderly was evaluated, it was seen that 33.1% had mild depression, 42.9% had moderate depression and 24% had severe depression. The mean score of the mental sub-dimension of quality of life of the elderly was 35.0 ± 10.25 and the mean score of the physical sub-dimension was 35.18 ± 8.40.

**Conclusions:** In the study examining the effects of depression and quality of life on physical activity levels in the elderly, men, single people, those who perceive their income poorly and those with chronic diseases were included in the risk group in terms of physical activity.

**Keywords:** Elderly; Physical Activity; Depression; Quality of life

## Introduction

The definition of old age is a very broad concept that includes factors such as socioeconomic, environmental, education and nutrition, in which changes and losses are seen in people. Senile; It is a complex process that includes variables such as genetics, lifestyle, and chronic disease. According to another definition, normal aging; They describe it as the gradual loss of the functionality of various systems of the body, excluding losses as a result of disability or disease [1]. Since the concepts of aging and aging cannot be made with a single definition, generally aging; It is defined as chronological, social, physiological and psychological aging and is divided into subgroups. Chronological aging is aging based on years, from birth to the time that a person is in [2]. According to the classification made about old age, 65-74 years old is considered young-old, 75-84 years old is middle-aged, and 85 years old and over is old. The World Health Organization (WHO) has declared that there is a large increase in non-communicable diseases in all societies. He reported that the reason for this was the decrease in physical activity as a result of the increase in the standard of living, the change in eating habits and the increase in smoking [3]. According to WHO estimates, more than 2 million people die each year due to lack of physical activity. Physical activity is necessary for the protection of the health of the elderly and for a quality life. With the increase in the number of elderly people day by day, studies have begun to focus on how individuals can spend their lives better in older ages. Individual differences experienced affect the quality of life in old age. Physical activity is a protective factor for many diseases in the elderly. Depression is at the forefront of the mental problems seen in old age, and senile depression can be followed together with other physical disorders [4]. The leading risk factors are the aging process, diseases, drug use, nutritional disorders and genetic factors. This type of depression seen in the elderly includes different features from other periods. Somatic complaints and cognitive impairment are at the forefront of depression in the elderly population. The diagnosis of depression in the elderly is often overlooked, not only because it is not taken into account too much, but also because of problems at the level of the patient, patient relatives and physician, and is mostly attributed to other physical reasons [5]. The thought that depressive symptoms are a part of old age or due to physical diseases can make it difficult to diagnose depression, take longer to treat, worsen the course of the disease and even increase the risk of suicide. Concluded suicide is twice as high in the elderly population as in the younger population. Improving the quality of life in the rapidly increasing elderly population is shown as one of the most important goals in almost every field of health. Since the primary purpose of treatment in elderly people is to improve the quality of life, reduce death rates and the percentage of health care services, it is necessary to consider the quality of life and the factors




**Citation:** Sefa Lök. The Effect of Physical Activity Level of the Elderly on Depression and Quality of Life. Austin J Nurs Health Care. 2022; 9(2): 1073.

affecting it in our clinical practice [6]. In the last 10 years, the word "quality of life" has become more used and has become the focus of clinical practice and scientific research. Despite this, researchers still have not reached a consensus on the areas that determine the quality of life. When it comes to quality of life, the concepts related to the psychological, functional and social aspects of the person gain importance. These three different dimensions should be evaluated together with the health status of the person. Because all the factors affecting the quality of life are interrelated and affect other factors [7]. For this reason, the effect of physical activity level of the elderly on depression and quality of life was investigated in this study.

## Research Questions

1. What are the sociodemographic characteristics of the elderly?

2. Does the level of physical activity change according to the socio-demographic characteristics of the elderly?

3. What are the physical activity, depression and quality of life levels of the elderly?

4. What is the effect of depression and quality of life of the elderly on the level of physical activity?

## Methods

### Type of Research

This study was planned as descriptive relational.

### Location and Features of the Research

The study was carried out with individuals registered in a Family Health Center located in Selçuklu district of Konya province.

### Study Group of the Research

The sample size in the study was calculated in the G*Power 3.1.9.2 analysis program. With an effect size of 0.26, a power of 95%, a margin of error of 5% [8], the total quality of life mental dimension average score (20.4 ± 4.5) was calculated as 154, taking into account.

The inclusion criteria of the study consisted of individuals aged 65 and over, literate individuals, and individuals who agreed to participate in the study.

Bağımlı değişkenler; Fiziksel aktivite, depresyon düzeyi, yaşam kalitesi

Bağımsız değişkenler; sosyodemografik özellikler

### Data Collection Technique and Tools

The data of the research were collected between February 1 and February 20, 2022 via Google Forms and face-to-face survey method. In data collection; Personal information form prepared by the researchers, questioning socio-demographic characteristics [9-11], International Physical Activity Questionnaire, Beck Depression Scale and SF 36 Quality of Life Scale were used.

### International Physical Survey (UFAA)

Physical activity levels were determined with the International Physical Activity Questionnaire (UFAA). The validity and reliability study of the questionnaire was conducted in Turkey. In our study, the self-administered short form of the questionnaire was used to evaluate the physical activity level, including the "last seven days". This short form consists of seven questions and provides information about sitting, walking, moderate-intensity activities, and time spent in vigorous activities. Calculation of the total score of the short form includes the sum of time (minutes) and frequency (days) of walking, moderate-intensity activity, and vigorous activity. The sitting score (level of sedentary behavior) is calculated separately. In the evaluation of all activities, the criterion is that each activity is done for at least 10 minutes at a time. A score is obtained as "MET-minutes/week" by multiplying the minute, day and MET value (multiples of resting oxygen consumption). Walking time (minutes) was multiplied by 3.3 METs to calculate the walking score. In the calculation, 4 METs for moderate-intensity activity and 8 METs for vigorous activity were taken. Physical activity levels were classified as physically inactive (3000 MET-min/week).

### Beck Depression Scale

Beck depression scale: Beck Depression İndex (BDI) is a self-report scale developed by Beck in 1961 to measure emotional, cognitive, somatic and motivational components. BDI is one of the most frequently used self-informing tools in research and clinics. Although its main purpose is to comprehensively evaluate the symptoms of depression, it also allows the evaluation of cognitive content. The scale consists of 21 items and two items are for emotions, eleven items are for cognitions, two items are for behaviors, five items are for somatic symptoms, and one item is for interpersonal symptoms. This questionnaire consisting of 21 questions was used in the evaluation of BDI. Patients were asked to choose the most appropriate one of these questions for their situation. Scores ranging from 0 to 63 were obtained by assigning a score of 0, 1, 2, 3 to each question. The results were evaluated as 0-9 none/minimal depression, 10-18 mild depression, 19-29 moderate depression, 30-63 severe depression. The validity and reliability of the BDI, which is used to determine the intensity of depression, for the Turkish population was made by Hisli [12].

### SF 36 Quality of Life Scale

This scale developed by Ware is one of the most widely used scales to measure quality of life. The Turkish validity and reliability study was conducted by [13] for the reliability and validity study of the Turkish version of the short form-36 (SF-36). In the reliability studies of the scale developed by Ware et al., Cronbach's alpha coefficients of each subscale were found between 0.73 and 0.76. It consists of 2 main dimensions and 8 sub-dimensions in SF-36: The scale has Likert type scoring. 35 out of 36 statements in the scale are evaluated considering the last 4 weeks. The scores of each sub-dimension and the two main dimensions range from 0 to 100. The positive scoring SF-36, the higher the score of each dimension; Health-related quality of life was scored as increased. With the scale, 8 sub-dimensions can be evaluated separately, and quality of life can be evaluated in two main dimensions, physical and mental. In calculating the main dimension scores, the score is calculated by adding the sub-dimension scores under each main dimension and dividing by the number of dimensions. For example, when calculating the physical dimension score; physical function, role limitation-physical, bodily pain, energy/vitality and general health perception scores are added and divided by 5. General health perception and energy/vitality take place in both main dimensions. SF-36 evaluates both positive and negative aspects of health status. It is not possible to obtain a total score for the SF-36

quality of life scale. Instead, summary scores can be obtained for the physical and mental components of health in the SF-36 scale. While physical health components are physical function, physical role, pain and general health perception subscales in the scale, mental health components are; vitality, social function, emotional role and mental health subscales. In summary scores, the lowest "0" and the highest "100" points are taken, and the highest score indicates good health.

### Evaluation of Data

The data of the study were evaluated using the statistical package program SPSS for Windows 22.0 (Statistical Package for Social Science). Number of units (n), percentage (%), mean ± standard deviation (mean (SD)) values were used as summary statistics. The relationship between physical activity levels and sociodemographic characteristics was evaluated by chi-square analysis. In order to evaluate the relationships between physical activity level and depression and quality of life scales, multiple regression analysis was used by choosing the backward method. In the analysis, categorical variables were determined as 1 for groups with risk factors. The results were evaluated at 95% confidence interval and $p<0.05$ significance level.

### Ethical dimension

Ethics approval was obtained from the Ethics Committee of the Faculty of Sport Sciences for the study. Before starting the study, informed consent form was obtained from the elderly individuals. The purpose of the research, its duration and the procedures to be carried out during the research were briefly explained in a language they could understand, the principle of "Informed Consent", the principle of "Autonomy" by stating that individuals could withdraw from the research at any time, and the principle of "Confidentiality and Confidentiality" by stating that individual information would be protected after sharing it with the researcher.

## Results

The average age of the elderly is 70.25 ± 3.28, 46.1% are female, 34% are secondary school graduates, 50.6% are married, 47.4% perceive their income as bad, and 76% determined to have any chronic disease.

When the physical activity questionnaire, depression and quality of life levels of the elderly were evaluated, it was seen that 69.5% were physically inactive (inactive) and 30.5% had low physical activity levels (Low active). When the depression level of the elderly was evaluated, it was seen that 33.1% had mild depression, 42.9% had moderate depression and 24% had severe depression. The average score of the mental Horse dimension of the quality of life of the elderly was 35.0 ± 10.25, and the average of the physical sub-dimension score was 35.18 ± 8.40 (Table 1).

The physical activity status of the elderly according to their sociodemographic characteristics is presented in Table 2. It was found that men were more inactive than women in terms of physical activity, and the difference was statistically significant ($p<0.05$). It was found that singles were more inactive than married people in terms of physical activity, and the difference was statistically significant ($p<0.05$). It was found that those with chronic disease were more inactive in terms of physical activity than those without, and the difference was statistically significant ($p<0.05$). There was no statistically significant difference between physical activity level, education status and perceived income level ($p>0.05$) (Table 2).

**Table 1:** Distribution of Physical Activity, Depression and Quality of Life Scores of Participants.

| Scales | Number (n) | Percent (%) |
|---|---|---|
| **Physical Activity Questionnaire** | | |
| Physically inactive (Inactive) (<600 MET-min/week) | 107 | 69,5 |
| Low physical activity level (600-3000 MET-min/week) (Low Active) | 47 | 30,5 |
| **Depression Scale** | | |
| Mild Depression | 51 | 33,1 |
| Moderate Depression | 66 | 42,9 |
| Severe Depression | 37 | 24,0 |
| | **Mean ± SD** | **Min-Max** |
| **Life quality** | | |
| Mental Dimension | 35,0 ± 10,25 | 22-74 |
| Physical Dimension | 35,18 ± 8,40 | 17-55 |

**Table 2:** Distribution of Physical Activity Levels of Participants by Sociodemographic Characteristics.

| Variable | Physical Activity Level | | |
|---|---|---|---|
| | Inactive n (%) | Minimal Active n (%) | Test value P |
| **Gender**** | | | |
| Woman | 50 | 21 | $X^2$: 0,055 p:0,010* |
| Male | 57 | 26 | |
| **Education Status**** | | | |
| literate | 28 | 6 | $X^2$: 8,516 p:0,374 |
| Primary school | 17 | 3 | |
| Middle School | 34 | 18 | |
| High school | 27 | 20 | |
| **Marital status**** | | | |
| Married | 49 | 29 | $X^2$: 3,306 p:0,021* |
| Single | 58 | 18 | |
| **Perceived Income**** | | | |
| Good | 12 | 9 | $X^2$: 4,203 p:0,838 |
| Middle | 47 | 13 | |
| Bad | 48 | 25 | |
| **Presence of Chronic Disease**** | | | |
| Yes | 82 | 35 | $X^2$: 0,084 p:0,026* |
| No | 25 | 12 | |

$X^2$: Chi-square test, *p<0.05
**Chi-square analysis with Yates correction was performed as the observed number of eyes was less than 25.

In order to evaluate the effects of mental and physical sub-dimensions on depression and quality of life of the elderly on physical activity level, multiple regression analysis was performed by choosing the backward method. It was observed that the physical activity level mean scores of the mental and physical sub-dimensions of depression and quality of life of the elderly had a highly significant effect on the

**Table 3:** The Effect of Depression and Quality of Life Levels of the Elderly on the Level of Physical Activity.

| Determinants | β | t | p | Collinearity | |
|---|---|---|---|---|---|
| | | | | Tolerance | VIF |
| **Depression Level (1=Severe depression)** | -0,667 | 1,023 | 0,000* | 0,661 | 2,027 |
| **Quality of Life Mental Dimension (Continuous)** | 0,583 | 4,216 | 0,000* | 0,722 | 1,775 |
| **Quality of Life Physical Dimension (Continuous)** | 0,823 | 7,320 | 0,000* | 0,498 | 2,053 |
| R=0,823 $R^2$=0,627 Adjusted $R^2$= 0,731 F=3542,22 p<0,000* | | | | | |

physical activity level (p<0.001). According to the regression analysis, it was found that the level of depression had a negative effect on physical activity, and a positive effect on the mental and physical sub-dimensions of quality of life. Depression (β=-0.667) and quality of life mental (β=-0.583) and physical sub-dimensions (β=-0.823) explained 73.1% (Adjusted R2= 0.731) of the change in physical activity level (Table 3).

## Discussion

When the effect of physical activity on depression and quality of life levels of the elderly is evaluated; It was determined that the majority of the elderly did not do physical activity. A strong relationship was found between physical activity and depression and quality of life. It has been observed that the majority of the elderly have mild depression and the quality of life is low in both physical and mental areas. [3]examined the physical activity level of the elderly and found the physical activity level of the elderly to be low. In the present study, Thomas et al. Similar to the study, the physical activity level of the elderly was found to be very low. The low physical activity level of the elderly may increase the incidence of chronic diseases and cause their existing diseases to be more severe.

In the present study, it was observed that the majority of the elderly showed mild symptoms of depression. When the findings of studies evaluating the prevalence of depression in the elderly were examined, it was reported that the depression levels of the elderly were high in many studies [9,14, 10]. A [15] emphasized that there is a significant relationship between the physical activity level of the elderly and depression. In the results of the research, it has been reported that by increasing the physical activity level of the elderly, the symptoms specific to depression will also decrease. Our current study finding was similar to the study findings we reported above.

In our study, physical activity was found to be the determinant of depression and quality of life in the elderly, mental and physical domains. In the literature, depression and quality of life levels of the elderly with low and insufficient physical activity levels are negatively affected, and it is reported that this may cause the elderly to experience more adverse conditions and poor health [1,16,11].

## Conclusion

In the study examining the effects of depression and quality of life on physical activity levels in the elderly, men, single people, those who perceive their income poorly and those with chronic diseases were included in the risk group in terms of physical activity. As the physical activity level of the elderly decreased, their depression levels increased and their quality of life decreased. In line with these results, it has been seen that planning physical activity programs especially for the elderly is very important in reducing depression and increasing the quality of life. As a result, it can be said that evaluating the relationship between the physical activity levels of elderly individuals and their depression levels is important in arranging and structuring the services to be offered to them, and also in terms of protecting individuals from chronic diseases.

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