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Original article

CORRELATION BETWEEN DEPRESSIVE SYMPTOMS AND PHYSICAL ACTIVITY LEVELS OF ELDERS, LIVING IN A CERTAIN AREA

LOK Neslihan¹, LOK Sefa²

Abstract*

Aim. This study has been conducted in order to evaluate the correlation between depressive symptoms and physical activity levels of elders, living in a certain area.

Methods. This research is a descriptive correlational type and it has been conducted by interviewing with 240 individuals who are older than 65 and registered in Family Health Center face to face. Socio-demographic information form, international physical activity questionnaire and Beck depression inventory have been used in collecting data. Number and percentage distributions have been used for evaluating demographic data of the study, chi-square has been used for evaluating correlation between socio-demographic characteristics and International Physical Activity questionnaire and Beck depression inventory, Pearson correlation analysis has been used for evaluating correlation between International Physical Activity questionnaire and Beck depression inventory.

Results. The average age of the elders is 75.12 ± 9.57 , 56.4% of them is male, 51.4% of them is married, 54.2% of them is retired, 53.9% of them is literate. The physical activity levels of elders have been determined according to "International Physical Activity" questionnaire and it has been found that 16.7% of them is very active (>3000 MET-min/week), 39.2% of them is minimally active (600-3000 MET-min/week) and 44.2% of them is inactive. When Depression levels of elders have been examined, it has been found that 30.7% "doesn't experience depression", 16.2% of them "experiences depression slightly", 28.2% of them "experiences depression moderately" and 24.6% of them "experiences depression severely". When correlation between physical activity levels and depressive symptoms has been evaluated, it has been found that there is a moderate correlation between physical activity and depressive symptoms in a negative way ($r: -0.60, p: 0.00$).

Conclusions. In our study, it has been found that there is a significant correlation between physical activity and depressive symptoms. It has been seen that depressive symptoms decrease as long as physical activity level increases.

Keywords. Old age, Physical activity level, Depressive symptoms.

Introduction

As well as all over the world, the population of elderly people is increasing every passing day. With the increasing length of life expected from the birth, the incidence of age-specific disease is increasing. Depression is one of such diseases which frequently occur in old ages (Underwood et al., 2013). Therefore, it is highly important to observe and evaluate the elderly people in terms of depression symptoms. As is known, the old age is known to be a period when people get retired, pull themselves out of the social life and daily works and they become less active. In this processes, it is possible to experience the incidents like 'turning to the self', energy reduction, a motionless life and consequently depression (Denehy et al., 2014). The reason why the energy consumption is decreasing by age is that the physical activities decrease by age. It is difficult to determine whether it is the sedentary life style or the intrinsic effects of aging to cause the rapid decrease in the physical activities

by old ages. Physical activity is defined as any kind of body motion which increases the energy consumption with the contraction of skeletal muscles (Huang et al., 2015).

It is not specifically aimed at developing physical compatibility but it provides benefits for the sake of health. Just like all age periods, it is also important in old age to continue an active physical life. In the studies carried out, it is stated that being physically active can protect the individuals from chronic diseases (Toker & Biron, 2012). Unfortunately, there are a limited number of studies which clearly emphasize the effects of physical activity on depression symptoms. The more regular and rhythmic the exercises performed by the elderly are, the easier they can protect and sustain their cognitive functions and the easier it gets to prevent the depression symptoms (Klinedinst et al., 2015). This study is carried out in order to evaluate the relationship between physical activity levels and depression symptoms among the elderly living in

¹ Selcuk University, Faculty of Sport Sciences, 42075, Konya, TURKEY

² Selcuk University Faculty of Health Science, 4275, Konya, TURKEY

E-mail: sefalok@gmail.com

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one region.

Methods

The research is planned as a descriptive relational type. The research is conducted via face to face interview method with 240 people over age 65 that are registered in Family Health Center. The population of the research is comprised of 876 elderly people over age 65 that are registered in Family Health Center. While determining the sample of the research; the sampling method, the population of which is known, is utilized. Since the prevalence is unknown, the incidence of the occurrence is decided to be 50% and the sampling is calculated to 240 individuals with 5% standard deviation and with 95% confidence interval. For collecting the data, an information form which is prepared by the researchers and which questions the socio-demographic information of the individuals, "Short Form of International Physical Activity Questionnaire" which evaluates the physical activity levels of the elderly people and "Beck Depression Scale" which evaluates the depression levels of the elderly people are used.

International Physical Activity Questionnaire

In this study, the short form of International Physical Activity Questionnaire is utilized in order to determine the physical activity levels of the elderly people. For this questionnaire, the international validity and reliability tests of which are performed by Craig at al., the validity and reliability studies in Turkey are performed by Öztürk on university students. The criteria field is that each activity be performed for at least 10 minutes. By multiplying the values; minute, day and MET (Metabolic Equivalent), a score as "MET-minute/week" is provided. The physical activity levels are categorized as 'physically non-active' (<600 MET-min/week), 'physically less active' (600 - 3000 MET-min/week), and 'physically active enough' (beneficial for the health) (>3000 MET-min/week). For calculating the energy consumptions related to the physical activities, the weekly duration (minutes) of each activity is multiplied by MET energy values which are comprised for the International Physical Activity Questionnaire. Therefore, the energy consumption for each individual related to intense, medium, walking, sitting and total physical activity is obtained in MET-min/week.

Beck Depression Scale

Beck depression scale is a self-report scale which is developed by Beck in 1961 in order to measure the emotional, cognitive, somatic and motivational components. Beck depression scale is one of the most used tools in researches and clinics which provide information about the individual.

Even though its main objective is to evaluate the depression indications comprehensively, it also enables the cognitive information to be evaluated. Beck depression scale is a self-report scale which helps measuring the indications of depression and which comprises of 21 sections. Two sections are separated for emotions, eleven sections for cognitions, two sections for behaviors, five sections for bodily indications and one section for interpersonal indications. Each question includes four answer options (0 to 3 points). In Beck depression scale, if the total score is 9 or less than 9 it is considered that there is "no depression"; if the total score is between 10 and 16 it is considered that there is "minor depression"; if the total score is between 17 and 23 it is considered that there is "medium level depression"; and if the total score is 24 or more than 24, it is considered that there is a "major depression". In similar studies which also use Beck depression scale, with different values determined for cut-off point, the cut-off point of BDS is generally determined to be 17.

Data Collection

The data of this research is collected from the individuals over 65 who are applied to the Family Health Center. The research is initiated after the ethical approval and official permission are received. The researcher makes the individuals who accept participating in the research read the consent form during the data collection and the researcher explains them the objective and scope of the research; after that if the individual accepts participating in the research, he/she undersigns the form. Before providing the individuals with the forms to be used in the research, the necessary explanations are made orally and it is tried to create a silent environments which includes less distractors during the application of the forms.

Analyzing the Data

After the collection of the data, the researchers enter the options stated by the participant for each section in the scale into SPSS program and the total scores of the individuals that they get from the scale are calculated. For the evaluation of the demographic data of the research, number and percentage distributions are used; for evaluating the relationship between socio-demographic features and International Physical Activity Questionnaire and Beck depression scale, Chi-square test is used; and for evaluating the relationship between International Physical Activity Questionnaire and Beck depression scale, Pearson correlation analysis is used. The results are evaluated with 95% confidence interval and with $p < 0.05$ significance level.

Results

The age average of the elderly people is 75.12±9.57, 56,4% of them are male, 51,4% of them are married, 54,2% of them are retired and 53,9% of them are literate. As for body-mass index, it is detected that 39,2% of them are normal weighted (BMI: 18.5-24.99). Moreover, it is detected that 45,7% of them do not smoke and 91,3% of them do not consume alcohol and 28,9% of them considers that their health is good/very good.

The physical activity levels of the elderly people are determined according to the "International Physical Activity" questionnaire; 16,7% of them are very active (>3000 MET-min/week), 39,2% of them are minimally active (600-3000 MET-min/week) and 44,2% of them are non-active (Table 1). Examining the depression levels of the elderly people, it is detected that 30,7% of them have "no depression", 16,2% of them have "minor depression", 28,2% of them have "medium level depression" and 24,6% of them have "major depression" (Table 2).

Table 1. The Physical Activity Levels of Elderly

The Physical Activity Levels	Number	%
Inactive (<600 MET-min/week)	106	44.2
Minimally Aktive (600-3000 MET- min/week)	95	39.2
Very Active (>3000 MET- min/week)	40	16.7
Total	240	100,0

*p<0.05

Table 2. The Score Distributions of Beck Depression Scale (BDS) of Elderly

BDS Puanı	Number	%
9 and less (no depression)	74	30.7
10-16 (mild degree)	39	16.2
17-23 (middle degree)	68	28.2
24 and more (severe degree)	59	24.5
Total	240	100,0

*p<0.05

Comparing the socio-demographic features of the elderly people according to their physical activity levels, it is detected that 35% of the females are non-active and 30,8% of the males are

minimally active and the difference between male and female is detected to be statistically significant ($X^2=18.124$, $p=0.00$) (Table 3).

Table 3 The Socio-Demographic Features and Physical Activity Levels of Elderly

	Inactive (<600 MET- dk/hafta) n (%)	Minimally Active (600-3000 MET- dk/hafta) n (%)	Very Active (>3000 MET- dk/hafta) n (%)	Test value
Gender				
Female	84 (35)	20 (8.3)	20 (8.3)	$X^2=18.124^{**}$ $p=0.00^*$
Male	22 (9.3)	74 (30.8)	20 (8.3)	
Marial status				
The married	62 (25.8)	26 (10.8)	29 (12.3)	$X^2=29.791^{**}$ $p=0.00^*$
Divorced	44 (13.3)	68 (28.2)	11 (4.6)	
Educational status				
Literate	42 (17.5)	68 (28.3)	20 (8.3)	$X^2=28.817^{**}$ $p=0.00^*$
Elementary/Middle School	64 (26.8)	26 (10.8)	20 (8.3)	
Body Mass Index Classification				
Normal weight (18.5-24.9)	43 (17.9)	20 (8.3)	31 (12.9)	$X^2=37.383^{**}$ $p=0.00^*$
Overweight (25.0-29.9)	63 (26.4)	74 (30.8)	9 (3.7)	

*p<0.05

** It is smaller than the number observed in 25 eyes Yates-corrected because chi-square analysis was performed.

Comparing the depression levels with socio-demographic features of the elderly people;

30% of the females, 39,2% of the males, 31,6% of the married participants and 36,6% of the primary/secondary school graduates have depression and the difference among them is statistically significant ($p > 0.05$).

Table 4 The Socio-Demographic Features and Depression Levels of Elderly

	No depression (9 and less) n (%)	Depression (10 and later) n (%)	Test value
Gender			
Female	32 (13.3)	72 (30.0)	$X^2=17.623$ $p=0.98$
Male	42 (17.5)	94 (39.2)	
Marial status			
The married	41 (17.3)	76 (31.6)	$X^2=1.897$ $p=0.16$
Divorced	33 (13.7)	90 (37.4)	
Educational status			
Literate	52 (21.6)	78 (32.5)	$X^2=11.176^{**}$ $p=0.00^*$
Elementary/Middle School	22 (9.3)	88 (36.6)	
Body Mass Index Classification			
Normal weight (18.5-24.9)	44 (18.3)	20 (8.3)	$X^2=1.662^{**}$ $p=0.00^*$
Overweight (25.0-29.9)	30 (12.7)	146 (60.7)	

* $p < 0.05$

** It is smaller than the number observed in 25 eyes Yates-corrected because chi-square analysis was performed.

Evaluating the relationship between the physical activity levels and depression symptoms, a negative and medium level relationship is found to be between physical activity and depression symptoms ($r: -0.60$ $p: 0.00$) (Table 5).

Table 5 The Relationship between Physical Activity Levels and Depression of Elderly (r, p)

Scale	X ± SS	r , p value
Physical Activity Questionnaire	417.86 ±47.24	-0,60 0,00*
Beck Depression Inventory	14.75±8.32	

* $p < 0.05$

Discussion

Old age is the continuation of adulthood and it is a period when the physical and mental areas undergo an alteration and regression in later period of life (Underwood et al. 2013). Since the alterations occurring especially in mental field are accepted to be a natural indication of old age, it is possible to prevent the diseases that might occur in the later periods (Kremer et al., 2014). It is highly important for discussion that the age averages of the participants in the studies carried out related to this subject are similar to each other. In our study, evaluating the physical activity levels of the elderly people, it is found that majority of them is non-active (Table 1). Teixeira et al., (2014) state in their

study determining the physical levels of elderly that majority of the individuals are non-active; Huang et al., (2015) state in their study that elderly people are minimally active in physical terms. Looking from the perspective of our study findings, it can be seen that they are similar to the results of the study by Teixeira et al but they are different from the results of the study by Huang et al., Comparing the depression levels with the socio-demographic features of the elderly in our study, it is seen that the male, married, primary/secondary school graduate and slightly overweighed participants display more depression symptoms (Table 4). Kremer et al., (2014) in their study determining the depression levels state that slightly overweighed



participants display more depression symptoms compared to those with normal weights. Toker and Biron (2012) in their study evaluating the relationship between physical activity and depression state that female participants are more depressed than male participants. Ströhle (2009) in his study evaluating the relationship between physical activity, exercise and depression states that male and married participants are more depressed and Kritz-Silverstein et al., (2001) in their study evaluating the relationship between exercise and depression state that the participants with lower education levels have more depression symptoms. And the findings of our study show similarity to the findings of mentioned studies. In our study, a negative and medium level relationship is found to be between physical activity levels and depression symptoms of the elderly people (Table 5). This finding shows that there is an inverse relationship between physical activity level and depression symptoms and that the lower the physical activity level is the more the depression symptoms increase. This finding is similar to the findings of the studies evaluating the relationship between physical activity and depression by Mammen and Faulkner (2013), Denehy et al., (2014), Kremer et al., (2014), Underwood et al., (2013), Blumenthal et al., (1999), Kritz-Silverstein et al., (2001) and Teixeira et al.,

Conclusions

In the study which evaluates the relationship between the physical activity levels and depression symptoms of the elderly people, female, married, literate and slightly overweighted participants take place in the risk group in terms of physical activity. In terms of depression, male, married, primary school graduate and slightly overweighted participants take place in the risk group. In our study, significant relations are found between physical activity and depression symptoms. It is seen that the depression symptoms decrease as the physical activity level increases. It is concluded that it is important to evaluate the relationship between physical activity levels and depression levels of the elderly people in terms of arranging the services to be offered to them and of protecting them against chronic diseases.

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