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Anxiety, depression, health-related quality of life and physical-educative fitness in middle-age women

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Abstract

During a specific time of life, aging is a natural and inevitable process which affects the decline of cognitive capacity and psychological disorders. However, a lot of people do not manage a correct quality of life due to physical fitness or psychological variables such as anxiety and depression. The aim of the present study is to analyze the relationship of anxiety and depression with quality of life related to health and physical fitness level in middle-age women. A total of 116 women aged between 41 and 79 years participated in this study. A cross-sectional study was used to assess clinical characteristics, anxiety and depression variables, health-related quality of life and physical fitness of participants. The results indicated that high levels of depression were not presented. However, higher HADS-anxiety and HADS-depression status groups showed the worst physical fitness test except thelower body muscular strength. It is necessary to highlight the relevance of engagement in physical-educative programs to decrease levels of depression and anxiety, improving subjects' quality of life related to health and physical fitness in middle-age women.

Keywords: physical fitness, elderly people, women, anxiety, depression.

Introduction

Ageing is a natural and inevitable process associated to the decline of cognitive capacity and psychological disorders such as anxiety and depression in elderly people (Baltes and Carstensen, 1996; Dowd, 2004; Roh et al., 2015; van't Veer-Tazelaar et al., 2008), especially in women (Matud, Guerrero and Matías, 2006). Multiple studies have shown significant relationship between increase of depression or anxiety and low levels of physical activity (Arts et al., 2016; Brunoni, Schuch, Dias, Kruel and Tiggeman, 2015). Regarding health-related quality of life (HRQoL) , the lack of physical fitness is a reliable predictor of negative physical and psychological health consequences (Ikezoe, Asakawa, Shima, Kishibuchi and Ichihashi, 2013). Therefore, the aging phenomenon needs to be addressed using suitable strategies that maintain the HRQoL and health of elderly people for as long as possible (Kremer, Holthuysen and Boesveldt, 2014).

Physiological changes that appear during the ageing process may affect the HRQoL and functionality of older adult and elderly people (Sui et al., 2007). However, the connection between mental functions and ageing is not still clear (Zagozdzon, Kolarzyk and Marcinkowski, 2011). The HRQoL is often used to evaluate the health status of people and is considered as a necessary predictor in order to recognize whether elderly people enjoy well-being in their daily lives (Hawkins, 2001). Therefore, the aim of the present study was to analyze the relationship of anxiety and depression with HRQoL and physical fitness in middle-age women.

Materials and Methods

Participants

A total of 145 female participants were recruited from a fitness-education program of *Diputación de Málaga,* Área *de Juventud y Deportes* (*Málaga*, Spain). The characteristics of the participants are detailed in Table 1. They were given clinical questionnaires to verify if they were eligible under the criteria of inclusion and exclusion. The inclusion criterions of participants were: i) not to have acute or terminal illness, ii) not to have their functional mobility limited. This way allows ensuring that participants were not taking any medications and had no functional mobility problems. The present study comprised a total of 116 older- adult women aged 56.6+11.8 years. Participants

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were informed of the purpose of this study and voluntarily agreed to participate by signing the informed consent. The study was conducted according to the Declaration of Helsinki and the protocol was approved by the local ethics committee-institutional board.

Table 1
Clinical, psychological and physical characteristics of the sample (n=116)

Variable	Range	M (SD)
Age (years)	41-79	56.6 (11.8)
Weight (kg)	48.6-92.5	70.5 (12.4)
Height (cm)	1.43-1.74	1.56 (0.7)
Body mass index (kg/m^2)	20.3-38.1	28.9 (4.7)
Weight status (%) NW/OW/OB	--	20.7/41.4/37.9
Fat mass (kg)	16.2-41.3	28.5 (7.3)
Fat mass (%)	25.9-45.8	39.9 (4.3)
Waist circumference (cm)	55-117	97.5 (14.1)
HADS-anxiety	1-18	7.9 (3.9)
HADS-depression	0-13	5.2 (3.1)
SF-36		
Physical functioning	30-100	77.7 (14.2)
Physical role	0-100	68.7 (38.3)
Bodily pain	0-90	45.5 (20.9)
General health	32-72	52.8 (8.1)
Vitality	0-80	39.3-14.9
Social Functioning	12-112	38.8 (17.8)
Emotional role	0-100	85.1 (28.6)
Mental health	4-72	46.1 (14.2)
SFT		
Muscular fitness		
30´´ Chair stand (seconds)	9-17	12.8 (1.8)
30´´Arm curl (No repetitions)	9.5-33	17.6 (4.5)
Flexibility		
Back scratch (cm)	-18.5/7.8	-4.3 (7.9)
Chair-sit-and-reach (cm)	-24.3/12	-3.2 (6.7)
Balance		
«8 feet up and go» (seconds)	3.7-8.43	5.43 (1.21)
Cardiorespiratory fitness		
2-min step test (No repetitions)	51-152	88.3 (21.3)

Note: NW= normal weight; OW= overweight; OB= obese; HADS= Hospital Anxiety and Depression Scale; SF36= General Health Short-Form Survey; SFT= Senior Fitness Test

Instruments

A cross-sectional study was used to assess clinical characteristics, anxiety and depression variables, HRQoL and physical fitness of the participants.

Weight (kg), body mass index (BMI) and fat mass (relative and absolute) were measured by bioelectrical impedance analysis with an Inbody 720 Biospace (Seoul, Korea). In addition, BMI was categorized using international criteria as underweight (BMI < 18.5 kg/m2), normal weight (BMI 18.5–24.9 kg/m2), overweight (BMI 25.0–29.9 kg/m2), and obese (BMI >30.0 kg/m2).

Height (cm) was measured using a stadiometer (Seca 22, Hamburg, Germany). Waist circumference (cm) was measured with the participant standing at the middle point between the ribs and ileac crest (Harpenden anthropometric tape, Holtain Ltd., Crymych, UK).

The Spanish version of Hospital Anxiety and Depression Scale (HADS, Quintana, Padierna-Esteban, Aróstegui and Bilbao, 2003) was used to identify possible anxiety disorders and depression among patients in non-psychiatric hospital clinics. It was divided into an Anxiety subscale (HADS-Anxiety) and a Depression subscale (HADS-Depression) both containing seven intermingled items. The score of both subscales range from 0 to 21. Some authors recommend to classify from eight to ten as *low status* whereas the *mild status* is range from 8 to 10. From 11 to 15 is known as *moderate status* and over 16 the most grave cases, *severe status* (Zigmond and Snaith, 1983). HADS has been found to perform well in assessing the symptom severity and possibilities of anxiety disorders and depression in both somatic, psychiatric and primary care patients and in the general population (Bjelland, Dahl, Haug and Neckelmann, 2002; Snaith andZigmond, 1986; Zigmond and Snaith, 1983).

The Spanish version (Alonso, Prieto and Anto, 1995) of the SF-36 Health Survey was used to assess HRQoL. This questionnaire is composed of 36 items, grouped into eight dimensions and two components: physical functioning, physical role, bodily pain, general health (physical component, all), vitality, social functioning, emotional role, mental health, and general health (mental component, all). Each dimension score ranges from 0 to 100, where 0 indicates the worst possible health status and 100 the best possible.

To assess physical fitness we used the Senior Fitness Test (SFT, Rikli and Jones, 2001) because it is relatively easy to administer, requires minimal equipment and space, and the tests are safe.

Lower body muscular strength. It was assessed by the 30-second chair stand test (30´´ CS). The number of times that the participant could raise to a full stand from a seated position with back straight and feet flat on the floor was counted, within 30 seconds and arms crossed at the wrists and closed to the chest.

Upper body muscular strength. This test was conducted with a dumbbell-5 lbs (2.27 kilograms) for women. The participants were seated the entire test. Each participant performed (alternately with both hands) the test twice allowing a 1-minute rest period between measures (30´´ AC). The best value of two trials for each hand and mean of both arms was chosen for analysis.

Lower body flexibility: It was assessed by the "chair sit and reach test" (CSR). Two trials with each leg were measured and the best value of each leg was registered, being the mean score of both legs used in the analysis.

Upper body flexibility. It was assessed by the "back scratch test" (BS). This test gives an overall measure of shoulder range of motion. It measures the distance between (or overlap of) the middle fingers behind the back. It was measured both hands twice and the best value was registered, being the mean score of both hands computed for analysis.

Agility/dynamic balance. It was assessed by the 8-ft up and go test. The participant stood up from a chair, walked 8 feet to and around a cone, and returned to the chair as fast as possible. It was recorded the best time of two trials.

Aerobic endurance. It was assessed by the "2-minute step test" and counted the maximum number of repetitions by the participants in 2 minutes.

Procedure

Subsequently, we assessed the anthropometrics characteristics and proceeded to take the HADS scales and test SF-36 Health Survey, before to perform any physical activity in order to avoid fatigue or excessive motivation that influenced their responses. SFT test tests were conducted during the same week to all participants. We carried out the SFT in a covered room with temperature ranging between 17-22°C. The frequency of sessions was twice a week in the afternoon and lasting 45 minutes per session. Each exercise was performed under the supervision of specialists.

Statistical Analysis

The descriptive analyses were carried out to check the characteristics of the participants and the ranges of variables studied. The comparison in SF-36, SFT and clinical variables between HADS-anxiety and HADS-depression status categories were tested using analysis of the one-way covariance controlling for age. Pairwise comparisons were performed with Bonferroni's adjustment. The magnitude of the differences in the diverse outcomes HADS-anxiety and HADS-depression status categories were calculated using the effect size (Cohen, 1992). SPSS for Windows v.17.0 program (Chicago, SPSS Inc.) was used to perform statistical analysis.

Results

Clinical, psychological and physical variables of the study sample are shown in Table 1. We analyzed the differences in SF-36 questionnaires, physical fitness (SFT) and clinical characteristics across four categories of HADS-anxiety (Table 2) and HADS-depression (Table 3). The HRQoL, as measured by SF-36, differed across anxiety and depression

categories (p< .001 and p< .05, respectively). Regarding to Table 2, BMI of moderate-anxiety group was significantly better than mild, low and severe-anxiety groups (25.4+3.3 vs. 27.3+1.3 and 29.7+4.8 and 33.2+4.7, respectively, p< .001) and fat mass of moderate-anxiety group was also significantly better compared to mild, low and severe-anxiety groups (34.8+4.6 vs. 40.5+2.9 and 40.8+3.5 and 43.7+0.9, respectively, all p< .001). SF-36 dimensions of bodily pain, general health and physical role were significantly worse in the low group of HADS-anxiety compared to mild, moderate and severe groups (both, p< .001 and p< .05). Specifically, bodily pain in low-anxiety group was significantly worse compared to mild and severe-anxiety groups (39.7+20.1 vs. 64.6+18.7 and 65.3+26.5, respectively) and general health in low-anxiety group was significantly worse compared to severe-anxiety group (52+8.6 vs. 62+5.3). Moreover, moderate-anxiety group showed worse score than severe-anxiety group (42.1+4.6 vs. 62+5.3). Physical role SF-36 dimension was significantly worse in low-anxiety group compared to moderate and severe-anxiety groups (61.1+40.4 vs. 90+12.6 and 99.1+0.8, respectively). Finally, mild-anxiety showed the highest significative score followed by severe-anxiety, moderate-anxiety and low-anxiety groups in vitality SF-36 dimension, respectively.

Table 2
HADS-Anxiety status categories according to clinical variables, SF-36 dimensions and SFT

Variable	HADS-Anxiety				F	P	Effect size (severe vs. low anxiety)†
	Low <8 (n=76)	Mild 8-10 (n=12)	Moderate 11 - 15 (n=20)	Severe >16 (n=8)			
Body mass index (kg/m^2)	29.7 (4.8)^{a}	27.3 (1.3)^{bd}	25.4 (3.3)^{abc}	33.2 (4.7)^{cd}	8.206	0.000	0.74 (0.35)
Fat mass (%)	40.8 (3.5)^{a}	40.5 (2.9)^{b}	34.8 (4.6)^{abc}	43.7 (0.9)^{c}	19.978	0.000	1.14 (0.49)
SF-36*							
Physical functioning	76.3 (15.3)	75.0 (15.3)	81.0 (9.4)	87.5 (14.2)	2.070	0.108	0.76 (0.35)
Physical role	61.1 (40.4)^{ab}	58.3 (44.4)	90.0 (12.6)^{a}	99.1 (0.8)^{b}	5.627	0.001	1.33 (0.55)
Bodily pain	39.7 (20.1)^{ab}	64.6 (18.7)^{a}	48.0 (8.2)	65.3 (26.5)^{b}	7.138	0.000	1.08 (0.48)
General health	52.0 (8.6)^{a}	53.6 (6.5)	52.1 (4.6)^{b}	62.0 (5.3)^{ab}	3.569	0.016	1.04 (0.57)
Vitality	37.6 (12.4)^{a}	56.6 (17.7)^{ab}	32.0 (16.4)^{bc}	47.6 (2.6)^{c}	8.836	0.000	1.12 (0.48)
Social Functioning	40.2 (21.8)	33.3 (6.2)	37.5 (0.8)	37.5 (1.2)	0.420	0.739	-0.17 (-0.08)
Emotional role	80.7 (33.2)	88.8 (16.4)	98.2 (1.2)	83.3 (17.8)	2.477	0.065	0.09 (0.04)
Mental health	48.4 (11.8)	48.0 (17.1)	40.8 (18.9)	34.0 (14.3)	4.134	0.008	-1.09 (-0.48)
SFT							
30´´ Chair stand (No repetitions)	12.5 (1.7)^{ab}	14.0 (2.5)^{a}	12.2 (0.7)	15.0 (1.8)^{b}	12.119	0.000	1.43 (0.58)
30´´Arm curl (No repetitions)	17.9 (5.2)	17.8 (1.1)	16.6 (3.9)	17.7 (1.8)	1.242	0.298	-0.05 (-0.02)
Back scratch (cm)	-3.5 (7.8)	-11.6 (10.1)	-1.8 (6.1)	-7.7 (0.5)	2.122	0.101	-0.75 (-0.35)
Chair-sit-and-reach (cm)	-3.2 (7.5)	-2.8 (2.5)	-1.9 (6.1)	-7.4 (0.9)	1.240	0.299	-0.78 (-0.36)
«8 feet up and go» (seconds)	5.41 (1.31)	5.59 (1.08)^{a}	5.46 (1.03)^{ab}	5.32 (0.56)^{b}	4.434	0.006	-0.08 (-0.04)
2-min step test (No repetitions)	86.4 (22.2)^{a}	105.7 (11.4)^{ab}	86.4 (5.4)^{b}	85.0 (5.4)	7.268	0.000	-0.08 (-0.04)

*Note: Values are means (standard deviation); HADS= Hospital Anxiety and Depression Scale; SF-36= General Health Short-Form Survey; SFT= Senior Fitness Test; p= Significant difference between HADS-Anxiety status categories with clinical variables, SF-36 and SFT (Analysis of covariance controlling for age). ^{a,b,c}Common superscripts in the same row indicate a significant difference (p < 0.05) between the groups with the same letter. Pairwise comparisons were performed with Bonferroni's adjustment. * Lower scores indicate worst health status. † Effects size statistics between severe and low groups are expressed a Cohen´s d (effect size-r).*

There were also relationships on physical fitness, as measured by SFT. Severe-anxiety group of 30-second chair stand test showed better significant differences than mild and low-anxiety groups (15+1.8 vs. 14+2.5 and 12.5+1.7, respectively, p< .001). Moderate-anxiety group was significantly difference than severe-anxiety and mild-anxiety

groups in the "8 feet up and go" (5.46+1.03 vs. 5.32+0.56 and 5.59+1.09, respectively, $p< .01$). Moreover, the mild-anxiety group in 2 min step test was significantly better compared to low-anxiety and moderate-anxiety groups (105.7+11.4 vs. 86.4+22.2 and 86.4+5.4, respectively, $p< .001$).

The Table 3 shows significant better results of BMI in moderate-depression group compared to low and mild-depression groups (23.5+4.7 vs. 29.1+4.6 and 33.2+3.7, respectively, $p< .01$). Moreover, mild-depression group in fat mass variable was significantly better compared to low-depression group (35.3+10.1 vs. 40.5+3.4, $p< .01$). Regarding to SF-36 dimensions, low-depression group of physical functioning was significantly lower in scores compared to mild-depression and moderate-depression groups (75.6+13.9 vs. 90+0.6 and 92.5+8.2, respectively, $p< .001$) whereas the mild group of physical role was significant better compared to low-depression group (96.1+1.1 vs. 63.5+39.1, $p< .001$). Mild group of vitality was significant better than the low-depression group (42.6+2.8 vs. 41.8+12.4, $p< 0.001$). Moderate group of mental health was significantly worse compared to mild and low-depression groups (18.1+14.9 vs. 48+4.2 and 48.2+12.3, respectively, $p< .001$).

There were also relationships on physical fitness, as measured by SFT, specifically the 2 min step test. Moderate group was significantly worse compared to low-depression group (76+11.7 vs. 89.9+22.1, $p< .05$). The Severe-depression group showed non-participant included in this group and therefore non-association with any clinical characteristic, HRQoL dimension (SF-36) and physical fitness test (SFT) (data not shown).

Table 3
HADS-Depression status categories according to clinical variables, SF-36 dimensions and SFT

Variable	HADS-Depression			F	p	Effect size (severe vs. low depression)†
	Low <8 (n=100)	Mild 8-10 (n=8)	Moderate 11-15 (n=8)			
Body mass index (kg/m^2)	29.1 (4.6)^a	33.2 (3.7)^b	23.5 (4.7)^{ab}	6.751	0.002	-1.20 (-0.51)
Fat mass (%)	40.5 (3.4)^a	35.3 (10.1)^a	38.5 (2.2)	6.486	0.002	-0.69 (-0.32)
SF-36*						
Physical functioning	75.6 (13.9)^{ab}	90.0 (0.6)^a	92.5 (8.2)^b	9.624	0.000	1.48 (0.59)
Physical role	63.5 (39.1)^a	96.1 (1.1)^a	95.3 (1.7)	7.006	0.001	1.14 (0.49)
Bodily pain	46.9 (21.7)	46.3 (6.2)	26.5 (5.9)	2.177	0.118	-1.28 (-0.53)
General health	52.8 (8.5)	57.0 (1.3)	49.5 (2.7)	0.959	0.386	-0.52 (-.025)
Vitality	41.8 (12.4)^a	42.6 (2.8)^b	5.0 (5.4)^{ab}	34.398	0.000	-3.84 (-0.88)
Social Functioning	38.5 (19.1)	37.5 (0.9)	43.7 (6.7)	0.233	0.792	0.36 (0.17)
Emotional role	82.6 (30.2)	98.4 (0.8)	96.5 (3.6)	2.904	0.059	0.65 (0.31)
Mental health	48.2 (12.3)^a	48.0 (4.2)^b	18.1 (14.9)^{ab}	35.691	0.000	-2.20 (-0.74)
SFT						
30´´ Chair stand test (No repetitions)	12.7 (1.8)	13.5 (1.6)	13.5 (0.5)	1.574	0.027	0.60 (0.28)
30´´Arm curl (No repetitions)	17.8 (4.7)	15.3 (0.8)	17.5 (2.7)	0.817	0.444	-0.08 (-0.04)
Back scratch (cm)	-4.8 (8.3)	-5.0 (2.4)	3.0 (0.8)	2.158	0.120	1.32 (0.55)
Chair-sit-and-reach (cm)	-2.8 (6.9)	-6.3 (2.2)	-5.0 (6.2)	2.559	0.082	-0.33 (-0.16)
«8 feet up and go» (seconds)	5.42 (1.25)	6.23 (0.41)	4.94 (0.48)	0.513	0.600	-0.50 (-0.24)
2-min step test (No repetitions)	89.9 (22.1)^a	80.0 (10.7)	76.0 (11.7)^a	4.203	0.017	-0.78 (-0.36)

*Note: Values are means (standard deviation); HADS= Hospital Anxiety and Depression Scale; SF-36= General Health Short-Form Survey; SFT= Senior Fitness Test; p= Significant difference between HADS-Depression status categories with clinical variables, SF-36 and SFT (Analysis of covariance controlling for age). ^{a,b,c} Common superscripts in the same row indicate a significant difference (p <.05) between the groups with the same letter. Pairwise comparisons were performed with Bonferroni's adjustment. * Lower scores indicate worst health status. † Effects size statistics between severe and low groups are expressed as Cohen´s d (effect size-*r).

Discussion

Late-life depression and anxiety are considered to being high prevalence in middle-age people, in addition of a negative prognosis, excess mortality, decreased HQRoL and significant social costs (Smit, Ederveen, Cuijpers, Deeg and Beekman, 2006; Wariso et al., 2017). In this context, according to van Hout et al., (2004) and Wariso et al., (2017), anxiety and depression pose a threat for the middle-age and older-adult women. In most of the cases presented in this study, anxiety and depression have shown lower levels, these outcomes might be due to the inverse relationship between performing physical activity and the existence of depression and anxiety in middle-age women (Kessler and Wang, 2008; Marshall, Schabrun and Knox, 2017). Physical activity helps maintaining a healthy psychological status and contributes to effective general health (Holle et al., 2016). Moreover, there are promising indications that the prevention possibilities of new mental disorders cases, based on psychosocial and medical treatments, seem to be possible (Cuijpers, Straten, Smit and van Straten, 2005).

The severe groups of HADS-Anxiety and HADS-Depression have shown a higher BMI. This information could be explained by the anxiety influence on the middle-age's BMI (Gariepy, Nitka and Schmitz, 2010). The associations between anxiety/depression and BMI levels are similar to the outcomes of several recent studies where the obese participants showed associations with mental health disorders (Bjerkeset, Romundstad, Evans and Gunnell, 2008). Regarding to the fat mass of the participants, the high levels found and the relationship with both HADS subscales' groups might be explained because of depression and anxiety, which are commonly associated with fat mass among middle-age and older-adult women (Agostini et al., 2018; Mezuk, Golden, Eaton and Lee, 2012).

The HRQoL has normally shown a negative relationship with age and it is possible that changes related to ageing process affect negatively to HRQoL of elderly people (Sui et al., 2007). Similarly, the findings of the present study would be in concordance with the outcomes of a North-American sample of elderly people where several variables were associated with bodily pain, including female gender and anxiety disorder (Mccarthy, Bigal, Katz, Derby and Lipton, 2009). On the other hand, a higher depression is related to high scores of bodily pain, as several studies have shown on this field (Mccarthy et al., 2009). Therefore, bodily pain could be considered a high impact in HRQoL of elderly people.

According to middle-age women's mental health, the moderate-depression group has presented significant differences, compared with the low and mild depression ones. Some studies have claimed that depressive symptoms might be understood as a typical feature in the mental health in an adult and old age (Payne, Hedberg, Kozloski, Dale and McClintock, 2014). The participation in programs, for promoting the physical and mental health, could be a solution, since aged women have proved the benefits of it (Lee and Choi, 2015). Moreover, HADS-Anxiety has shown lower significant levels of mental health in moderate-anxiety and severe-anxiety groups. In this context, older women tend to suffer more frequently from anxiety disorders, affecting directly to their mental health and causing several mental disorders (Kinzl, 2013; Ruiz-Montero, Castillo-Rodríguez, Mikalački and Delgado-Fernández, 2015).

Furthermore, a low score in moderate groups of HADS-Anxiety and HADS-Depression with vitality has also been reported. One of the intrinsic symptoms of depression is the decrease of vitality, involving the loss of the capability for enjoying and showing interest in the way of living life (Aliño and Miyar, 2008). However, the vitality of participants has shown lower scores. The physical activity and strength training based on the perceived effort has been considered as an appropriate method to improve the vitality of the depressed the elderly (Brunoni et al., 2015). The general health dimension shows differences between anxiety and self-perception of health. These findings suggest that negative mood affects the perception of middle-age and older adult's general health status and therefore, increasing the anxiety of this population (Brunoni et al., 2015; Penedo and Dahn, 2005).

The outcomes related to the participants' physical fitness are low in some of the different variables according to the SFT normative values (Annexed I). The ageing of the population implies an appreciable reduction in the physical fitness and, this is because of the impairment of physical fitness, immunosenescenseor psychological disorders (Trifunovic and Ventura, 2014; Vink, Aartsea and Schoevers, 2008). Physical frailty has been associated with being a risk in adults with depressive symptoms, this is partly explained because of late-life depression is associated with an age-related loss of muscle strength and muscle mass (Arts et al., 2016).

Moreover, the performance of agility and muscle strength has obtained low SFT normative values. This could be explained because of agility is highly linked with the mechanical power developed by the lower limbs (Rikli and Jones, 2001). The aerobic endurance has shown significant outcomes in both HADS subscales and this might be linked with the fact that the participants of the present study showed lower levels of depression and anxiety (Laureano et al., 2014).Aerobic-physical activity might be a possible treatment to reduce feelings of depression and anxiety (Herring et al., 2011), supported by several meta-analyses where the main focus of the aerobic exercise was the treatment of the depression and, to a lesser extent, anxiety (Bartley, Hay and Bloch, 2013; Krogh et al., 2011). In addition, other possibility could have been the low mean age of the participants if it is compared our present study with others.

Conclusion

In general, physical fitness is a trustworthy predictor of life expectancy in middle-age women. A physical-education program has shown to be an effective option for treating mild to moderate depression and for decreasing depressive symptoms in the elderly (Carek, Laibstain and Carek, 2011). In conclusion, the present study shows that high levels of anxiety and depression are associated with higher clinical variables (BMI and fat mass, %) and lower levels of anxiety and depression are associated with higher physical and mental components of HRQoL and higher physical fitness levels (lower body muscular strength, aerobic endurance and agility/dynamic balance) in middle-age women.

Ansiedad, depresión, calidad de vida relacionada con la salud y fitness físico-educativo en mujeres de mediana edad

Resumen

El envejecimiento es un proceso natural e inevitable, durante un periodo específico de la vida que afecta a la declinación de la capacidad cognitiva y desórdenes psicológicos. Hay mucha gente que no gestiona correctamente su calidad de vida debido a variables psicológicas como la ansiedad, depresión o capacidad física. El objetivo del presente estudio es analizar la relación de la ansiedad y depresión con la calidad de vida relacionada con la salud y el nivel de capacidad física en mujeres de mediana edad. Un total de 116 mujeres con edades comprendidas entre 41 y 79 años participaron en este estudio. Un estudio transversal fue utilizado para evaluar las características clínicas, variables de ansiedad y depresión, calidad de vida y capacidad física de las participantes. Los resultados no indicaron altos valores de HADS-depresión. Sin embargo, los grupos de participantes con mayores valores de HADS-ansiedad y HADS-depresión mostraron peores resultados de capacidad física excepto en la fuerza de tren inferior. Es necesario destacar la relevancia de la participación en programas físico-educativos para disminuir los niveles de depresión y ansiedad, mejorar la calidad de vida relacionada con la salud de las participantes y la capacidad física en mujeres de mediana edad.

Palabras Clave: capacidad física, mujeres, ansiedad, depresión.

References

Agostini, D., Zeppa Donati, S., Lucertini, F., Annibalini, G., Gervasi, M., Ferri Marini, C., … Sestili, P. (2018). Muscle and Bone Health in Postmenopausal Women: Role of Protein and Vitamin D Supplementation Combined with Exercise Training. *Nutrients*, *10*(8). doi:10.3390/nu10081103

Aliño J. J. L. and Miyar, M. V. (2008). *DSM-IV-TR: Manual diagnóstico y estadístico de los trastornos mentales*. Arlington, USA: American Psychiatric Pub.

Alonso, J., Prieto, L. and Anto, J. M. (1995). The Spanish version of the SF-36 Health Survey (the SF-36 health questionnaire): an instrument for measuring clinical results. *MedicinaClinica*, 104(20), 771-776.

Arts, M. H. L., Collard, R. M., Comijs, H. C., Zuidersma, M., de Rooij, S. E., Naarding, P. and Oude Voshaar, R. C. (2016). Physical Frailty and Cognitive Functioning in Depressed Older Adults: Findings From the NESDO Study. *Journal of the American Medical Directors Association*, 17(1), 36-43.doi: 10.1016/j.jamda.2015.07.016

Baltes, M. M. and Carstensen, L. L. (1996). The Process of Successful Ageing. *Ageing and Society*, 16(4), 397-422.doi: 10.1017/S0144686X00003603

Bartley, C.A., Hay, M. and Bloch, M.H. (2013). Meta-analysis: Aerobic exercise for the treatment of anxiety disorders. *Progress in Neuro-Psychopharmacology & Biological Psychiatry, 45*, 34-39.

Bjelland, I., Dahl, A. a, Haug, T. T. and Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *Journal of Psychosomatic Research*, 52(2), 69-77.doi: 10.1016/S0022-3999(01)00296-3

Bjerkeset, O., Romundstad, P., Evans, J. and Gunnell, D. (2008). Association of Adult Body Mass Index and Height with Anxiety, Depression, and Suicide in the General Population. *American Journal of Epidemiology*, 167(2), 193-202.doi: 10.1093/aje/kwm280

Brunoni, L., Schuch, F. B., Dias, C. P., Kruel, L. F. M. and Tiggeman, C. L. (2015). Treinamento de força diminui os sintomas depressivos e melhora a qualidade de vida relacionada a saúde em idosas. *Revista Brasileira de Educação Física e Esporte*, 29(2), 189-196.

Carek, P. J., Laibstain, S. E. andCarek, S. M. (2011). Exercise for the Treatment of Depression and Anxiety. *The International Journal of Psychiatry in Medicine*, 41(1), 15-28.doi: 10.2190/PM.41.1.c

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.doi: 10.1037/0033-2909.112.1.155

Cuijpers, P., Straten, A., Smit, F. and van Straten, A. (2005). Preventing the incidence of new cases of mental disorders: a meta-analytic review (Structured abstract). *Journal of Nervous and Mental Disease*, 193(2), 119-125.doi: 10.1097/01.nmd.0000152810.76190.a6

Dowd, T. (2004). Depression: Theory, assessment , and new directions in practice. *International Journal of Clinical and Health Psychology*, 4(2), 413-423.

Gariepy, G., Nitka, D. and Schmitz, N. (2010). The association between obesity and anxiety disorders in the population: a systematic review and meta-analysis. *International Journal of Obesity*, 34(3), 407-419. doi: 10.1038/ijo.2009.252

Hawkins J. C. (2001). *Quality of life and health status perceptions of elderly participants in the Purdue LifeSpan study*. Oregon, USA: Microform Publications, University of Oregon.

Holle, V.V., Van Cauwenberg, J., Gheysen, F., Van Dyck, D., Deforche, B., Van De Weghe, N., & De Bourdeaudhuij, I. (2016). The association between Belgian older adults' physical functioning and physical activity: What is the moderating role of the physical environment? *PLoS ONE*, *11*(2), 1-17.

Ikezoe, T., Asakawa, Y., Shima, H., Kishibuchi, K. and Ichihashi, N. (2013). Daytime physical activity patterns and physical fitness in institutionalized elderly women: An exploratory study. *Archives of Gerontology and Geriatrics*, 57(2), 221-225.doi: 10.1016/j.archger.2013.04.004

Jones, C.J., & Rikli, R.E. (2002). Measuring functional. *The Journal of Active Aging*, *March April*, 24-30

Kessler, R. C. and Wang, P. S. (2008). The descriptive epidemiology of commonly occurring mental disorders in the United States. *Annual Review of Public Health*, 29, 115-129.doi: 10.1146/annurev.publhealth.29.020907.090847

Kinzl, J. F. (2013). Mental disorders in old age. *ZeitschriftFürGerontologie Und Geriatrie*, 46(6), 526-531.

Krogh, J., Nordentoft, M., Sterne, J.A.C. and Lawlor, D.A. (2011). The effect of exercise in clinically depressed adults: systematic review and meta-analysis of randomized controlled trials. *Journal of Clinical Psychiatry, 72*, 529-538.

Kremer, S., Holthuysen, N. and Boesveldt, S. (2014). The influence of olfactory impairment in vital, independently living older persons on their eating behaviour and food liking. *FoodQualityandPreference*, 38, 30-39.doi: 10.1016/j.foodqual.2014.05.012

Laureano, M. L. M., Martins, R. A., Sousa, N. M., Machado-Rodrigues, A. M., Valente-Santos, J.and Coelho-e-Silva, M. J. (2014). Relationship between functional fitness, medication costs and mood in elderly people. *Revista Da Associação Médica Brasileira*, 60(3), 200-207.doi: 10.1590/1806-9282.60.03.007

Lee, C.andChoi, Y. (2015). The Effects of a Pilates Exercise Program using Self-Efficacy Sources in Elderly Women. *Journal of Environmental Science International*, 24(1), 117-131.

Marshall, P.; Schabrun, S. and Knox, M. (2017). Physical activity and the mediating effect of fear, depression, anxiety, and catastrophizing on pain related disability in people with chronic low back pain. *Plos One, 12*(7), e0180788.

Matud, M. P., Guerrero, K. and Matías, R. G. (2006). Theinfluenceofsociodemographic variables ongenderdifferences in depression | Relevancia de las variables sociodemográficas en las diferencias de género en depresión. *International Journal of Clinical and Health Psychology*, 6(1), 7-21.

Mccarthy, L. H., Bigal, M. E., Katz, M., Derby, C. and Lipton, R. B. (2009). Chronic pain and obesity in elderly people: Results from the Einstein aging study. *Journal of the American Geriatrics Society*, 57(1), 115-119.doi: 10.1111/j.1532-5415.2008.02089.x

Mezuk, B., Golden, S. H., Eaton, W. W. and Lee, H. Ben. (2012). Depression and body composition among older adults. *Aging and Mental Health*, 16(2), 167-172.doi: 10.1080/13607863.2011.583631

Payne, C., Hedberg, E. C., Kozloski, M., Dale, W. and McClintock, M. K. (2014). Using and interpreting mental health measures in the national social life, health, and aging project. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, 69(Suppl 2), S99-S116.doi: 10.1093/geronb/gbu100

Penedo, F.J. and Dahn, J.R. (2005). Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry, 18*(2), 189-193.

Quintana, J. M., Padierna Esteban, C., A., Aróstegui, I. and Bilbao I., A. R. (2003). Evaluation of the psychometric characteristics of the Spanish version of the Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 107(3), 216-221.doi: 10.1034/j.1600-0447.2003.00062.x

Rikli, R. E. and Jones, C. J. (2001). *Senior fitness test manual*. Champaign, IL: Human Kinetics.

Roh, H. W., Lee, Y., Lee, K. S., Chang, K. J., Kim, J., Lee, S. J., … Hong, C. H. (2015). Frequency of contact with non-cohabitating adult children and risk of depression in elderly: A community-based three-year longitudinal study in Korea. *Archives of Gerontology and Geriatrics*, 60(1), 183-189. doi: 10.1016/j.archger.2014.09.007

Ruiz-Montero, P. J., Castillo-Rodríguez, A., Mikalački, M. and Delgado-Fernández, M. (2015). Physical Fitness Comparison and Quality of Life between Spanish and Serbian Elderly Women through a Physical Fitness Program. *Collegium Antropologicum*, 39(2), 411-417.

Smit, F., Ederveen, A., Cuijpers, P., Deeg, D. and Beekman, A. (2006). Opportunities for Cost-effective Prevention of Late-Life Depression. *Archives of General Psychiatry*, 63(3), 290-296.doi: 10.1001/archpsyc.63.3.290

Snaith, R. P. and Zigmond, A. S. (1986). The hospital anxiety and depression scale. *British Medical Journal (Clinical Research Ed.)*, 292(6516), 344.doi: 10.1136/bmj.292.6516.344

Sui, X., LaMonte, M. J., Laditka, J. N., Hardin, J. W., Chase, N., Hooker, S. P. and Blair, S. N. (2007). Cardiorespiratory Fitness and Adiposity as Mortality Predictors in Older Adults. *Journal of the American Medical Association*, 298(21), 2507-2516.doi: 10.1001/jama.298.21.2507

Trifunovic A. and Ventura N. (2014). Mitochondria and metabolic control of the aging process. *Experimental gerontology*, 56, 1-2.doi: 10.1016/j.exger.2014.05.009

van't Veer-Tazelaar, P. J., van Marwijk, H. W. J., Jansen, A. P. D., Rijmen, F., Kostense, P. J., van Oppen, P., … Beekman, A. T. F. (2008). Depression in old age (75+), the PIKO study. *Journal of Affective Disorders*, 106(3), 295-299. doi: 10.1016/j.jad.2007.07.004

van Hout, H. P., Beekman, A. T., de Beurs, E., Comijs, H., van Marwijk, H., de Haan, M., … Deeg, D. J. (2004). Anxiety and the risk of death in older men and women. *The British Journal of Psychiatry : The Journal of Mental Science*, 185(5), 399-404.doi: 10.1192/bjp.185.5.399

Vink, D., Aartsen, M. J. and Schoevers, R. A. (2008). Risk factors for anxiety and depression in the elderly: A review. *Journal of Affective Disorders*, 106(1), 29-44. doi: 10.1016/j.jad.2007.06.005

Wariso, B. A., Guerrieri, G. M., Thompson, K., Koziol, D. E., Haq, N., Martinez, P. E., … Schmidt, P. J. (2017). Depression during the menopause transition: impact on quality of life, social adjustment, and disability. *Archives of women's mental health*, *20*(2), 273–282. doi:10.1007/s00737-016-0701-x

Zagozdzon, P., Kolarzyk, E. and Marcinkowski, J. T. (2011). Quality of life and rural place of residence in Polish women - population based study. *Annals of Agricultural and Environmental Medicine : AAEM*, 18(2), 429-432.

Zigmond, A. and Snaith, R. (1983). The hospital anxiety and depression scale. *The Hospital Anxiety and Depression Scale*, 67(6), 361-370. doi: 10.1111/j.1600-0447.1983.tb09716.x

Annexed I

	60-64	65-69	70-74	75-79	80-84	85-89	90-94
Chair stand (no. of stands)	12 - 17	11 - 16	10 - 15	10 - 15	9 - 14	8 - 13	4 - 11
Arm Curl (no. of reps)	13 - 19	12 - 18	12 - 17	11 - 17	10 - 16	10 - 15	8 - 13
6-Min Walk (no. of yds)	545 - 660	500 - 635	480 - 615	430 - 585	385 - 540	340 - 510	275 - 440
2-Min Step (no. of steps)	75 - 107	73 - 107	68 - 101	68 - 100	60 - 91	55 - 85	44 - 72
Chair Sit-&-Reach (inches +/-)	-0.5 - +5.0	-0.5 - +4.5	-1.0 - +4.0	-1.5 - +3.5	-2.0 - +3.0	-2.5 - +2.5	-4.5 - +1.0
Back Scratch (inches +/-)	-3.0 - +1.5	-3.5 - +1.5	-4.0 - +1.0	-5.0 - +0.5	-5.5 - +0.0	-7.0 - -1.0	-8.0 - -1.0
8-Ft Up-&-Go (seconds)	6.0 - 4.4	6.4 - 4.8	7.1 - 4.9	7.4 - 5.2	8.7 - 5.7	9.6 - 6.2	11.5 - 7.3

Figure 1. Normal range of scores-women by Jones and Rikli (2002).