ORIGINAL ARTICLE

Predictive variables of depressive symptoms and anxiety in older adults from primary care: a cross-sectional observational study

Isabel GÓMEZ-SORIA,[1,2] **Chelo FERREIRA,**[3] **Bárbara OLIVÁN-BLAZQUEZ** [2,4] **Alejandra AGUILAR-LATORRE** [2,5] **and Estela CALATAYUD**[1,2]

Department of [1]Physiatry and Nursing, Faculty of Health Sciences, [3]Applied Mathematics and IUMA, Faculty of Veterinary Sciences and [4]Psychology and Sociology, Faculty of Social and Labor Sciences, University of Zaragoza and [2]Institute for Health Research Aragón (IIS Aragón), Zaragoza and [5]Department of Psychology and Sociology, Faculty of Human Sciences and Education of Huesca, University of Zaragoza, Huesca, Spain

Correspondence: Chelo Ferreira, Department of Applied Mathematics and IUMA, Faculty of Veterinary Sciences, University of Zaragoza, 50013 Zaragoza, Spain. Email: cferrei@unizar.es

Received 3 April 2023; revision received 5 October 2023; accepted 9 October 2023.

Abstract

Background: By 2050, the number of people aged 60 years and older will have doubled worldwide and the most common mental disorders in this age group are currently depressive symptoms and anxiety. This study aimed to analyze the Basic and Instrumental Activities of Daily Living (BADLs and IADLs, respectively) in older adults; socio-demographic, clinical, lifestyle, and environmental variables; and cognitive impairment related to the appearance of depressive symptoms and anxiety.

Material and Methods: A cross-sectional observational study was conducted with 327 participants aged ≥65 years in primary care. The variables were Yesavage's Geriatric Depression Scale, the Goldberg Anxiety Subscale, socio-demographic, clinical, lifestyle, environmental variables, BADLs, IADLs, and the Spanish version of the Mini-Mental State Examination.

Results: An analysis of variance was carried out for the predictive multiple linear regression models. '≥ 1 chronic pathology' and 'low dependency' in BADL are negatively associated with anxiety, while 'physical activity' and 'low dependency' in BADL are associated with positive factors for depressive symptoms.

Conclusions: Predictor variables could improve the early detection of anxiety and depressive symptoms by general practitioners and serve as a basis for future studies and personalised-adapted cognitive stimulation programs.

INTRODUCTION

By 2050, the number of people aged 60 years and older will have doubled, reaching 2.1 million globally.[1] Depressive symptoms and anxiety are major public health concerns due to their high prevalence in older adults.[2] The prevalence in people aged 65+ years in European countries is 12.3% (95% confidence interval (CI), 11.8–12.9) for depressive symptoms (between 8.8% in Iceland, 10% in Liverpool, 10.7% in Zaragoza, 11.9% in Dublin, 12% in Amsterdam, 16.5% in Berlin, 17.3% in London, 18.3% Verona, and 23.6% in Munich).[3] The prevalence in people aged 65+ years in European countries is 17.2% (95% CI, 14.0–20.4) for anxiety,[4] 11% (95% CI, 6–18)

in Spain,[5] 13.4% in England (95% CI, 10.2–16.5), 12% in Germany (95% CI, 10.1–13.8), 9.4% in Italy (95% CI, 7.5–11.4), and 7.8% in Switzerland (95% CI, 5.5–10.1).[4]

Depressive symptoms and subjective memory complaints are major risk factors for incident anxiety in this age group. However, anxiety because of increasing difficulties with memory is independent of the presence of depressive symptoms.[6]

Depressive symptoms and anxiety have been linked to various risk factors: lower education level, a sedentary lifestyle,[7] being female, smoking,[8] and highly demanding jobs.[9] Moreover, several stressors could affect people in their ageing, such as a change

in roles, the deterioration of health, and a loss of close attachments.[1]

Several studies highlight the link between mood and anxiety disorders, and subjective cognitive impairment[10] and cognitive impairment (CI).[11] The prevalence in patients with mild cognitive impairment (MCI) of depressive symptoms is 21.0% (95% CI, 16.2–26.7), and the prevalence of anxiety in community-based samples is 14.3% (95% CI, 9.7–20.5).[12] The prevalence of depressive symptoms in patients with mild dementia is 38% (range, 10%–78%; 95% CI, 32%–45%; $I^2 = 96\%$, $P < 0.001$), and the prevalence of anxiety is 38% (range, 13%–67%; 95% CI, 31%–45%; $I^2 = 94\%$, $P < 0.001$).[13]

MCI describes a stage of intermediate cognitive dysfunction where the risk of conversion to dementia is increased.[14] The ability to execute complex instrumental activities of daily living (IADLs) may also be an important factor in differentiating between normal cognition (NC), MCI, and dementia.[15]

Dementia is the greatest global burden for welfare and healthcare systems in the 21st century.[16] Only two-thirds of dementia cases in primary care are currently recorded and, as such, the process of increasing the number of diagnosed cases is a priority.[17]

Primary care is usually the first point of contact for mental health problems.[18] Due to the existence of underdiagnoses in primary care consultations,[19] it would be of interest to establish a profile in which primary care professionals could make early detections, identifying the components that contribute to successful diagnoses.[20]

As such, this study aimed to analyze factors (basic activities of daily living (BADLs), IADLs, socio-demographic, clinical, lifestyle, and environmental variables, and cognitive impairment related to the appearance of depressive symptoms and anxiety in older adults (≥ 65 years) in NC to cognitive impairment in a primary healthcare setting.

MATERIALS AND METHODS
Design
This cross-sectional observational study was conducted in a primary care centre in an urban area in the north of Spain. The interview process was carried out at an urban primary care centre in the city of Zaragoza (northeastern Spain). On January 1, 2019, Zaragoza had 706 904 inhabitants, of which 29.34%

were over 65 years of age.[21] Aragón is, on average, the oldest autonomous community in Spain in terms of its population, with the percentage of older adults exceeding 21% of the entire population.[22]

The evaluation process was carried out by occupational therapists who had received appropriate training to ensure the homogeneous application of the evaluation tools.

Participants and Sample Size
The sample consisted of 337 participants who were patients in primary healthcare consultations. The participants' file numbers were placed in an opaque urn and an anonymous person drew the selected numbers. The first author verified the inclusion criteria of the participants: ≥ 65 years of age and receiving a score on the Spanish version of the Mini-Mental State Examination (MEC-35)[23] ranging from 20 to 35 points. The exclusion criteria were institutionalisation, deafness, blindness, neuropsychiatric disorders, motor difficulties, and having received cognitive stimulation during the 12 months before the study.

The participants were subdivided into four categories: no deterioration (ND), subtle cognitive impairment (SCI), level deterioration (LD), and moderate deterioration (MD). These four categories are described in the following section.

Participants received information about the project through informative posters that had been placed on the doors of all the medical consultation rooms. These posters invited patients to participate in the project and get in contact with the research occupational therapists of the study.

All the participants were informed about the nature of the study and objectives, as well as that their participation was voluntary and that they could leave the study at any point.

To note the proportion of individuals with a certain level of cognitive impairment (as a four-category qualitative variable), the sample size was calculated for an expected proportion of 30%, with a 5% error and 95% confidence level. An algorithm implemented in WinEpi 2 was used for this calculation and an unknowing reference population was assumed.[24]

Outcomes
The primary variables were depressive symptoms and anxiety. The instruments with which these

variables were measured were the 15-point version of Yesavage's Geriatric Depression Scale (GDS-15) and the Goldberg Anxiety Subscale.

Yesavage GDS-15

The GDS-15 is one of the most widely used short tests for the study of depressive symptoms in primary care settings.[25] With a total score >5 being interpreted as 'probable depressive symptoms'. In older adults, with a cut-off of 5 points, sensitivity is 71.8% and specificity is 78.2%.[26] The internal reliability for the Spanish version of the GDS-15 in the study was 0.715. The sensitivity of the GDS-15 was 0.755 and the specificity was 0.668. The receiver operating characteristic curve of the GDS-15 is 0.764.[27]

The Goldberg Anxiety Subscale

The Goldberg Anxiety Subscale has nine dichotomous response items (yes/no responses). The cut-off value is ≥4 for the anxiety subscale, indicating 'probable anxiety'. This scale has a specificity of 91% and a sensitivity of 86%.[28] The Spanish version has proven its reliability and validity in the primary care setting and has a sensitivity of 83.1%, a specificity of 81.8%, a misclassification rate of 17.7%, and a positive predictive value of 95.3%.[29]

The secondary variables were the following.

Socio-demographic variables

The socio-demographic variables studied can be seen in Table 1. Education level was divided into two subgroups (Primary/Secondary or Higher). The subdivision of both the physical occupational status and mental occupational status variables was made according to three levels: low, medium, and high.[30] To assess interests, the Modified Interest Checklist[31] was used. Subsequently, this variable was dichotomised into three categories.

Clinical characteristic variables

The clinical characteristics variables examined were grouped into no chronic pathology, 1, 2, 3, or >3 chronic pathologies, and considered high blood pressure, diabetes, hypercholesterolemia, obesity, heart disease, lung disease, peripheral vascular disease, visual disturbance, hearing impairment, cerebrovascular accident, alcoholism, anxiety treatment, and depressive symptoms treatment. To be able to reflect

the category 'alcoholism', the participants were asked if they drank two or more alcoholic beverages per day. Moreover, all participants who were taking drugs (for depressive symptoms and anxiety) were included in 'depressive symptoms treatment' or 'anxiety treatment' categories.

Lifestyle variables

The lifestyle variables studied were smoking and physical activity. We considered 'smokers' to be participants who smoked 10 or more cigarettes daily. Furthermore, a division of the subgroups was made in accordance with the level of physical activity (Sedentary Lifestyle/Light/Moderate/Vigorous) for low, moderate, and high activity levels, according to the International Physical Activity Questionnaire (IPAQ). Participants who did not perform any physical activity were included in the 'Sedentary Lifestyle' category.[32]

Environmental variables

The environmental variables related to the elimination of architectural barriers through technical aids in housing (≤1, >1).

BADLs

Independence when carrying out 10 BADLs was evaluated with the Barthel Index (BI). The maximum score is 100 points and scores ≥60 points indicate mild dependence. Its sensitivity ranges between 76 and 99.8% and its specificity between 46 and 97%.[33] In the Spanish version, Cronbach's alpha was above 0.70. The standardised effect size and the standardised response mean were between 0.68 and 1.81.[34]

IADLs

Autonomy in the eight IADLs that are necessary to live independently was assessed with the Lawton and Brody Scale (L-B). The scale's sensitivity is 57% and its specificity is 82%.[35] The score ranges from 0 (dependent) to 8 (independent) points. The internal consistency of the eight items on the Spanish version questionnaire has a Cronbach's alpha of 0.94. Due to its characteristics, both in its original form and in Spanish, it is a reliable instrument for the assessment of IADLs in older adults living in the community.[36]

Table 1 The participants' socio-demographic and clinical characteristics, and the participants' lifestyle and environmental variables

Total (N = 337) Age (years) mean (SD): 74 (6)		
Participants' socio-demographic characteristics		n (%)
Gender	Men	102 (30.3)
	Female	235 (69.7)
Civil status	Single	17 (5)
	Widowed	7 (2.1)
	Married	227 (67.4)
	Separated	86 (26.5)
Education level	Primary	269 (79.8)
	Secondary or higher	68 (20.2)
Physical occupational status	Low	63 (18.7)
	Medium	145 (43)
	High	129 (38.3)
Mental occupational status	Low	205 (60.8)
	Medium	112 (33.2)
	High	20 (5.9)
Nucleus of family coexistence	Living alone	65 (19.3)
	Living with others	272 (80.7)
Interests	No interests	39 (11.6)
	From 1 to 3 interests	212 (62.9)
	More than 3 interests	86 (25.5)
Roles	No role	4 (1.2)
	From 1 to 3 roles	319 (94.7)
	More than 3 roles	14 (4.2)
Values	None	9 (2.7)
	Personal	299 (88.7)
	Social	29 (8.6)
Participants' clinical characteristics n (%)		
No chronic pathology		8 (2.4)
1 chronic pathology		38 (11.3)
2 chronic pathologies		57 (16.9)
3 chronic pathologies		89 (26.4)
>3 chronic pathologies		145 (43)
Participants' lifestyle		n (%)
Physical activity	Sedentary lifestyle	32 (9.5)
	Light	34 (10.1)
	Moderate	240 (71.2)
	Vigorous	31 (9.2)
Smoker	No	328 (97.3)
	Yes	9 (2.7)
Participants' environmental variables		n (%)
Ramp use	No	156 (46.3)
	Yes	181 (53.7)
Lift use	No	43 (12.8)
	Yes	294 (87.2)
Have shower at home	No	207 (61.4)
	Yes	130 (38.6)
Mood		n (%)
GDS-15	≥ 5	59 (17.5)
	< 5	278 (82.5)

Table 1 Continued

Total (N = 337) Age (years) mean (SD): 74 (6)		
Participants' socio-demographic characteristics		n (%)
Goldberg Anxiety Subscale	≥ 4	134 (39.8)
	< 4	203 (60.2)
		n (%)
Barthel Index	100	227 (67.4)
	≥ 60	110 (32.6)
	< 20	0 (0)
IADLs		n (%)
Lawton & Brody	8	207 (61.4)
	≥ 5	108 (32.0)
	< 5	22 (6.5)
Normal cognition to cognitive impairment variable		n (%)
MEC-35	No deterioration	101 (30)
	Subtle cognitive impairment	100 (29.7)
	Level deterioration	108 (32)
	Moderate deterioration	28 (8.3)

Abbreviations: BADLs, basic activities of daily living; GDS-15, 15-point version of Yesavage's Geriatric Depression Scale; IADLs, instrumental activities of daily living.

MEC-35

The MEC-35 is a version of Folstein's Mini-Mental State Examination (MMSE) adapted to Spanish to detect patients with cognitive impairment.[37] The variable related to NC and cognitive impairment was evaluated by classifying all participants into four groups based on their cognitive level, according to the MEC-35.[23] The MEC-35 is one of the most widely used short cognitive tests for the study of cognitive capacities in primary care. The validity of the MEC-35 is confirmed, with the most balanced cut-off point being precisely 23/24. Test–retest reliability: weighted kappa = 0.667, sensitivity = 89.8%, and specificity = 83.9%.[38] Scores between 32 and 35 points on the MEC-35 would indicate an absence of cognitive impairment; in other words, ND. Scores between 28 and 31 points would indicate SCI; the cut-off of 31 points on the MEC-35, corresponding to a score of 25 on the MMSE, is based on the classification of Friedman et al.[39] Scores between 24 and 27 points would indicate LD, following the classification by Calero et al.[40] based on individuals with MCI. Moreover, scores ranging from 20 to 23 points would indicate MD in presence of cognitive impairment, in accordance with Vinyoles Bargalló et al.[41] According to certain authors, the ND indicates that NC and SCI could indicate pre-symptomatic levels

© 2023 The Authors

Psychogeriatrics published by John Wiley & Sons Australia, Ltd on behalf of Japanese Psychogeriatric Society.

49

Table 2 Bivariate analysis of the socio-demographic, clinical characteristics, lifestyle, and environmental variables, and the normal cognition to cognitive impairment variable, related to anxiety

Anxiety		Mean (SD)	Median (IQR)	95% confidence interval level (lower limit–upper limit)	P-value
Participants' socio-demographic characteristics					
Age	65–75 years	2.980 (2.4590)	3.000 (4.0)	2.639–3.321	0.294
	>75 years	2.722 (2.4659)	2.000 (4.0)	2.302–3.142	
Gender	Men	2.157 (2.1496)	1.500 (4.0)	1.728–2.585	<0.001**
	Female	3.242 (2.5452)	3.000 (4.0)	2.908–3.577	
Civil Status	Single	2.958 (3.0929)	2.000 (5.8)	0.993–4.923	0.062
	Widowed	3.415 (2.3711)	4.000 (4.1)	2.894–3.936	
	Married	2.740 (2.4832)	2.000 (4.0)	2.412–3.068	
	Separated	2.357 (2.0759)	2.000 (4.0)	0.437–4.277	
Education level	Primary	2.990 (2.5071)	3.000 (4.0)	2.684–3.297	0.327
	Secondary or higher	2.592 (2.3550)	2.000 (4.5)	2.009–3.176	
Physical occupational status	Low	3.425 (2.7706)	3.750 (9.0)	2.709–4.141	0.038*
	Medium	3.071 (2.4285)	3.000 (4.0)	2.666–3.477	
	High	2.480 (2.3334)	2.000 (9.0)	2.065–2.895	
Mental occupational status	Low	3.048 (2.4950)	2.750 (4.0)	2.700–3.395	0.184
	Medium	2.743 (2.4585)	3.000 (5.0)	2.272–3.214	
	High	2.353 (2.4159)	1.000 (4.0)	1.111–3.595	
Nucleus of family coexistence	Living alone	3.231 (2.4224)	3.500 (4.0)	2.631–3.831	0.174
	Living with other	2.792 (2.4675)	2.000 (4.5)	2.498–3.087	
Interests	No interests	3.343 (2.4638)	3.500 (4.5)	2.497–4.189	0.047*
	From 1 to 3 interests	3.056 (2.5375)	3.000 (4.0)	2.706–3.407	
	More than 3 interests	2.382 (2.2804)	1.500 (4.5)	1.890–2.874	
Roles	No role	2.000 (4.0000)	0.000 (6.0)	−4.365–8.365	0.458
	From 1 to 3 roles	2.896 (2.4489)	2.750 (4.0)	2.622–3.171	
	More than 3 roles	3.583 (2.8110)	4.000 (6.1)	1.797–5.369	
Values	None	2.000 (1.9365)	1.500 (3.8)	−0.404-4.404	0.579
	Personal	2.932 (2.4950)	2.500 (4.0)	2.645–3.219	
	Social	2.846 (2.4322)	3.000 (4.5)	1.864–3.829	
Clinical Characteristics					
	No chronic pathology	0.500 (0.7559)	0.000 (1.0)	−0.132-1.132	0.003*
	one or more chronic pathologies	2.935 (2.4603)	3.000 (4.0)	2.668–3.201	
Participants' lifestyle					
Physical activity	Sedentary lifestyle	3.406 (2.5414)	3.750 (4.9)	2.490–4.323	0.164
	Light, moderate, and vigorous	2.821 (2.4505)	2.500 (4.5)	2.545–3.097	
Smoker	No	2.925 (2.4799)	3.000 (4.0)	2.650–3.200	0.547
	Yes	2.389 (2.5345)	1.500 (4.8)	0.441–4.337	
Environmental variables					
Have technical aids in housing	≤1	2.589 (2.242)	2.000 (4.0)	2.133–3.046	0.252
	>1	2.990 (2.538)	3.000 (4.0)	2.668–3.311	
BADLs					
Barthel Index	100	2.566 (2.3970)	2.000 (4.0)	2.253–2.880	0.001**
	≥ 60	3.518 (2.4792)	4.000 (4.5)	3.050–3.987	
IADLs					
Lawton & Brody	8	3.114 (2.4786)	3.000 (4.0)	2.774–3.453	0.062
	≥ 5	2.611 (2.4989)	2.000 (4.9)	2.134–3.088	
	< 5	1.955 (1.7451)	1.250 (2.8)	1.181–2.728	
Normal cognition to cognitive impairment variable					
MEC-35	No deterioration	2.929 (2.5203)	3.000 (4.5)	2.427–3.432	0.559
	Subtle cognitive impairment	2.672 (2.5024)	2.000 (5.0)	2.165–3.179	
	Level deterioration	3.052 (2.4023)	3.000 (4.0)	2.589–3.515	
	Moderate deterioration	3.174 (2.6311)	2.500 (5.0)	2.036–3.086	

Note: Non-parametric descriptive tests: Mann–Whitney or Kruskal–Wallis. Abbreviations: BADLs, basic activities of daily living; IADLs, instrumental activities of daily living; IQR, interquartile range; MEC-35, Spanish version of the Mini-Mental State Examination. ** Mean *P*-value <0.001 respectively. * Mean *P*-value <0.05 respectively.

Table 3 Bivariate analysis of the socio-demographic, clinical characteristics, lifestyle, and environmental variables, from normal cognition to cognitive impairment variable, related to depressive symptoms

Depressive symptoms		Mean (SD)	Median (IQR)	95% confidence interval level (lower limit–upper limit)	P-value
Participants' socio-demographic characteristics					
Age	65–75 years	2.834 (2.6242)	2.000 (3.0)	2.470–3.198	0.533
	>75 years	3.196 (3.0211)	2.500 (4.0)	2.682–3.711	
Gender	Men	1.934 (1.9452)	1.500 (2.5)	1.546–2.322	<0.001**
	Female	3.393 (3.0104)	3.000 (4.0)	2.998–3.789	
Civil status	Single	2.292 (2.4164)	2.000 (3.6)	0.756–3.827	<0.001**
	Widowed	4.256 (3.2052)	3.750 (5.0)	3.552–4.960	
	Married	2.547 (2.5484)	2.000 (2.5)	2.211–2.883	
	Separated	1.500 (1.4720)	1.000 (3.5)	0.139–2.861	
Education level	Primary	3.027 (2.7621)	2.000 (3.5)	2.689–3.365	0.124
	Secondary or higher	2.632 (2.9860)	1.500 (4.0)	1.891–3.371	
Physical occupational status	Low	3.067 (3.1427)	2.000 (3.9)	2.255–3.879	0.213
	Medium	3.104 (2.7039)	2.750 (3.5)	2.652–3.555	
	High	2.714 (2.7602)	2.000 (2.5)	2.223–3.204	
Mental occupational status	Low	3.073 (2.8529)	2.000 (3.4)	2.675–3.470	0.464
	Medium	2.785 (2.7128)	2.000 (3.0)	2.265–3.305	
	High	2.500 (2.9368)	1.500 (4.0)	0.990–4.010	
Nucleus of family coexistence	Living alone	3.700 (2.4675)	2.000 (4.0)	2.943–4.457	0.024*
	Living with others	2.807 (2.7021)	2.000 (3.0)	2.484–3.130	
Interests	No interests	3.443 (3.4445)	2.000 (4.0)	2.260–4.626	0.005*
	From 1 to 3 interests	3.154 (2.8200)	2.500 (3.5)	2.765–3.544	
	More than 3 interests	2.247 (2.3662)	1.500 (3.0)	1.737–2.757	
Roles	No role	1.500 (2.3805)	0.500 (4.0)	−2.286-5.288	0.272
	From 1 to 3 roles	2.985 (2.8207)	2.000 (3.0)	2.669–3.302	
	More than 3 roles	2.458 (2.6238)	1.250 (4.3)	0.791–4.125	
Values	None	3.900 (2.8810)	4.000 (4.8)	0.323–7.477	0.348
	Personal	2.899 (2.7646)	2.000 (3.0)	2.581–3.217	
	Social	3.308 (3.3078)	2.250 (5.0)	1.972–4.644	
Clinical characteristics					
	No chronic pathology	1.375 (0.9161)	1.250 (1.8)	0.609–2.141	0.105
	1 or more chronic pathologies	3.018 (2.8105)	2.000 (3.5)	2.713–3.323	
Participants' lifestyle					
Physical activity	Sedentary lifestyle	5.469 (4.2043)	3.500 (7.0)	3.953–6.985	<0.001**
	Light, moderate, and vigorous	2.718 (2.4674)	2.000 (3.0)	2.440–2.996	
	Moderate	2.714 (2.5628)	2.000 (3.0)	2.382–3.047	
	Vigorous	1.468 (1.4197)	1.000 (2.0)	0.947–1.988	
Smoker	No	2.967 (2.8109)	2.000 (3.0)	2.655–3.278	0.446
	Yes	2.278 (2.7851)	1.000 (3.5)	0.137–4.419	
Environmental variables					
Have technical aids in housing	≤1	2.795 (2.3974)	2.500 (3.0)	2.306–3.283	0.914
	>1	3.052 (2.9329)	2.000 (3.5)	2.680–3.423	
BADLs					
Barthel Index	100	2.374 (2.3102)	2.000 (2.5)	2.072–2.677	<0.001**
	≥ 60	4.227 (3.2585)	3.500 (4.6)	3.612–4.843	
IADLs					
Lawton & Brody	8	2.918 (2.7713)	2.000 (3.0)	2.538–3.298	0.698
	≥ 5	3.083 (2.9714)	2.000 (3.9)	2.517–3.650	
	< 5	3.045 (2.0581)	3.000 (3.4)	2.133–3.958	
Normal cognition to cognitive impairment variable					
MEC-35	No deterioration	2.439 (2.3368)	2.000 (2.5)	1.973–2.905	0.119
	Subtle cognitive impairment	2.932 (2.8047)	2.000 (3.0)	2.364–3.501	
	Level deterioration	3.165 (2.7669)	2.250 (3.6)	2.632–3.698	
	Moderate deterioration	4.196 (4.2339)	3.000 (8.0)	2.365–6.027	

Abbreviations: BADLs: basic activities of daily living; IADLs: instrumental activities of daily living; IQR: interquartile range; MEC-35: Spanish version of the Mini-Mental State Examination. ** Mean P-value <0.001. * Mean P-value <0.05 respectively.

of cognitive impairment and decreased cognitive functioning.[42] However, other authors comment that there is no correlation with no neurological symptoms or subjective memory complaints.[43] The MD group could indicate mild dementia.

Trained occupational therapists carried out interviews over 2 weeks for variable collection. All the variables are collected in Table 1.

Statistical Analysis

The statistical analysis was performed with the IBM SPSS Statistics Package, version 25 (IBM, Armonk, NY, USA).[44] The descriptive statistics are shown according to the nature of each variable. For qualitative variables, the number and proportion of participants in each category (n, %) were considered. For variables related to anxiety and depressive symptoms, the mean ($\bar{x}$), SD, and a 95% CI (lower limit and upper limit) were used for the population mean. Due to the non-symmetry of some of the variables, we also included the median and interquartile range (Tables 2 and 3). The Kolmogorov–Smirnov test was used to verify the normality of the quantitative variables. Most of the variables were non-normal distributions, therefore, the non-parametric analysis was used.

Differences between groups in the cognitive measurements were evaluated using the non-parametric Mann–Whitney or Kruskal–Wallis tests (Tables 2 and 3).

An analysis of variance (ANOVA) analysis was used for predictive multiple linear regression models

Table 4 Predictive linear regression models in relation to anxiety, only with the significant coefficients

Significant regression categories	Coefficients	95% confidence interval level (lower limit–upper limit)	P-value
High physical occupational status	−0.199	−1.804; −0.0209	0.013
>3 interests	−0.178	−1.956; −0.049	0.039
Clinical characteristics for the status of 'participants who present 1 or more chronic pathologies'	0.159	0.849; 4.274	0.003
Barthel Index ≥60 (low dependency)	0.205	0.457; 1.691	0.001
R^2	0.166**		
R^2 fitted	0.098**		

** Mean P-value <0.001, <0.05 respectively.

Table 5 Predictive linear regression models in relation to depressive symptoms, only with the significant coefficients

Significant regression categories	Coefficients	95% confidence interval level (lower limit–upper limit)	P-value
Gender (for the category of 'female gender')	0.190	0.373; 1.931	0.004
>3 interests	−0.189	−2.217; −0.0194	0.020
Physical activity (light, moderate and vigorous)	−0.211	−2.999; −1.020	0.000
Barthel Index ≥60 (low dependency)	0.195	0.502; 1.811	0.001
R^2	0.2700**		
R^2 fitted	0.211**		

** Mean P-value <0.001, <0.05 respectively.

and only significant independent variables have been included (Tables 4 and 5). To complete the bivariate analysis and predictive linear regression models, the clinical characteristics variable was regrouped into no chronic pathology, or one or more chronic pathologies, and the physical activity variable was regrouped into no chronic pathology, or one or more chronic pathologies.

Finally, with all the independent variables, two multiple linear regression models are established, and after the ANOVA analysis, we proposed as predictor variables those that were significant in the analysis (Tables 4 and 5). To complete the bivariate analysis and predictive linear regression models, the clinical characteristics variable was regrouped into no chronic pathology or one or more chronic pathologies, and the physical activity variable was regrouped into no chronic pathology or one or more chronic pathologies.

Ethical Considerations

This study was approved by the Research Ethics Committee of the Autonomous Community of Aragón (protocol number CEICA PI11/90 and PI11/00091). All personal data protection regulations were respected. The patients/participants provided their written informed consent to participate in this study. The deontological norms recognised by the Declaration of Helsinki by the 52nd WMA General Assembly, Edinburgh, Scotland, (October 2000)[45] and good clinical

practice norms were followed, as well as current legislation.

RESULTS

This study included 337 older adults with MEC-35 scores between 20 and 35 points; 69.7% (235) were women and 30.3% (102) were men. Their mean age was 74 years, with an SD of 6.

As shown in Table 1, a description of the sample has been offered in terms of the study variables collected.

Tables 2 and 3 show the relationship between the socio-demographic, clinical characteristics, lifestyle, and environmental variables related to anxiety and depressive symptoms, respectively. First, we found significant differences between the means for anxiety in the categories of gender ($P < 0.001$), physical occupational status ($P = 0.038$), interests ($P = 0.047$), clinical characteristics ($P < 0.003$), and the BI ($P < 0.001$) (Table 2). Second, for the depressive symptoms means, we obtained significant differences for the categories of gender ($P < 0.001$), civil status ($P < 0.001$), the nucleus of family coexistence ($P < 0.001$), interests ($P < 0.005$), physical activity ($P < 0.001$), and the BI ($P < 0.001$) (Table 3).

Regarding the linear regression model, the results are shown in Tables 4 and 5. Almost 17% of the variation in anxiety scores is explained by the regression model, where physical occupational status, interests, clinical characteristics, and the BI are predictor variables for anxiety (Table 4). For depressive symptoms, 27% of the variation in depression scores is explained by the regression model, with gender, civil status, the nucleus of the family, interests, physical activity, and the BI as the predictor variables (Table 5).

It can be observed that anxiety is explained, with a determination of $R^2 = 0.166$ ($P < 0.001$), by the 'high' ($P < 0.05$) physical occupational status variable, by the '>3 interests' ($P < 0.05$) variable, by the clinical characteristics for the status of 'participants who present one or more chronic pathologies' ($P < 0.05$), and by the BI score '≥60' (low dependency) ($P < 0.001$) variable (Table 4).

It can be observed that depressive symptoms are explained, with a determination of $R^2 = 0.2700$ ($P < 0.001$), by the 'being female' ($P < 0.05$) variable, by the '>3 interests' ($P < 0.05$) variable, by the 'Light, Moderate, and Vigorous' ($P < 0.001$) physical activity variable, and by the BI score '≥60' (low dependency) ($P < 0.05$) variable (Table 5).

DISCUSSION

Through the results of this study, primary care professionals could establish risk profiles for anxiety in older adults given that the predictive variables are 'high' physical occupational status, '>3 interests', the clinical characteristics for the status of 'participants who present one or more chronic pathologies' and the BI score '≥ 60' (low dependency). Similarly, risk profiles for depressive symptoms can be established, as the predictive variables are 'being female', '>3 interests', 'Light, Moderate, and Vigorous' physical activity, and the BI score '≥60' (low dependency). These findings could be relevant in establishing prevention interventions for community mental health in primary care.[46]

Regarding the direction of the association, we have found the following:

- females present more anxiety and more depressive symptoms than men
- anxiety is related to suffering from one or more chronic pathologies
- more depressive symptoms are evident in widowed people and less in separated people, while single and married people show similar levels
- people who live alone also show more depressive symptoms
- a negative direction related to interests, dependence on BADLs, and physical activity. Anxiety and depressive symptoms decrease as the number of interests increases. Major dependence on BADLs meant increased anxiety and depressive symptoms, while higher rates of physical activity generally meant lower levels of depressive symptoms.

One of the variables that could establish a risk profile for depressive symptoms is being female. In line with our results, other studies find that compared to men, women in general in all age groups are more likely to suffer from depressive symptoms.[47,48] Nevertheless, older women are associated with more positive help-seeking attitudes regarding mental health services.[49]

Clinical characteristics for the status of 'participants who present one or more chronic pathologies' is a variable that could establish a risk profile concerning anxiety. Comorbidity associated with other chronic pathologies such as diabetes, hypertension,

cardiovascular diseases, and cancer, among others, is high.[33,50] Moreover, comorbidity associated with psychiatric diseases such as anxiety disorders[51] is also high and has a great impact on health, healthcare utilisation, associated costs and increasing the risk of complications and death.[52]

Comparing the results of this study to the results from other studies, a direct association between having one or more pathologies and suffering from anxiety can be noted.[47,53] Furthermore, long-term treatment is required which is associated with higher healthcare costs.[54]

In our study, we have seen that having '>3 interests' could be a protective factor for both anxiety and depressive symptoms. Other studies find similar results.[55,56]

The role of marital status in our study is considered a predictor of depressive symptoms since more depressive symptoms are evident in widowed people and less in separated people, while single and married people show similar levels. On the one hand, other studies found similar results in relation to widowed older adults experiencing more depressive symptoms than those who are married.[57] However, in another study, social support from adult children buffered the harmful effects of widowhood, while spousal support during marriage increased vulnerability.[58] Furthermore, the condition of being a widowed[59,60] or separated person[59] is strongly related to loneliness in other studies. On the other hand, although married older adults are less likely to have depressive symptoms even with all the mentioned physical limitations, in another study, single women were found more vulnerable to depressive symptoms with physical limitations.[61]

In our study, we found that people living alone report more depressive symptoms. In a recent systematic review, all the articles on old age show a significant and positive association between loneliness and depressive symptoms, with an odds ratio of 0.41 to 17.76.[62]

In our results, none of the participants presented high dependency. However, it was found that low dependency (score ≥ 60) was associated with anxiety and depressive symptoms. Other authors find that anxiety and depressive symptoms in older adults have a great impact on ADLs.[63,64] In addition, experiencing pain, taking five or more medications, suffering from chronic pathologies, receiving higher depressive symptoms scores, doing less physical activity, having a decreased quality of life, and having a lower MMSE score are all associated with disabilities in ADLs.[65]

We found that 'high physical occupational status' could be a protective factor regarding anxiety. Other authors find that physically demanding occupations are not protective factors because they increase the risk of suffering from disease or disability and are associated with functional limitations in ADLs in older adults.[66] Notwithstanding, 'physical activity' could be a protective factor regarding depressive symptoms, as in other studies.[67]

The variable regarding 'from normal cognition to becoming cognitively disabled' was not shown to be a predictive factor for depressive symptoms in our study, perhaps because the participants were relatively young (≥65 years), had relatively NC, and had low dependency in ADLs. Different authors found a relationship between cognitive impairment in older age and cognitive symptoms.[48,68]

This study has several limitations. First, the sample size, study design, and setting, which have implications for the generalisability and impact of the findings. Second, in this study, the anxiety and depressive symptoms scales were selected due to their being short tests that evaluate seniors living in the community. The aim was to determine non-normal values. The Goldberg Anxiety Subscale is a widely used instrument in healthcare practice and clinical research;[69] however, it is often used as a screening test. A final limitation was the inability to control for possible confounding variables that may interact.

CONCLUSIONS

This study provides insight into potential risk factors for anxiety and depressive symptoms in older adults in primary care and highlights areas for further research based on larger representative studies. In addition, the study could help in the design and development of personalised protocols and preventive interventions.

AUTHOR CONTRIBUTIONS

Isabel Gómez-Soria: conceptualisation, methodology, investigation, resources, data curation, writing-original draft, project administration. **Chelo Ferreira:**

REFERENCES

1 World Health Organization. Mental health of older adults [Internet], [cited 2023 Jan 11]. Available from: https://www.who.int/en/news-room/fact-sheets/detail/mental-health-of-older-adults.

2 Byers AL, Yaffe K, Covinsky KE, Friedman MB, Bruce ML. High occurrence of mood and anxiety disorders among older adults: the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2010; **67**: 489–496.

3 Copeland JRM, Beekman ATF, Braam AW et al. Depression among older people in Europe: the EURODEP studies. *World Psychiatry* 2004; **3**: 45.

4 Andreas S, Schulz H, Volkert J et al. Prevalence of mental disorders in elderly people: the European MentDis_ICF65+ study. *Br J Psychiatry* 2017; **210**: 125–131.

5 Villagrasa B, Olaya B, Lopez-Anton R, de la Cámara C, Lobo A, Santabárbara J. Prevalence of anxiety disorder among older adults in Spain: a meta-analysis. *J Affect Disord* 2018; **2019**: 408–417.

6 Welzel FD, Luppa M, Pabst A et al. Incidence of anxiety in latest life and risk factors. Results of the agecode/agequalide study. *Int J Environ Res Public Health* 2021; **18**: 12786.

7 de Sousa RD, Rodrigues AM, Gregório MJ et al. Anxiety and depression in the Portuguese older adults: prevalence and associated factors. *Front Med (Lausanne)* 2017; **4**: 1–12. https://doi.org/10.3389/fmed.2017.00196/full.

8 Thapa DK. Impact of Adult Children's Migration on the Mental Health and Quality of Life of Older Parents 'Left Behind' in Nepal Submitted in fulfilment of the requirements for the Doctor of Philosophy (PhD) in Public Health College of Health and Medicine June, 2021.

9 Harvey SB, Modini M, Joyce S et al. Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. *Occup Environ Med* 2017; **74**: 301–310.

10 Mascherek A, Werkle N, Göritz AS, Kühn S, Moritz S. Lifestyle variables do not predict subjective memory performance over and above depression and anxiety. *Front Psychol* 2020; **11**: 1–9.

11 Ma L. Depression, anxiety, and apathy in mild cognitive impairment: current perspectives. *Front Aging Neurosci* 2020; **12**: 1–8.

12 Chen C, Hu Z, Jiang Z, Zhou F. Prevalence of anxiety in patients with mild cognitive impairment: a systematic review and meta-analysis. *J Affect Disord* 2018; **236**: 211–221.

13 Leung DKY, Chan WC, Spector A, Wong GHY. Prevalence of depression, anxiety, and apathy symptoms across dementia stages: a systematic review and meta-analysis. *Int J Geriatr Psychiatry* 2021; **36**: 1330–1344.

14 Petersen RC. Mild cognitive impairment. *Lancet* 2006; **367**: 1979.

15 Lee MT, Jang Y, Chang WY. How do impairments in cognitive functions affect activities of daily living functions in older adults? *PloS One* 2019; **14**: 1–14.

16 Grand JHG, Caspar S, MacDonald SWS. Clinical features and multidisciplinary approaches to dementia care. *J Multidiscip Healthc* 2011; **4**: 125–147.

17 Ford E, Greenslade N, Paudyal P et al. Predicting dementia from primary care records: a systematic review and meta-analysis. *PloS One* 2018; **13**: 1–23.

18 Patel V, Belkin GS, Chockalingam A, Cooper J, Saxena S, Unützer J. Grand challenges: integrating mental health services into priority health care platforms. *PLoS Med* 2013; **10**: e1001448.

19 Llorente JM, Oliván-Blázquez B, Zuñiga-Antón M et al. Variability of the prevalence of depression in function of sociodemographic and environmental factors: ecological model. *Front Psychol* 2018; **9**: 2182.

20 Thompson C, Kinmonth AL, Stevens L et al. Effects of a clinical-practice guideline and practice-based education on detection and outcome of depression in primary care: Hampshire depression project randomised controlled trial. *Lancet* 2000; **355**: 185–191.

21 Zaragoza City Council. Cifras de Zaragoza. Datos demográficos del padrón municipal de habitante. Zaragoza, 2020. [cited 2023 Jan 11]. Available from: http://demografia.zaragoza.es/.

22 Abellán GA, Aceituno NP, Pérez DJ, Ramiro FD, Ayala GA, Pujol Rodríguez R. Un perfil de las personas mayores en España, 2019. Indicadores estadísticos básicos. Informes

© 2023 The Authors

Psychogeriatrics published by John Wiley & Sons Australia, Ltd on behalf of Japanese Psychogeriatric Society.

55

Envejecimiento en Red no 22. Madrid, 2019. [cited 2023 Jan 11]. Available from: http://envejecimiento.csic.es/documentos/documentos/enred-indicadoresbasicos2019.pdf.

23 Calero MD, García TM, Robles P, Navarro E. Estudio de validez del Mini-Examen Cognoscitivo de Lobo et al para la detección del deterioro cognitivo asociado a demencias. *Neurología* 2000; **15**: 337–342.

24 Vallejo A, Muniesa A, Ferreira C, de Blas I. New method to estimate the sample size for calculation of a proportion assuming binomial distribution. *Res Vet sci* 2013; **95**: 405–409.

25 Watson LC, Pignone MP. Screening accuracy for late-life depression in primary care: a systematic review. *J Fam Pract* 2003; **52**: 956–964.

26 Marc LG, Raue PJ, Bruce ML. Screening performance of the 15-item geriatric depression scale in a diverse elderly home care population. *Am J Geriatr Psychiatry* 2008; **16**: 914–921.

27 Bugallo-Carrera C, Dosil-Díaz C, Pereiro AX *et al*. Assessment of validity and comparison of two Spanish versions of the geriatric depression scale. *Front Psychol* 2023; **14**: 1101886.

28 Goldberg D, Bridges K, Duncan-Jones P, Grayson D. Detecting anxiety and depression in general medical settings. *Br Med J* 1988; **297**: 897–899.

29 Montón C, Pérez Echeverría MJ, Campos R, García Campayo J, Lobo A. Anxiety scales and Goldberg's depression: an efficient interview guide for the detection of psychologic distress. *Aten Primaria* 1993; **12**: 345–349.

30 Grotz C, Meillon C, Amieva H, Andel R, Dartigues JF, Adam SLL. Occupational social and mental stimulation and cognitive decline with advancing age. *Age Ageing* 2017; **47**: 101–106.

31 Kielhofner G, Neville A. *The Modified Interest Checklist*. Chicago: University of Illinois, 1983.

32 IPAQ Research Committee. Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ)-Short Form, [cited 2023 Jan 11] Available from: www.ipaq.ki.se.

33 Bernabeu-Wittel M, Díez-Manglano J, Nieto-Martín D *et al*. Simplification of the Barthel scale for screening for frailty and severe dependency in polypathological patients. *Rev Clin Esp* 2019; **219**: 433–439.

34 González N, Bilbao A, Forjaz MJ *et al*. Psychometric characteristics of the Spanish version of the Barthel index. *Aging Clin Exp Res* 2018; **30**: 489–497.

35 Pfeffer RI, Kurosaki TT, Harrah CH, Chance JM, Filos S. Measurement of functional activities in older adults in the community. *J Gerontology* 1982; **37**: 323–329.

36 Vergara I, Bilbao A, Orive M, Garcia-Gutierrez S, Navarro G, Quintana JM. Validation of the Spanish version of the Lawton IADL scale for its application in elderly people. *Health Qual Life Outcomes* 2012; **10**: 130.

37 Lobo A, Escobar V, Ezquerra J, Seva DA. The 'Mini-Examen Cognoscitivo': A simple and practical test to detect intellectual dysfunctions in psychiatric patients. *Revista de Psiquiatría y Psicología Médica* 1980; **14**: 39–57.

38 Lobo A. Erratum: Revalidacion y normalizacion del mini-examen cognoscitivo (primera version en castellano del mini-mental status examination) en la poblacion general geriatrica. *Med Clin (Barc)* 1999; **113**: 197.

39 Friedman TW, Yelland GW, Robinson SR. Subtle cognitive impairment in elders with mini-mental state examination scores within the 'normal' range. *Int J Geriatr Psychiatry* 2012; **27**: 463–471.

40 Calero-García MD, Navarro-González E. Eficacia de un programa de entrenamiento en memoria en el mantenimiento de ancianos con y sin deterioro cognitivo. *Clin Salud* 2005; **17**: 187–202.

41 Vinyoles Bargalló E, Vila Domènech J, Argimon Pallàs JM, Espinàs Boquet J, Abos Pueyo T, Limón RE. Concordance among mini-Examen Cognoscitivo and mini-mental state examination in cognitive impairment screening. *Atencion Primaria/Sociedad Española de Medicina de Familia y Comunitaria* 2002; **30**: 5–13.

42 Rizk-Jackson A, Insel P, Petersen R, Aisen P, Jack C, Weiner M. Early indications of future cognitive decline: stable versus declining controls. *PloS One* 2013; **8**: e74062.

43 Haapalinna F, Kokki M, Jääskeläinen O *et al*. Subtle cognitive impairment and Alzheimer's disease-type pathological changes in cerebrospinal fluid are common among neurologically healthy subjects. *J Alzheimers Dis* 2018; **62**: 165–174.

44 IBM Corp. *IBM SPSS Statistics for Windows, Version 25.0*. Armonk, NY: IBM Corp, 2017.

45 World Medical Association (WMA) General Assembly. WMA Declaration of Helsinki—Ethical Principles For Medical Research Involving Human Subjects [Internet], 2022 [cited 2023 Jan 11]. Available from: https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/.

46 Saraceno B, van Ommeren M, Batniji R *et al*. Barriers to improvement of mental health services in low-income and middle-income countries. *Lancet* 2007; **370**: 1164–1174.

47 Lin H, Xiao S, Shi L *et al*. Impact of multimorbidity on symptoms of depression, anxiety, and stress in older adults: is there a sex difference? *Front Psychol* 2021; **21**: 5904.

48 Maier A, Riedel-Heller SG, Pabst A, Luppa M. Risk factors and protective factors of depression in older people 65+: A systematic review. *PLoS ONE* 2021; **16**: 1–38. https://doi.org/10.1371/journal.pone.0251326.

49 Mackenzie CS, Gekoski WL, Knox VJ. Age, gender, and the underutilization of mental health services: the influence of help-seeking attitudes. *Aging Ment Health* 2006; **10**: 574–582.

50 O'Neil A, Jacka FN, Quirk SE *et al*. A shared framework for the common mental disorders and non-communicable disease: key considerations for disease prevention and control. *BMC Psychiatry* 2015; **15**: 1–6.

51 Aragonès E, Piñol JL, Labad A, Masdéu RM, Pino M, Cervera J. Prevalence and determinants of depressive disorders in primary care practice in Spain. *Int J Psychiatry Med* 2004; **34**: 21–35.

52 Cimpean D, Drake RE. Treating co-morbid chronic medical conditions and anxiety/depression. *Epidemiol Psychiatr sci* 2011; **20**: 141–150.

53 Gould CE, O'Hara R, Goldstein MK, Beaudreau SA. Multimorbidity is associated with anxiety in older adults in the health and retirement study. *Int J Geriatr Psychiatry* 2016; **31**: 1105–1115.

54 Simon G, Ormel J, VonKorff M, Barlow W. Health care costs associated with depressive and anxiety disorders in primary care. *Am J Psychiatry* 1995; **152**: 352–357.

55 Grover S, Malhotra N. Depression in elderly: a review of Indian research. *J Geriatric Mental Health* 2015; **2**: 4.

56 Roh HW, Hong CH, Lee Y *et al*. Participation in physical, social, and religious activity and risk of depression in the elderly: a community-based three-year longitudinal study in Korea. *PloS One* 2015; **10**: 1–13.

57 Zhang B, Li J. Gender and marital status differences in depressive symptoms among elderly adults: the roles of family support and friend support. *Aging Ment Health* 2011; **15**: 844–854.

58 Li L, Liang J, Toler A, Gu S. Widowhood and depressive symptoms among older Chinese: do gender and source of support make a difference? *Soc sci Med* 2005; **60**: 637–647.

59 Burger J, Stroebe MS, Perrig-Chiello P *et al*. Bereavement or breakup: differences in networks of depression. *J Affect Disord* 2020; **15**: 1–8.

60 Nakagomi A, Shiba K, Hanazato M, Kondo K, Kawachi I. Does community-level social capital mitigate the impact of widowhood & living alone on depressive symptoms?: a prospective, multi-level study. *Soc sci Med* 2020; **259**: 113140.

61 Hossain B, Yadav PK, Nagargoje VP, Vinod Joseph KJ. Association between physical limitations and depressive symptoms among Indian elderly: marital status as a moderator. *BMC Psychiatry* 2021; **21**: 573.

62 Van As BAL, Imbimbo E, Franceschi A, Menesini E, Nocentini A. The longitudinal association between loneliness and depressive symptoms in the elderly: a systematic review. *Int Psychogeriatr* 2022; **34**: 657–669.

63 Brown Wilson C, Arendt L, Nguyen M *et al*. Nonpharmacological interventions for anxiety and dementia in nursing homes: a systematic review. *Gerontologist* 2019; **59**: E731–E742.

64 Song HJ, Meade K, Akobundu U, Sahyoun NR. Depression as a correlate of functional status of community-dwelling older adults: utilizing a short-version of 5-item geriatric depression scale as a screening tool. *J Nutrition, Health and Aging* 2014; **18**: 765–770.

65 Connolly D, Garvey J, McKee G. Factors associated with ADL/IADL disability in community dwelling older adults in the Irish longitudinal study on ageing (TILDA). *Disabil Rehabil* 2017; **39**: 809–816.

66 Mc Carthy VJC, Perry IJ, Greiner BA. Has your work worked you too hard? Physically demanding work and disability in a sample of the older Irish population. *Ir J Med sci* 2013; **182**: 47–55.

67 Gujral S, Aizenstein H, Reynolds CF, Butters MA, Erickson KI. Exercise effects on depression: Possible neural mechanisms. *Gen Hosp Psychiatry* 2017; **49**: 2–10.

68 Sugarman MA, Alosco ML, Tripodis Y, Steinberg EG, Stern RA. Neuropsychiatric symptoms and the diagnostic stability of mild cognitive impairment. *J Alzheimers Dis* 2018; **62**: 1841–1855.

69 Burgos Varo ML, Ortiz Fernández MD, Muñoz Cobos F, Vega Gutiérrez P, Bordallo AR. Intervención grupal en los trastornos de ansiedad en Atención Primaria: Técnicas de relajación y cognitivo-conductuales. *Sem Ther* 2006; **32**: 205–210.

© 2023 The Authors

Psychogeriatrics published by John Wiley & Sons Australia, Ltd on behalf of Japanese Psychogeriatric Society.

57