

## Diferencias de género en la relación entre factores personales intrínsecos y la sintomatología ansiosa y depresiva de una población trabajadora

### Gender differences in the relationship between intrinsic personal factors and the anxious and depressive symptomatology of a working population

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#### Resumen

**Introducción:** Los trastornos afectivos son un problema de salud con un gran impacto en el funcionamiento psicosocial y calidad de vida de las personas que los sufren. Por ello, el objetivo de este estudio fue analizar la analizar diferencias por género en la asociación entre los factores personales intrínsecos y la sintomatología depresiva y ansiosa de una población trabajadora.

**Métodos:** Se realizaron análisis descriptivo, bivalente y multivalente de datos de 242 individuos en edad laboral activa, entrevistados entre julio de 2021 y julio de 2022. El resultado primario fue la gravedad de la sintomatología depresiva y ansiosa como variable continua. **Resultados:** La prevalencia de síntomas depresivos en nuestra muestra es del 22,22% en mujeres y del 6,54 en varones, mientras la prevalencia de sintomatología ansiosa fue similar en ambos sexos (21,50% en varones y 25,19% en mujeres). En varones, la alta autoestima ( $\beta = -0,300$ ;  $p=0,022$ ) y una mayor edad ( $\beta = -0,210$ ;  $p=0,031$ )

son factores protectores de sintomatología depresiva y, la alta autoestima ( $\beta = -0,269$ ;  $p=0,005$ ) y la alta activación ( $\beta = -0,031$ ;  $p=0,049$ ) en la sintomatología ansiosa. Mientras, en las mujeres, una mayor autoeficacia y un mayor sentido de coherencia son factores protectores de la sintomatología depresiva ( $\beta = -0,250$ ,  $p=0,004$ ;  $\beta = -0,244$ ,  $p=0,005$ ) y ansiosa ( $\beta = -0,254$ ,  $p=0,004$ ;  $\beta = -0,178$ ,  $p=0,040$ ). Conclusión: Las mujeres trabajadoras tienen más sintomatología depresiva y ansiosa que sus homólogos masculinos. Existen diferencias entre hombres y mujeres en los factores personales intrínsecos que influyen en los síntomas depresivos y ansiosos.

**Palabras clave:** salud mental; depresión; ansiedad; determinantes sociales de la salud; Roles de género.

### Abstract

Introduction: Affective disorders are health problems with a significant impact on the psychosocial functioning and quality of life of people who suffer from them. Therefore, the objective of this study was to analyse gender differences in the association between intrinsic personal factors and depressive and anxious symptoms in a working population. Methods: Descriptive, bivariate, and multivariate analyses were performed on data from 242 individuals of active working age interviewed between July 2021 and July 2022. The primary outcome was the severity of depressive and anxiety symptoms as a continuous variable. Results: The prevalence of depressive symptoms in our sample is 22.22% in women and 6.54% in men, while the prevalence of anxious symptoms was similar in both sexes (21.50% in men and 25.19% in women). In men, high self-esteem ( $\beta = -0.300$ ;  $p=0.022$ ) and older age ( $\beta = -0.210$ ;  $p=0.031$ ) are protective factors for depressive symptoms, and high self-esteem ( $\beta = -0.269$ ;  $p=0.005$ ) and high activation ( $\beta = -0.031$ ;  $p=0.049$ ) in anxious symptomatology. Meanwhile, in women, greater self-efficacy and a greater sense of coherence are protective factors for depressive ( $\beta = -0.250$ ,  $p=0.004$ ;  $\beta = -0.244$ ,  $p=0.005$ ) and anxious symptoms ( $\beta = -0.254$ ,  $p=0.004$ ;  $\beta = -0.178$ ,  $p=0.040$ ). Conclusion: Women workers have more depressive and anxious symptoms than their male counterparts. There are differences between men and women in the intrinsic personal factors that influence depressive and anxious symptoms.

**Keywords:** mental health; depression; anxiety; Social Determinants of Health; Gender roles.

### INTRODUCTION

Affective disorders are a major and growing health problem with significant morbidity worldwide (WHO, 2021). Currently, affective disorders have a significant impact on the quality of life of 246 million people with major depressive disorders and 374 million people with anxiety disorders worldwide (Santomauro et al., 2021). These disorders are more prevalent or diagnosed in women

than in men. For example, according to reports from the World Health Organization (WHO) (2021), depressive symptoms affect 5.1% of women compared to 3.6% of men, and anxious symptoms affect 4.6% of women compared to 2.6% of men.

These syndromes are characterised by a significant clinical impairment in an individual's cognition, emotional regulation, or behaviour (WHO, 2019). Furthermore, they result from complex social, psychological, and biological interactions. They are associated with significant distress or impairment in personal, familial, social, educational, occupational, or other important areas of functioning (Sekhon & Gupta, 2022).

Among these factors, stressful work conditions predict poor mental health, and there is growing concern that such conditions contribute to the population burden of two common psychiatric disorders: major depression and generalised anxiety disorder (Melchior et al., 2007). On the other hand, according to the effort-reward model at work, the risk of presenting stress and psychosomatic disorders would occur when reward factors, such as salary, esteem, professional promotion, or job security, do not compensate for effort. work (Cabrera Armijos et al., 2022; Siegrist, 1996).

Depressive symptomatology has been associated with disability in terms of decreased productivity ("presenteeism"), absenteeism, job turnover, and unemployment, as well as early retirement, low quality of life, and increased risk of myocardial infarction (Magnusson Hanson et al., 2009). Job demands that exceed the individual's coping abilities are perceived as stressful and could influence the risk of psychiatric disorder through biological, psychological, psychosomatic, and behavioural mechanisms (Melchior et al., 2007).

Furthermore, certain personal factors in health-promoting behaviour influence physical and mental well-being (Lakshmi et al., 2023). Among these factors, health literacy (Sørensen et al., 2015), patient activation (Hibbard et al., 2005), resilience (Campbell-Sills & Stein, 2007), self-efficacy (Sherer et al., 1982), self-esteem (Bailey, 2003) and the sense of coherence (Antonovsky, 1993) stand out as elements that significantly influence our physical and emotional health.

Health literacy is defined as the population's knowledge, motivation, and individual capabilities to understand and make decisions about the promotion and management of their health (Sørensen et al., 2015). Improving health literacy positively affects people's emotional state, with a moderately positive effect on reducing symptoms of depression and anxiety (Magallón-Botaya et al., 2023).

Patient activation refers to an individual's ability and capacity to manage their health condition and the confidence to assume this responsibility (Hibbard et al., 2005). Individuals with high activation levels have a greater ability for self-care, better health, and fewer depressive symptoms (Blakemore et al., 2016).

Resilience is a positive adaptation to adverse life events and events (Campbell-Sills & Stein, 2007)

People with high resilience can better cope with adverse life situations, leading to better overall health outcomes, such as lower depressive and anxious symptoms and lower mortality (Smith & Hollinger-Smith, 2015; To et al., 2022).

Self-efficacy is represented as a feeling of confidence in one's ability to cope with certain stressors in life (Sherer et al., 1982). People with high self-efficacy have better emotional regulation and more effective psychosocial functioning (Milanovic et al., 2018; Schönfeld et al., 2017).

Self-esteem is a positive or negative feeling about oneself and is built through the evaluation of one's attributes (Bailey, 2003). Adults with high global self-esteem are likelier to have greater physical, mental, occupational, and social well-being. Low self-esteem is related to emotional problems and substance abuse (Orth et al., 2012).

Finally, a sense of coherence refers to an individual's disposition toward values essential to her well-being and life experiences (Antonovsky, 1993). People with a strong sense of coherence are likelier to maintain good mental health (Giglio et al., 2015). Promoting the population's participation in coping with diseases and self-care of their health is a key element in the health of the population in general and especially the population with affective disorders (WHO, 2022). It is necessary to investigate further how psychological constructs, beliefs, and people's self-care capacity can affect people's well-being or discomfort and contribute to a healthier life from a mental health perspective. Furthermore, it is important to evaluate longitudinal changes in these factors and affective disorders, given their association with increased comorbidity and mortality (Zhang et al., 2009). The analysis of the association of psychological constructs and the mental health of individuals and communities provides evidence that will better address and prevent these prevalent problems and promote their improvement from a more global and holistic perspective.

According to primary care clinical data from the National Health System (2021), the decade between the ages of 30 and 40 is the most common stage of presenting depressive and anxious symptoms. These problems are more common in women than in men at this age (depression: 4.2% vs 2.0%; anxiety: 10% vs 5.7%, respectively). Furthermore, at this age, these symptoms significantly impact people's work, economic and family activities (WHO, 2023). Therefore, this study aims to analyse gender differences in the association between intrinsic personal factors (health literacy, patient activation, resilience, self-efficacy, self-esteem, and sense of coherence) and Depressive and anxious symptoms of a working population.

## METHODS

### Study design

This research project is an analysis of secondary data (Wickham, 2019) collected from a prospective longitudinal cohort (Méndez-López et al., 2023) whose main objective is to analyse the relationship between psychological constructs (self-efficacy, activation, health literacy, resilience, personality traits, sense of coherence, self-esteem) and the presence of depressive and anxious symptoms. The initial data of this cohort were collected between July 2021 and July 2022 in primary care health centres (PHC) in Aragon and registered in the ISRCTN Registry before the start (ISRCTN12820058).

### Participants and procedure

The study population was participants between 35-65 years old, members of a prospective longitudinal cohort conducted in Aragon (Méndez-López et al., 2023), with a good level of Spanish and who agreed to participate in the study voluntarily and signed the informed consent. The exclusion criteria were having a terminal illness, cognitive dysfunction, dementia, or any significant illness that could seriously interfere with participation in the study.

To select the cohort participants, a stratified selection was conducted by age, sex, and population distribution in urban and rural areas concerning the data from the Aragon census of the National Institute of Statistics (2021). The purpose of this stratification was to provide maximum diversity to the sample while ensuring the representativeness of the population. The cohort was recruited in two PHC centres (one rural, Daroca, and another urban, Arrabal neighbourhood of Zaragoza). Following the stratification criteria, individuals were randomly selected from the list of users of the participating health centres.

The selected participants were contacted by letter or telephone, where they were fully informed of the study. Those who showed interest in participating voluntarily made an appointment at their usual health centre to complete the questionnaires. The study adhered to the STROBE Initiative (Strengthening the Reporting of Observational Studies in Epidemiology) (von Elm et al., 2008).

The sample size was established in the prospective longitudinal cohort study on which this secondary data analysis is based. It established itself at 290 participants, according to the prevalence of depressive and anxious symptoms as the primary variable. Finally, 505 people were assessed for eligibility, of which 400 participants were included in the DESVELA cohort in Aragón (Méndez-López et al., 2023), exceeding the sample size requirement. For the present study, the 242 cohort participants of active working age were included.

## Instruments

### Sociodemographic information

Participant information was collected on sex, age, habitual residence (urban, rural), marital status (single/divorced/widowed, or in a relationship), education (none/primary or secondary/university), occupation (employed, self-employed), type of working day (continuous, part-time, irregular or shifts), and economic level of the family unit (measured through the minimum interprofessional wage (SMI)) through an ad hoc questionnaire. In addition, the time dedicated to personal roles and weekly hours dedicated to work, household chores, and caring for minors or dependents were recorded. Work stress was measured using the effort-reward imbalance questionnaire (ERI, Spanish version) (Siegrist et al., 2004, 2009). It consists of 23 Likert-type items and records information on the worker's perception of their work situation concerning extrinsic effort, professional reward, and the degree of overinvolvement experienced by the worker. A higher score implies greater work stress. The validated Spanish version has a Cronbach's  $\alpha$  value of 0.80 (Muñoz-Navarro et al., 2017). The internal consistency of the ERI in our sample was 0.72.

### Depressive and anxious symptoms.

The presence and severity of depression symptoms were assessed using the Patient Health Questionnaire (PHQ-9, Spanish version) (Kroenke & Spitzer, 2002), which measures the presence and severity of depression. Severity levels included no depression (0 to 4), mild depression (5 to 9), moderate depression (10 to 14), moderately severe depression (15 to 19), and severe depression (20 to 27). The validated Spanish version has a Cronbach's  $\alpha$  value of 0.80 (Muñoz-Navarro et al., 2017). The internal consistency of the PHQ-9 in our sample was 0.80.

The presence and severity of anxiety symptoms were measured using the Generalized Anxiety Disorder (GAD-7, Spanish version) (Spitzer et al., 2006). It consists of seven multiple-choice questions, and each answer is scored on a scale ranging from 0 to 3. Each item describes one of the typical symptoms of generalized anxiety disorders. Severity levels included no anxiety (0 to 4), mild anxiety (5 to 9), moderate anxiety (10 to 14), and severe anxiety (15 to 21). The validated Spanish version has a Cronbach's  $\alpha$  value of 0.93 (García-Campayo et al., 2010). Our sample's internal consistency was high (Cronbach's  $\alpha$  = 0.83).

### Personal factors on health-promoting behaviour.

Health literacy was measured using the European Health Literacy Questionnaire (HLS-EU-Q16, Spanish version) (Sørensen et al., 2015). Higher scores (after transforming each into a dichotomous response) (range 0-16) indicate a higher level of health literacy: inadequate or problematic levels of

health literacy (0-12) and sufficient or adequate health literacy (13- 16). In its Spanish version, Cronbach's  $\alpha$  is 0.98 (Nolasco et al., 2020). Internal consistency in our sample was high ( $\alpha = 0.88$ ).

Patient activation was assessed using the Patient Activation Questionnaire (PAM-13, Spanish version) (Hibbard et al., 2005). Higher scores indicate a higher level of patients' activation to address their health (range 0-100) and place the individual in one of four activation levels: "Disengaged and Overwhelmed" (0 - 47.0), " Become aware, but keep fighting." (47.1 - 55.1), "Take action" (55.2 - 67.0) and "Maintain behaviours and move forward" (67.1 - 100). In its Spanish version, Cronbach's  $\alpha$  is 0.7 (Moreno-Chico et al., 2017). Internal consistency in our sample was high ( $\alpha = 0.89$ ).

Resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC-10, Spanish version) (Campbell-Sills & Stein, 2007). This scale score on the questionnaire was the sum of the responses obtained for each item (range 0-40), with higher scores indicating the highest level of resilience. The validated Spanish version has a Cronbach's  $\alpha$  value of 0.85 (Notario-Pacheco et al., 2011). The internal consistency of our sample was 0.86.

Self-efficacy was assessed using the General Self-Efficacy Scale (GSES-12, Spanish version) (Sherer et al., 1982). The final score of the questionnaire was the sum of the responses obtained in each item (range 12-60), and the highest scores indicated the highest level of self-efficacy. The validated Spanish version has a Cronbach's alpha value of 0.69 (Herrero et al., 2014). The internal consistency in our sample was acceptable ( $\alpha = 0.76$ ).

Self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES, Spanish version (Rosenberg, 1965). The scale ranges from 0 to 30. Scores between 15 and 25 are within the normal range; scores less than 15 suggest low self-esteem. The validated Spanish version has a Cronbach's  $\alpha$  of 0.85 (Martín-Albo et al., 2007). The internal consistency in our sample was acceptable ( $\alpha = 0.78$ ).

The sense of coherence was measured using the Sense of Coherence Scale (SOC-13, Spanish version) (Antonovsky, 1993). It measures the sense of coherence, understandability, manageability and meaning. Higher scores (after reversing the reversed items) (range 13-91) indicate a greater sense of coherence. The validated Spanish version has a Cronbach's  $\alpha$  of 0.83 (Moreno, B., Alonso, M., & Álvarez, 1997). The internal consistency in our sample was acceptable ( $\alpha = 0.76$ ).

## Data analysis

The normal distribution of the results was verified using the Kolmogorov-Smirnov test. A descriptive analysis was performed to determine the characteristics of the sample: frequencies (n) and percentages (%) for categorical variables, mean (M) and standard deviation (SD) for continuous variables. Secondly, bivariate analyses were conducted using the chi-square test for qualitative variables and the Student's t-test for continuous variables, aiming to compare the different variables

between men and women. Furthermore, to analyse the associations between the anxiety (GAD-7) and depressive (PHQ-9) symptomatology score and all variables, correlations were performed using the Pearson correlation coefficient (Pearson's  $r$  for the relationship between two continuous variables and point biserial correlation  $r_{pb}$  for the relationship between a continuous variable and a dichotomous variable) (Sheskin, 2020).

Third, the multivariate analysis was performed with ordinary linear regression, using the stepwise variable selection method, with a probability of entering the model of 0.05 and a probability of remaining in the model of 0.10 (Núñez et al., 2011). The dependent variable was the score on the depressive symptomatology scale (PHQ-9) and the anxiety symptomatology scale (GAD-7). All independent variables (sociodemographic and personal factors related to health behaviour variables) were entered into the regression models (Hamilton, 1994), each time eliminating the least correlated variable. The sociodemographic variables were classified into two categories to be included in the multiple regression. Multicollinearity (Variance Inflation Factor (VIF) and tolerance values were assessed for the different linear regressions.

### **Ethical Issues**

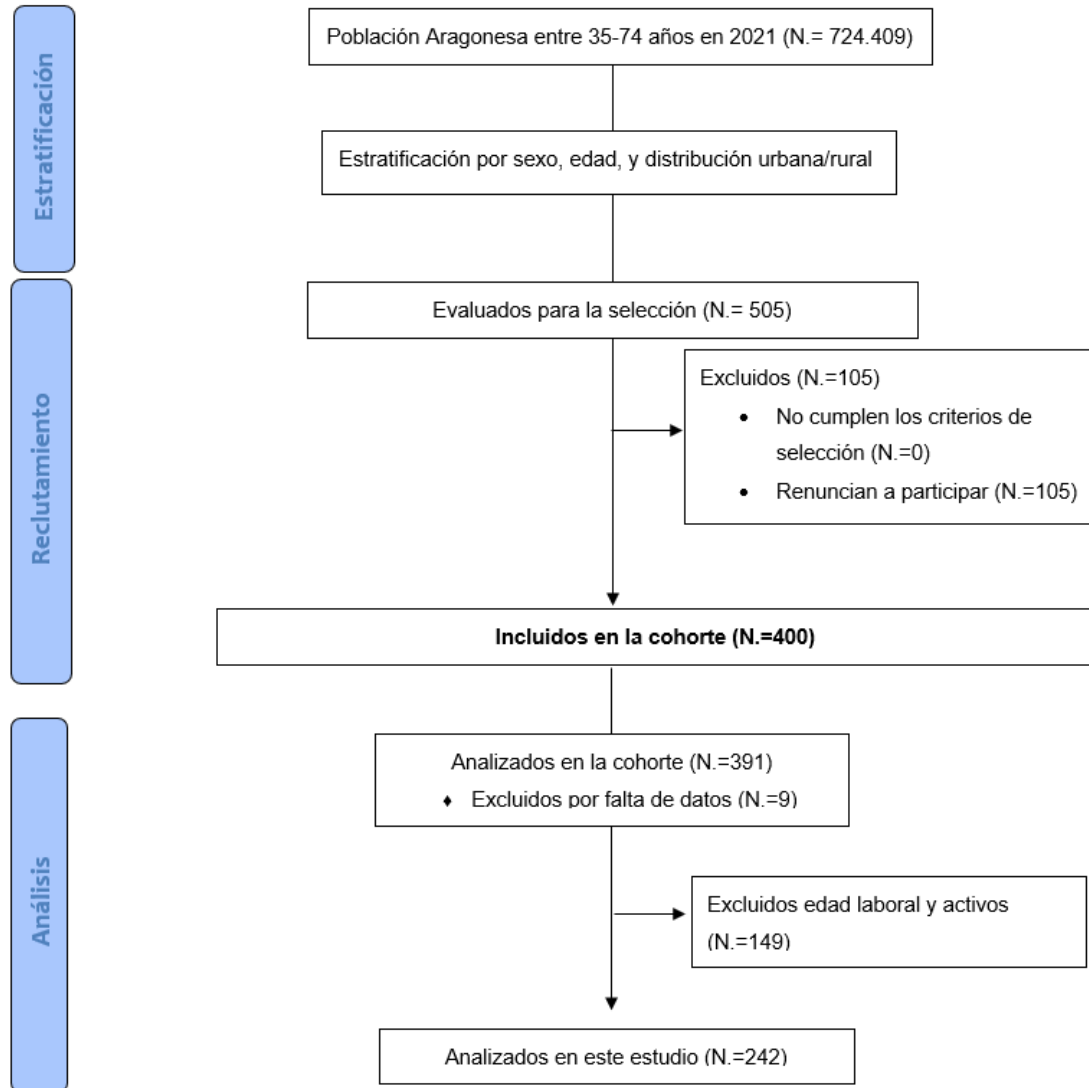
This study was approved by the Clinical Research Ethics Committee of Aragon (PI20/302) and was developed in accordance with the standards of the Declaration of Helsinki. The collection, processing, communication, and transfer of personal data of all participating subjects complied with the provisions of the General Data Protection Regulation (EU) (GDPR 2016/679) and Organic Law 3/2018 on Data Protection Personal. Informed consent was obtained from all participants. All subjects allowed their data to be anonymized and used solely for the purposes and publication of the results of this study.

### **RESULTS**

Of the 400 individuals included in the initial cohort in Aragon, 242 participants between 35 and 65 with active employment status were included in this study (Figure 1). The characteristics of this population are shown in Table 1

**Figure 1**

*Recruitment and selection flowchart of participants.*



The average age of the analysed sample is 49.43 years, with a slight predominance of the female sex and greater participation from the urban environment. In addition, there is a greater tendency for women to be employed workers with a working day with fixed hours. Of the 50 self-employed participants, 92% considered their schedule irregular, while of the 186 employees, 44.8% reported it as irregular. As expected, women dedicate significantly more hours to domestic tasks than men. There are no differences regarding the rest of the sociodemographic variables.

22.22% of the women in our samples present depressive symptoms, while only 6.54% of the men present it. Meanwhile, the presence of anxious symptoms manifests itself in a similar way in both

sexes (21.50% in men and 25.19% in women). Regarding intrinsic personal factors, women are more health-active than men, and greater health literacy stands out. There is greater work stress among women workers compared to men (Table 1). Specifically, women register a higher degree of overinvolvement and extrinsic effort than men.

**Table 1**

*Sociodemographic, personal, and mental health characteristics of the sample*

Variable	Total (n=242)	Men (n=107)	Women (n=135)	p-value
Age, years; M ± SD	49.43 ± 7.73	48.70 ± 7.71	50.01 ± 7.72	0.190
Municipality, n (%)				<b>0.047</b>
Urban	147 (60.74)	57 (53.27)	90 (66.67)	
Rural	95 (39.26)	50 (46.73)	45 (33.33)	
Marital status, n (%)				0.760
With a partner	186 (76.86)	81 (75.70)	105 (77.78)	
Without a partner	56 (23.14)	26 (24.30)	30 (22.22)	
Education, n (%)				0.586
None or primary	207 (85.54)	90 (84.11)	117 (86.67)	
Secondary or tertiary	35 (14.46)	17 (15.89)	18 (13.33)	
Weekly hours of paid work, M ± SD	39.06 ± 11.64	40.66 ± 13.79	37.79 ± 9.46	0.056
Weekly hours of housework, M ± SD	13.44 ± 7.81	11.04 ± 5.92	15.35 ± 8.61	<b>&lt;0.001</b>
Weekly hours of caregiving, M ± SD	10.74 ± 15.95	10.00 ± 14.49	11.33 ± 17.04	0.522
Worker type, n (%)				<b>0.016</b>
Employee	192 (79.34)	77 (71.96)	115 (85.19)	
Self-employed	50 (20.66)	30 (28.04)	20 (14.81)	
Type of working day, n (%)				<b>0.003</b>
Fixed full-time schedule	110 (37.30)	37 (34.57)	73 (54.07)	
Irregular schedule/departure/shifts	132 (70.25)	70 (65.42)	62 (45.92)	
Monthly household income, n (%)				0.592
<2 IMW	89 (36.78)	37 (34.58)	52 (38.52)	
>2 IMW	153 (63.22)	70 (65.42)	83 (61.48)	
Self-efficacy (GSES-12), M ± SD	46.35 ± 5.47	46.62 ± 4.66	46.13 ± 6.04	0.488
Resilience (CD-Risc-10), M ± SD	28.60 ± 6.32	28.52 ± 5.91	28.66 ± 6.65	0.869
Patient activation (PAM-13), M ± SD	63.08 ± 16.44	60.74 ± 15.81	64.94 ± 16.75	<b>0.047</b>
Health literacy (HLS- EU-Q16), M ± SD	14.30 ± 2.00	13.87 ± 2.35	14.64 ± 1.61	<b>0.003</b>
Sense of coherence (SOC-13), M ± SD	57.73 ± 6.60	58.00 ± 6.44	57.52 ± 6.74	0.580
Self-esteem (RSES), M ± SD	34.54 ± 3.73	34.66 ± 3.65	34.45 ± 3.81	0.660
Depressive symptoms (PHQ-9), n (%)				<b>&lt;0.001</b>
No depression (≤4)	205 (84.71)	100 (93.46)	105 (77.78)	
Mild (5-9)	26 (10.74)	7 (6.54)	19 (14.07)	
Moderate (10-14)	6 (2.48)	0 (0)	6 (4.44)	
Moderate-severe (15-19)	3 (1.24)	0 (0)	3 (2.22)	
Severe (≥27)	2 (0.83)	0 (0)	2 (1.48)	

Anxious symptoms (GAD-7), n (%)	No anxiety ( $\leq 4$ )	185 (76.45)	84 (78.50)	101 (74.81)	<b>0.016</b>
	Mild (5-9)	45 (18.60)	21 (19.63)	24 (17.78)	
	Moderate (10-14)	8 (3.31)	2 (1.87)	6 (4.44)	
	Severe ( $\geq 21$ )	4 (1.65)	0 (0)	4 (2.96)	
Work stress (ERI), M $\pm$ SD		38.47 $\pm$ 5.09	37.30 $\pm$ 5.15	39.40 $\pm$ 4.86	<b>0.002</b>
	Extrinsic effort	15.17 $\pm$ 2.84	14.49 $\pm$ 2.68	15.72 $\pm$ 2.87	<b>0.001</b>
	Professional reward	9.51 $\pm$ 2.03	9.59 $\pm$ 1.86	9.47 $\pm$ 2.16	0.669
	Overinvolvement	13.77 $\pm$ 2.84	13.23 $\pm$ 2.63	14.21 $\pm$ 2.95	<b>0.009</b>

Note. CD-RISC-10: Connor-Davidson Resilience Scale; SD: Standard deviation; ERI: Effort-Reward Imbalance Scale; GAD-7: Generalized Anxiety Disorder Scale; GSES-12: Generalized Self-Efficacy Scale; HLS-EU-Q16: "European Health Literacy Survey"; M, medium; n, frequency; %, percentage; PAM-13: Patient Activation Measurement Questionnaire; PHQ-9: Patient Health Questionnaire; RSES: Rosenberg Self-Esteem Scale; IMW: Interprofessional Minimum Wage; SOC-13: Antonovsky Sense of Coherence Scale. Statistically significant values ( $p \leq 0.05$ ) are marked in bold.

Analysing more deeply the relationship between affective disorders and the sociodemographic and personal characteristics of men workers and women (Table 2), we found that women who lived in rural areas, with a level of primary education or none and an irregular working day had more depressive symptoms, while, in men, depressive symptoms are associated with high values of work stress. No relationship was found between depressive symptoms (PHQ-9) and the rest of the sociodemographic characteristics in men. Concerning intrinsic personal factors, depressive symptomatology in women is associated with lower scores in self-efficacy, sense of coherence, and self-esteem. In contrast, in men, depressive symptomatology is associated with lower scores in the sense of coherence and self-esteem.

On the other hand, our data shows that self-employed women had more anxiety symptoms. In contrast, men with a full-time schedule, more significant work stress and more excellent work overinvolvement have higher anxiety symptom scores. Women with anxious symptoms were the women with the lowest scores in self-efficacy, resilience, sense of coherence, and self-esteem. No relationship was found between anxious symptomatology (GAD-7) and the personal characteristics of men (Table 2)

**Table 2**

*Bivariate correlations of depressive and anxiety symptoms, sociodemographic and personal factors*

Variables	Depressive symptoms (PHQ-9)		Anxious symptoms (GAD-7)	
	Men	Women	Men	Women
Age, years	-0.185	0.001	-0.156	0.011
Municipality (Urban)	0.001	<b>-0.209*</b>	0.167	-0.122
Marital status (With a partner)	-0.143	0.147	-0.069	-0.035
Education (Secondary or tertiary)	0.051	<b>-0.180*</b>	0.141	-0.090
Worker type (Self-employed)	0.164	-0.058	0.082	<b>-0.174*</b>
Type of working day (Fixed full-time Schedule)	0.135	<b>-0.181*</b>	<b>0.281**</b>	-0.099
Monthly household income (>2 IMW)	-0.104	-0.073	-0.118	0.020
Weekly hours of paid work	-0.013	0.083	-0.048	0.022
Weekly hours of housework	-0.180	-0.043	-0.050	-0.064
Weekly hours of caregiving	-0.040	0.025	0.002	0.044
Self-efficacy (GSES-12)	-0.173	<b>-0.292**</b>	-0.173	<b>-0.288**</b>
Resilience (CD-Risc-10)	-0.089	-0.183	-0.067	<b>-0.266**</b>
Patient activation (PAM-13)	-0.074	-0.104	-0.148	-0.142
Health literacy (HLS- EU-Q16)	0.003	-0.135	0.027	-0.059
Sense of coherence (SOC-13)	<b>-0.217*</b>	<b>-0.282**</b>	-0.068	<b>-0.224**</b>
Self-esteem (RSES)	<b>-0.282**</b>	<b>-0.247**</b>	-0.311	<b>-0.176*</b>
Work stress (ERI)	0.169	0.656	<b>0.197*</b>	0.508
Extrinsic effort	0.227	-0.026	0.135	0.060
Professional reward	-0.011	-0.105	-0.029	-0.143
Overinvolvement	<b>0.215*</b>	0.123	<b>0.270*</b>	0.174

Note. CD-RISC-10: Connor-Davidson Resilience Scale; ERI: Effort-Reward Imbalance Scale; GAD-7: Generalized Anxiety Disorder Scale; GSES-12: Generalized Self-Efficacy Scale; HLS-EU-Q16: "European Health Literacy Survey"; PAM-13: Patient Activation Measurement Questionnaire; PHQ-9: Patient Health Questionnaire; RSES: Rosenberg Self-Esteem Scale; IMW: Interprofessional minimum wage; SOC-13: Antonovsky Sense of Coherence Scale. Statistically significant values ( $p \leq 0.05$ ) are marked in bold; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

To further analyse the magnitude of the correlation and the increase in depressive and anxious symptomatology scores (PHQ-9 and GAD-7) associated with sociodemographic and personal characteristics, different multivariate linear regression models were conducted (Tables 3 and 4).

We found that, in men, high self-esteem ( $\beta = -0.300$ ;  $p = 0.022$ ) and older age ( $\beta = -0.210$ ;  $p = 0.031$ ) are protective factors against depressive symptoms, while, in women, greater Self-efficacy ( $\beta = -0.250$ ;  $p = 0.004$ ) and a greater sense of coherence ( $\beta = -0.244$ ;  $p = 0.005$ ) are favourable factors for having less depressive symptoms (Table 3).

**Table 3**

*Regression models of depressive symptomatology scores according to the PHQ-9 scale with sociodemographic data and personal factors as predictors.*

Model	Unstandardised coefficient		Standardised coefficients	t	p-value	95% CI of B	Collinearity Statistics	
	B	SE	$\beta$				Tolerance	VIF
(Constant)	9.503	2.240		4.243	<b>&lt;0.001</b>	[5.058; 13.949]		
Self-esteem (RSES)	-0.158	0.051	-0.300	-3.123	<b>0.002</b>	[-0.259; -0.058]	0.985	1.015
Age	-0.054	0.024	-0.210	-2.188	<b>0.031</b>	[-0.102; -0.005]	0.985	1.015
(Constant)	20.503	3.795		5.402	<b>&lt;0.001</b>	[12.991; 28.015]		
Self-efficacy (GSES-12)	-0.180	0.061	-0.250	-2.966	<b>0.004</b>	[-0.300; -0.060]	0.968	1.033
Sense of coherence (SOC-13)	-0.156	0.054	-0.244	-2.893	<b>0.005</b>	[-0.262; -0.049]	0.968	1.033

Note.  $\beta$ : Standardized coefficients; B: Unstandardized regression coefficient; SE: standard error; F: F statistic; GSES-12: Generalized Self-Efficacy Scale; CI: confidence intervals; PHQ-9: Patient Health Questionnaire; R2: Total variance; RSES: Rosenberg Self-Esteem Scale; SOC-13: Antonovsky Sense of Coherence Scale; t: t-test; VIF: Variance inflation factor. Statistically significant values ( $p \leq 0.05$ ) are marked in bold; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

On the other hand, as seen in Table 4, we found that, in men, high self-esteem ( $\beta = -0.269$ ;  $p = 0.005$ ) and high activation ( $\beta = -0.031$ ;  $p = 0.049$ ) are protective factors for anxious symptomatology; however, that full-time working is a predictor of having more significant anxious symptomatology ( $\beta = 0.248$ ;  $p = 0.010$ ). Meanwhile, in women, greater self-efficacy ( $\beta = -0.254$ ;  $p = 0.004$ ) and a greater sense of coherence ( $\beta = -0.178$ ;  $p = 0.040$ ) are favourable factors for having less anxious symptoms, the same as in depressive symptoms.

**Table 4**

*Regression model of anxiety symptom scores according to the GAD-7 scale with sociodemographic data and personal factors as predictors.*

Model	Unstandardised coefficient		Standardised coefficients	t	p-value	95% CI of B	Collinearity Statistics	
	B	SE	β				Tolerance	VIF
(Constant)	10.276	2.479		4.145	<b>&lt;0.001</b>	[5.121; 14.590]		
Self-esteem (RSES)	-0.192	0.067	-0.269	-2.869	<b>0.005</b>	[-0.324; -0.059]	0.979	1.021
Type of working day								
(Fixed full-time Schedule)	1.367	0.521	0.248	2.622	<b>0.010</b>	[0.332; 2.403]	0.961	1.041
Patient activation (PAM-13)	-0.031	0.015	-0.186	-1.988	<b>0.049</b>	[-0.061; -0.001]	0.977	1.024
(Constant)	17.885	3.749		4.770	<b>&lt;0.001</b>	[10.464; 25.305]		
Self-efficacy (GSES-12)	-0.177	0.060	-0.254	-2.955	<b>0.004</b>	[-0.296; -0.059]	0.968	1.033
Sense of coherence (SOC-13)	-0.110	0.053	-0.178	-2.072	<b>0.040</b>	[-0.216; -0.005]	0.968	1.033

Note. β: Standardized coefficients; B: Unstandardized regression coefficient; SE: standard error; F: F statistic; GSES-12: Generalized Self-Efficacy Scale; CI: confidence intervals; GAD-7: Generalized Anxiety Disorder Scale; R2: Total variance; RSES: Rosenberg Self-Esteem Scale; SOC-13: Antonovsky Sense of Coherence Scale; t: t-test; VIF: Variance inflation factor. Statistically significant values ( $p \leq 0.05$ ) are marked in bold; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

## DISCUSSION

This study analysed the association between anxious and depressive symptoms and sociodemographic, work, and personal characteristics (resilience, self-efficacy, sense of coherence, patient activation, health literacy, and self-esteem) in a sample of men workers and women. The behaviour of the different factors that influence depressive and anxiety symptoms is other in men than in women workers.

Women workers spend much more time on domestic tasks, have more significant work stress, and have more severe symptoms of depression and anxiety than men. These results coincide with Breij et al. (2022), longitudinal investigation of 313 workers, which also demonstrates greater dedication to informal care and household chores in the female sex, while higher income and a more significant number of working hours were associated with the male sex (not statistically significant in our data). Breij et al. (2022), also observed that the female sex was significantly associated with more depression,

a fact already confirmed in the literature. Furthermore, a recent systematic review suggests that inequalities in the division of unpaid labour expose women to a greater risk of poorer mental health than men (Ervin et al., 2022). Theorell et al. (2014) study conducted in a population of 2,731 male and 3,446 female workers from Sweden aged 16-64 years, reported women with higher levels of job strain than men and job strain was as strongly related to depressive symptoms among men as well as among women.

Specifically in our findings, in women, depressive symptoms were associated with living in rural areas, a level of primary education or less, and an irregular workday. In previous research, female participants with higher education reported a lower prevalence of depressive symptomatology and significantly less knowledge and stigma around depressive symptomatology than participants with lower educational levels (Lopez et al., 2018). However, in our multiple linear regression models, the level of education does not influence the anxious and/or depressive symptomatology of women workers or men. On the other hand, in men, anxious symptoms were associated with a continuous fixed working day schedule. Furthermore, in older men, the presence of depressive symptoms is lower, while working a continuous fixed day is a predictor of having more significant anxiety symptoms. Previous research suggests that older men workers tend to report higher levels of resilience, lower depressive symptoms, and satisfaction with their work than younger employees (Hsu, 2018). Shiri et al. (2022) systematic review indicated that flexible working increases employees' control over work hours and has beneficial effects on depressive symptoms, burnout, fatigue, psychological distress, and emotional exhaustion.

On the other hand, there is greater work stress among women workers compared to men. Specifically, women register a higher degree of overinvolvement and extrinsic effort than men. However, in men, depressive symptoms were associated with high levels of work stress, while anxious symptoms were associated with greater work stress and more excellent work overinvolvement. This association was not statistically significant in women. In line with these findings, Álvarez y Gómez (2011) suggests that women are subject to high levels of stress due to role overload both at work (long work hours, labour market) and in the family (family role and domestic work). Meanwhile, as Gómez (2012) points out, men value the work role positively; they see work as a means of maintenance, fulfilment, and constant satisfaction thanks to the achievements and learning it provides them. She also mentions that overinvolvement in their work role can generate work stress in men. In line with these results, a longitudinal study of male working adults in Korea associated incident depressive and anxiety symptoms with more significant job stress and demand, job insecurity, lack of reward, and discomfort in their organisational climate (S. Kim et al., 2020; S.-Y. Kim et al., 2020).

Regarding intrinsic personal factors, women are more health-active than men, and greater health

literacy stands out. These results coincide with Lee et al. (2015) cross-sectional study, in which Korean women indicated a higher level of health literacy than men in understanding medical forms, instructions on medication bottles, and written information offered by healthcare providers. Furthermore, previous evidence shows how gender influences patient activation, as in Paukkonen et al. (2021) cross-sectional study in which women evaluated and gave greater importance than men to planning and decision-making, information and knowledge, motivation and encouragement, and family participation in their health.

Specifically, in women, anxious and depressive symptoms were associated with lower scores in self-efficacy, resilience, sense of coherence, and self-esteem. Furthermore, in women, greater self-efficacy and a greater sense of coherence have the potential to promote a lower presence of depressive and anxiety symptoms. These results were recently observed in Dong et al. (2023) cross-sectional, in which 3,177 health workers participated. It was observed that social support and self-efficacy had a significant negative influence on depressive and anxious symptoms. These results also agree with those obtained in the cross-sectional study conducted on 500 Korean workers, in which lower self-efficacy, among other factors, affected the workers' depressive symptoms (Park & Lee, 2023). Regarding resilience, in the study by Sardella et al. (2022) involving 108 Italian adults, women reported lower levels of psychological resilience compared to men. Furthermore, the high correlation of lower levels of psychological resilience with higher levels of depressive, anxiety and stress symptoms was highlighted. Concerning previous research on the sense of coherence, Lelek-Kratiuk & Szczygieł (2022) evaluated gender differences in adults in Poland; it was identified that the purpose of coherence was negatively and weakly/moderately correlated with mental health in women.

In men, only depressive symptoms were associated with lower scores in the sense of coherence and self-esteem. In the case of men, higher self-esteem has the potential to promote a lower presence of depressive and anxiety symptoms. Furthermore, the presence of greater activation in these men is a predictor of less or milder anxiety symptomatology. Lelek-Kratiuk et al. (2022) also identified that the sense of coherence was negatively and weakly/moderately correlated with mental health in men. On the other hand, Boettcher et al. (2019) evidenced in their qualitative study the influence of the norms and roles established for men workers on their emotional state and self-esteem. These norms portray men as highly productive and emotionally controlled workers. The self-esteem of the participants is related to the ability to contribute and achieve their work goals, generating anxiety and anguish when they are not able to contribute to the extent they want.

## Strengths and limitations

Based on previous studies, we now know patterns of certain psychological constructs associated with the mental health of the working population. However, few investigations analyse whether there are differences between men and women in the sociodemographic characteristics and personal factors that influence the severity of depressive and anxious symptoms. Furthermore, the profile of the participants corresponds to the most common age of depressive and anxious symptoms and where these symptoms significantly affect people who are often of age to conduct work, economical and complete family activities (WHO, 2023).

Several limitations should be considered in this study. First, data were collected at a single time point rather than longitudinally, which limited the ability to draw causal inferences or determine the direction of causal relationships. Future prospective studies with a large sample size are justified to validate our findings (Álvarez-Hernández & Delgado-DelaMora, 2015). Extensive future intervention research is needed to verify our hypothesised models. Second, according to the population census, the ratio of men to women could not be achieved, as the percentage of women was higher than estimated in the 2021 census. Current research suggests that the willingness to participate in research is seen as significantly affected by sex, with women being more likely than men to contribute (Glass et al., 2015). Thirdly, the survey was conducted with two types of questionnaires with different limitations (on the one hand, self-administered and others hetero administered). On the one hand, self-administered questionnaires give rise to possible bias due to omitting or misinterpreting questions by not having an interviewer ask questions about the questionnaire itself. On the other hand, hetero-administered questionnaires lose the freedom of response time and psychological exposures, as they may feel pressured or observed by the recruiter (Choi et al., 2010; Demetriou et al., 2015). Lastly, the symptoms of depression and anxiety. They were measured for this analysis as continuous variables using the PHQ-9 and GAD-7 scores without considering the different levels of depressive symptomatology qualitatively. Furthermore, these questionnaires were only measured once, and subsequent changes in the level of these affective problems, the cumulative burden of depressive and anxiety symptomatology, or time-varying associations with outcomes were not tracked.

## CONCLUSION

These findings contribute to the search for a relationship between the characteristics of individuals and the presence of affective symptoms of anxiety and/or depression. Women workers have more depressive and anxious symptoms than their male counterparts. Our findings reveal that, in men, high self-esteem and older age are protective factors for depressive symptoms and high self-esteem and

activation for anxious symptoms. Meanwhile, in women, greater self-efficacy and a greater sense of coherence are protective factors against depressive and anxious symptoms.

Our findings provide new insight into personal health factors' role in affective mental health and underscore a new approach to preventive identification and early care measures among at-risk individuals and their families. However, more research is needed on the interrelationship between personal factors and depressive and anxiety symptomatology. The study findings provided a foundation for future research into the combined role of individual factors and how they affect the severity of depressive and anxious symptomatology.

### **AVAILABILITY OF DATA AND MATERIALS**

Data supporting the findings of this study are available from the corresponding author upon request.

### **CONFLICT OF INTERESTS**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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### **AUTHORS' CONTRIBUTIONS**

Conceptualization: all authors; Methodology: F.M-L; Software: FM-L; Validation: all authors; Formal analysis: F.M-L; Research: F.M-L; Resources: M.D-G; Data curation: F.M-L; Writing - Original draft: F.M-L; Writing - Review and editing: all authors; Display: F.M-L; Supervision: all authors; Project administration: F.M-L; Acquisition Financing: F.M-L; Final approved: all authors.

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