

RELATIONSHIPS BETWEEN ANXIETY AND DEPRESSION IN THE WORKPLACE: EPIDEMIOLOGICAL STUDY AMONG WORKERS IN A PUBLIC UNIVERSITY

*Relações entre estresse, ansiedade e depressão no ambiente de trabalho:
estudo epidemiológico entre servidores de uma Universidade Pública*

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Artigo encaminhado: 18/04/2014

Aceito para publicação: 21/11/2017

ABSTRACT: This study described the association between anxiety and depression and the relationship with sociodemographic factors among technical-administrative employees of a public university. Were interviewed 925 individuals, 54.7% female, with a mean age of 43.1 years. Logistic regression was performed seeking to evaluate the association between anxiety and depression through the stepwise forward method, with the independent variables entered from their p value in the bivariate analysis. The results confirmed the association between anxiety and depression, showing a probability of anxiety 4.40 times higher in people with depression. Was a predominance of females (54.9%), aged 40-49 years (38%) and that lives with a partner (66.4%).

Keywords: Anxiety. Depression. Mental Health. Occupational Health.

RESUMO: Foi descrita a associação entre ansiedade e depressão e relação com fatores sócio-demográficos entre trabalhadores técnico-administrativos de uma universidade pública. Foram entrevistados 925 indivíduos, 54,7% do sexo feminino com idade média de 43,1 anos. Realizou-se a regressão logística buscando avaliar a associação entre ansiedade e depressão a partir do método *stepwise forward*, sendo que as variáveis independentes foram inseridas a

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partir do seu p valor na análise bivariada. Os resultados confirmaram a associação entre ansiedade e depressão, mostrando uma chance de ansiedade 4,40 vezes maior em pessoas com depressão. Observou-se predominância do sexo feminino (54,9%), na faixa etária de 40 a 49 anos (38%) e que vivem com companheiro (66,4%).

Palavras-chave: Ansiedade. Depressão. Saúde Mental. Saúde do trabalhador.

1 INTRODUCTION

Transformations in the workplace along with technological advances and globalization, give rise to a new way to analyze the relationship between people and work. The restructuring of organizations in their activities and processes to remain competitive and to adapt to the new dynamics of the global market, influences the structure of the work, as well as the workers and society as a whole. The majority of workers experience or have experienced situations of discontent, emotional exhaustion, feelings of injustice and conflict in interpersonal work relationships (HAZLETT-STEVENSON, 2012).

Currently there is considerable interest in issues related to the links between work and mental health/illness. This is due to the increasing number of mental and behavioral disorders associated with work that are evident in the official and unofficial statistics. In Brazil, according to statistics from the National Institute of Social Security (NISS) which consider only workers with formal work records, mental disorders constitute the third most frequent reason for claiming sickness benefit, sick leave of more than fifteen days and retirement due to disability (BRASIL, 2001).

Depressive syndromes can have their pathogenesis, development and evolution clearly associated with work experiences, with the depression manifesting as typical acute or chronic conditions (sadness, experiences of loss or failure and hopelessness). Depression is understood as being a serious mood disorder that is characterized by depressed mood or loss of interest or pleasure, present for a period of two or more weeks, when accompanied by at least four additional symptoms, including: feelings of worthlessness or excessive guilt; reduced attention and concentration; recurrent thoughts of death; suicidal ideation; significant change in weight; psychomotor retardation or agitation; changes in sleep pattern and/or fatigue (WHO, 1993).

Associated with depression, the anxiety disorder is characterized by excessive worry about a number of events or activities in which a person presents difficulty controlling this worry, showing impairment in social or occupational functioning. For the diagnosis to be made, besides anxiety and concern, the individual must have at least three symptoms present on the majority of the days of the past six months, among them: restlessness; fatigue; difficulty concentrating or feeling as if the mind is blank; irritability; muscular tension; tachycardia; diaphoresis and/or sleep disturbances (WHO, 1993). Anxiety disorders are among the most frequent psychiatric disorders in the general population and the most common, with a prevalence of 12.5% throughout life, and can be found in any person in certain periods of their existence (ANDRADE *et al.*, 2002).

Anxiety and depression are common conditions in the current society that coexist in the same individual or situation and may have their pathogenesis, development and evolution clearly associated with work experiences, creating relationships that need better comprehension. Despite the association between anxiety and depression is well known, little has been studied about the socioeconomic factors and working relationships involved in this association.

Thus, this study aimed to describe the prevalence of the association between anxiety and depression and socio-demographic factors and health status among technical-administrative employees of a public university in the state of São Paulo.

2 METHOD

This is a cross-sectional study, with a population of technical and administrative workers of teaching units, the administrative sector and the computer support sector of a public university in the state of São Paulo.

The study population (1,239) consisted of technical and administrative workers, which aggregated a wide diversity of ages, socioeconomic statuses, education levels and work functions. Thus, the inclusion criteria for the study were: to be a technical or administrative employee and to be present at the time of data collection, which resulted in a sample of 925 subjects (74.65%).

Data collection was performed from March 2009 to August 2010 by trained interviewers. Visits and interviews were made to the work units, where the workers were informed of the study aims and conditions of the interview.

The data collection instruments used in this study were: Socio-demographic Data Questionnaire (SDQ), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) and Alcohol Use Disorders Identification Test (AUDIT).

2.1 Socio-demographic Data Questionnaire (SDQ): the demographic, socioeconomic and behavioral variables investigated were gender, age, education, religious practice, marital status, family income, length of time working in the institution, type of work (JSS scale (ALVES *et al.*, 2009)) and tobacco use.

2.2 Beck Anxiety Inventory (BAI): originally created for use with psychiatric patients, however, it has also proved to be adequate for the general population in studies in England. The Portuguese version has been used with psychiatric and not-psychiatric groups, including worker groups. The data regarding reliability and validity based on data from the original samples are broadly satisfactory. The inventory consists of 21 items, with a Likert type response scale of 4 points, which reflect increasing levels of severity for each symptom of anxiety (minimal, mild, moderate and severe). The sum of the scores obtained in each item results in a final score that ranges from 0 to 63 points, resulting in minimal levels (0 to 10 points), mild (11 to 19 points), moderate (20 to 30 points) and severe (31-63 points) (BECK *et al.*, 1988).

2.3 Beck Depression Inventory (BDI): initially developed as a symptomatic depression scale, for use with psychiatric patients, it has become widely used, both in research and in the clinical area. It is a self-report scale of 21 items, each with four alternatives representing increasing degrees of depression, with scores from 0 to 3. The total score is the result of the sum of the individual scores of the items, enabling the classification of depression intensity levels. Minimal depressive symptoms (0 to 11 points), mild depression (12 to 19 points), moderate depression (20 to 35 points) and severe depression (36 to 63 points) (BECK *et al.*, 1996).

2.4 Alcohol Use Disorders Identification Test (AUDIT): It is used to detect problematic alcohol use, with its performance positively evaluated in Primary Health Care services and populational prevalence studies (REINERT e ALLEN, 2007). The test consists of 10 questions that assess the recent use of alcohol, dependence symptoms and alcohol-related problems. The answer to each question is scored from 0 to 4, with higher scores indicative of a problem. Thus, the score ranges from 0 to 40 and in this study problematic alcohol use was defined by a score higher than 7 points (BABOR *et al.*, 2001).

The project was submitted to the Research Ethics Committee of the USP Ribeirão Preto College of Nursing (CEP-EERP/USP) under protocol No. 0846/2007. Data collection was performed between March 2009 and August 2010.

Information obtained from the BAI and BDI scales were analyzed in two ways. First, a descriptive analysis was made between anxiety and depression, categorized according to the above description, seeking the strata in which the variables were most strongly associated. To complement the analysis of the relationship between anxiety and depression Pearson's correlation test. Subsequently, the descriptive analysis was carried out of anxiety associated with socio-demographic factors and health conditions, including depression. For this, the anxiety were re-categorized, in both cases the categories "mild, moderate and severe" were grouped to generate the category "Yes". Finally, the analysis with the logistic regression data was performed, seeking to evaluate the association between anxiety and depression. Logistic regression was performed through the stepwise forward method, with the independent variables entered from their p value in the bivariate analysis. Only the variables with p values less than or equal to 0.20 were maintained in the multivariate analysis, and subsequently, the variables with p values less than or equal to 0.05 were considered significant.

3 RESULTS

Of the respondents, 54.7% were women with a mean age of 43.1 years. The majority of the respondents reported that they had complete higher education, lived with a partner, had children and had some religious practice in

their daily lives, at the time of data collection. Regarding the work related characteristics, the majority received more than R\$ 2,800.00 per month and had worked in the institution for less than 5 years or more than 20 years. The majority of the interviewees performed a type of work considered active and low demand. When asked about health conditions, 21.9% of the workers met the diagnostic criteria for depression, 13.9% were smokers and 13.2% presented alcohol use considered risky (Tables 2 and 3). The data regarding the prevalence of anxiety and depression are presented in Table 1. There was a higher concentration of individuals with minimal levels of anxiety and depression, with a prevalence of moderate anxiety of 4.2% and of moderate depression of 3.5%.

Table 1 - Prevalence of anxiety and depression by strata. Ribeirão Preto, 2010.

	Anxiety (%)	Depression (%)
Minimal	79.7	78.0
Mild	14.1	17.6
Moderate	4.2	3.5
Severe	2.0	0.9

When carrying out the analysis of the relationship between anxiety and depression, it was perceived that the pathologies are correlated, because there were few cases where the individual had a moderate or severe level of anxiety and a minimal or mild level of depression, and vice versa. The correlation between anxiety and depression can also be demonstrated by the Pearson's correlation coefficient, which in this case is 0.57.

The prevalence of anxiety and depression in the population studied was 20.3% and 22.0% respectively. The prevalence of anxiety was approximately twice as high in the females (24.9%, CI 95% 21.1-28.7) than in the males (14.7%, CI 95% 11.3-18.1). It was also higher in people under the age of 50, with complete higher education, living without a partner, with children, earning up to R \$ 2,800.00, with length of time working between 6 and 10 years, whose work was considered passive and who smoked at the time and presented problematic alcohol use. Regarding the association between anxiety and

depression, the prevalence was approximately five times higher among people who also presented depression (Table 2).

Table 2 - Characteristics of the sample and prevalence of Anxiety according to the demographic, socioeconomic and behavioral variables. Ribeirão Preto, 2010.

Variable	General Sample (%) *	Prevalence (%) (CI 95%)		P value
		No	Yes	
Gender				
Male	415 (45.3)	85.3 (81.9-88.7)	14.7 (11.3-18.1)	<0.001***
Female	502 (54.7)	75.1 (71.3-78.9)	24.9 (21.1-28.7)	
Age group				
>= 50 years	705 (77.2)	84.1 (79.1-89.1)	15.9 (10.9-20.9)	0.066**
< 50 years	208 (22.8)	78.3 (75.2-81.3)	21.7 (18.6-24.8)	
Education				
Complete Higher Education	465 (51.0)	79.1 (75.4-82.8)	20.9 (17.1-24.6)	0.722**
Complete High School	335 (36.7)	80.0 (75.7-84.3)	20.0 (17.2-24.6)	
Complete elementary education	112 (12.3)	80.4 (72.9-87.8)	19.6 (12.2-27.1)	
Religious Practice				
Yes	866 (93.6)	79.7 (76.9-82.3)	20.3 (17.6-23.0)	0.998***
No	59 (6.4)	79.7 (69.1-90.2)	20.3 (9.8-30.9)	
Marital status				
With partner	609 (66.4)	81.6 (78.5-	18.4 (15.3-	0.034***

		84.7)	21.5)	
Without partner	308 (33.6)	75.7 (70.8-80.5)	24.4 (19.5-29.2)	
Have children				
No	284 (31.0)	80.3 (75.6-84.9)	19.7 (15.1-24.4)	0.726***
Yes	632 (69.0)	79.3 (76.1-82.4)	20.7 (17.5-23.9)	
Monthly Income (R\$)				
More than 2800	531 (66.9)	82.1 (16.6-78.8)	17.9 (14.6-21.2)	0.100**
Up to 2800	263 (33.1)	77.2 (72.1-82.3)	25.9 (17.7-27.9)	
Length of Time Working				
< 5 years	297 (35.8)	80.1 (75.6-84.7)	19.9 (15.3-24.4)	0.905**
6 to 10 years	84 (10.1)	75.0 (65.5-84.5)	25.0 (15.5-34.5)	
11 to 20 years	160 (19.3)	80.6 (74.4-86.8)	19.4 (13.2-25.6)	
> 21 years	289 (34.8)	79.9 (75.2-84.6)	20.1 (15.4-24.7)	
Type of Work				
Passive	211 (23.1)	78.2 (72.3-83.8)	21.8 (16.2-27.4)	0.751***
Active	283 (30.9)	81.2 (77.5-86.5)	18.0 (13.5-22.5)	
High Demand	172 (18.8)	79.7 (73.6-85.7)	20.4 (14.3-26.4)	
Low Demand	251 (27.4)	79.3 (74.2-84.3)	20.7 (15.7-25.8)	
Smoker				
No	796 (86.1)	81.3 (78.6-	18.7 (16.0-	0.003***

		84.0)	21.4)	
Yes	129 (13.9)	69.8 (61.7-77.8)	30.2 (22.2-38.3)	
Problematic Use of Alcohol				
No	803 (86.8)	81.3 (78.6-84.0)	18.7 (16.0-21.4)	<0.001***
Yes	122 (13.2)	68.9 (60.5-77.2)	31.2 (22.8-39.5)	
Depression				
No	722 (78.1)	88.4 (86.0-90.7)	11.6 (9.3-14.0)	<0.001***
Yes	203 (21.9)	48.8 (41.8-55.7)	51.2 (44.3-58.2)	

* The smallest n was of the variable Monthly Income, with 794 responses

Wald Test for Linear tendency * Wald Test for heterogeneity.

Table 3 shows the raw values of the prevalence rates (PR) of anxiety according to

the independent variables. Bivariate analysis was performed to identify the variables that should be included in the multivariate analysis. The bivariate analysis highlighted a higher prevalence among the people who were women (PR 1.69, CI 95% 1.25-2.30), less than 50 years of age (PR 1.37, CI 95% 0.94-1.99), living without a partner (PR 1.32, CI 95% 0.99-1.77) with income of less than R\$ 2,800.00 (PR 1.28, CI 95% 0.92-1.76), smokers (PR 1.61, CI 95% 1.14-2.30), with problematic alcohol use (PR 1.67, CI 95% 1.17-2.38) and with the presence of depression (PR 4.40, CI 95% 3.30-5.87).

Table 3 - Analysis of bivariate Poisson regression between anxiety and demographic, socioeconomic and behavioral variables among workers of a public university. Ribeirão Preto/SP, 2010

Variable	PR (CI 95%)	P value
Gender		

Male	1	<0.001
Female	1.69 (1.25 - 2.30)	
Age group		
>= 50 years	1	0.10
< 50 years	1.37 (0.94 - 1.99)	
Education		
Complete higher education	1	0.95
Complete high school	0.96 (0.70 - 1.31)	
Incomplete elementary education	0.94 (0.59 - 1.50)	
Religious Practice		
Yes	1	0.99
No	1.00 (0.56 - 1.80)	
Marital status		
With partner	1	0.06
Without partner	1.32 (0.99 - 1.77)	
Have children		
No	1	0.31
Yes	1.05 (0.77 - 1.44)	
Length of Time Working		
< 5 years	1	0.81
6 to 10 years	1.25 (0.76 - 2.07)	
11 to 20 years	0.97 (0.63 - 1.51)	
> 21 years	1.01 (0.70 - 1.45)	
Type of Work		
Passive	1	0.81
Active	0.83 (0.55 - 1.23)	
High Demand	0.93 (0.60 - 1.45)	
Low Demand	0.95 (0.64 - 1.41)	
Smoker		
No	1	0.008
Yes	1.61 (1.14 - 2.30)	
Problematic Use of Alcohol		
No	1	0.005

Yes	1.67 (1.17 - 2.38)	
Depression		
No	1	<0.001
Yes	4.40 (3.30 - 5.87)	

The association between anxiety and depression was evaluated through multiple Poisson regression, as shown in Table 4. A progressive reduction was observed in the prevalence rate values, nevertheless, after the adjustment people with depression still had a 4.22 times greater chance of presenting anxiety, compared to people without depression.

Table 4 - Multiple Poisson regression analysis between anxiety and depression among worker of a public university. Ribeirão Preto/SP, 2010.

Model ¹	Depression		P value
	No	Yes - PR (CI 95%)	
Raw Model	Reference	4.40 (3.30 - 5.87)	<0.001
Model 2	Reference	4.45 (3.33 - 5.95)	<0.001
Model 3	Reference	4.32 (3.23 - 5.78)	<0.001
Model 4	Reference	4.28 (3.20 - 5.73)	<0.001
Model 5	Reference	4.22 (3.15 - 5.65)	<0.001

¹Model 2 Raw Model + gender

Model 3 Model 2 + Problematic Use of Alcohol

Model 4 Model 3 + Use of Tobacco

Model 5 Model 4 + Marital Status

4 DISCUSSION

It is noteworthy that the reality of the working world is much more complex than the results obtained by one study, and despite the limitations, the results reinforce and consolidate the theoretical framework. The present study confirmed the association between symptoms of anxiety and symptoms of depression, showing a 4.40 times greater possibility of anxiety in people with symptoms of depression. Regarding the sociodemographic and economic data of the sample there was a predominance of females (54.9%), aged 40-49 years

(38%), with a mean age of 43.1 years and with a partner (66.4%). Similar results were found in a study with a similar population with a prevalence of females, with 69% in the age group 41 to 55 years (CAVALHEIRO e TOLFO, 2011).

Studies indicate that anxiety is one of the major mental health problems of the Brazilian population, with prevalence rates ranging from 8% to 18%, according to different regions (MUNARETTI e TERRA, 2007). The higher prevalence of depressive symptoms among women, found in this study, is supported by the WHO, which indicates the probability of a woman developing depression throughout life ranges from 10% to 25% and varies in a man from 5% to 12%(WHO, 2012). The literature shows that depressive symptoms are found two to three times more often in women than in men, independent of the country(FLECK *et al.*, 2009). This result was also observed in the study by Cavaleiro, in which the prevalence was 14% for mild depression among women and 2% for severe depression, while in men only mild levels were detected which did not exceed 8% (CAVALHEIRO e TOLFO, 2011).

The psychological and social factors seem to play an important role in explaining the prevalence of depression in women, considering the employment context of this study the fact is that women are occupying more positions in the labor market, entering into diverse sectors and carrying out functions which were previously performed mainly by men (MADALOZZO, 2010).

Concerning the problematic use of alcohol and anxiety and depressive symptoms, the results of this study are consistent with the literature. People who present the risky use of alcohol also present more anxiety and depressive symptoms, in both national and international studies. Alcohol use by people with symptoms of depression and anxiety can be considered a coping strategy, being used concurrently with other medication in an attempt to better deal with the situation (BOSCHLOO *et al.*, 2012).

Regarding the use of tobacco observed in this study, the findings are consistent with other studies in the area. The probability of tobacco use among people with depressive and anxious symptoms was 60% higher than in people without these symptoms. This association can be linked to familial factors, as well as to the antidepressant properties of nicotine (AUBIN *et al.*, 1996).

The results of the present study showed significant correlations between the symptoms of anxiety and depression, a result that can also be found in the national and international literature. Even after controlling for sociodemographic variables and substance use, the association remained strong. Anxiety and depression can have their pathogenesis, development and evolution clearly associated with work experiences. The relationship between anxiety and depression has been closely studied, primarily due to the importance of health and work problems in the life of the individual. Thus, low levels of security, authority and decision-making power in the workplace are associated with increased depression (SCHNITTKER, 2010).

Approximately half of the patients diagnosed with anxiety are also diagnosed with depression and, although they are clinically different disorders, people can experience symptoms of anxiety and depression together, such as nervousness, irritability and concentration problems. Furthermore, women with depression, influenced by genetic and psychosocial factors, present a greater risk of developing anxiety disorders (NIMH, 2009).

From a biological perspective, it has been verified that the neurotransmitters which are related to the development of depression, such as serotonin and GABA, also influence the development of anxiety (WARNER *et al.*, 2008). Factors such as changes in the management, financial conditions and workload, inadequate coping strategies, uninterrupted work schedules, difficulties dealing with superiors, for example, have been indicated as vulnerability factors for the development of anxiety and depression in the workplace (MACEDO *et al.*, 2007).

Limitations of this study include being cross-sectional and the lack of studies conducted among technical-administrative public workers, which limits the comparison of data with other scientific findings.

5 CONCLUSION

Given the observed epidemiological condition i.e., the strong association between depression and anxiety and that females represent the majority of those affected by these pathologies, it is necessary to develop intervention programs that consider the co-occurrence of these conditions as well as the psycho-socio-cultural particularities of the female universe.

More studies are need to deepen the understanding of the association between anxiety and depression in workplaces and how this conditions affect the satisfaction with life and work.

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