THE RELATIONSHIP BETWEEN COMMON MENTAL DISORDERS AND ABDOMINAL OBESITY AMONG SHIFT WORKERS

Anderson Garcez ^{a,b}, Marcos Pascoal Pattussi ^a, Jamile Block Araldi Macagnan ^c, Vera Maria Vieira Paniz ^a, Maria Teresa Anselmo Olinto ^{a,b}

^a Post-graduate Program in Collective Health, University of Vale do Rio dos Sinos, Unisinos, São Leopoldo, RS, Brazil
^b Post-graduate Program in Nutrition Sciences, Federal University of Health Science of Porto Alegre, UFCSPA, Porto Alegre, RS, Brazil
^c Department of Nursing, University of the State of Santa Catarina, UESC, Palmitos, SC, Brazil
* E-mail: adsgarcez@gmail.com

BACKGROUND

- Abdominal obesity is considered one of the most harmful types of obesity because it is an independent risk factor for cardiometabolic diseases.
- Common mental disorders are a set of psychiatric symptoms that includes irritability, fatigue, insomnia, difficult concentration, memory deficit, physical complaints and anxiety and depression symptoms.
- Shift work has been related to many health impairments, including alteration of circadian rhythms and psychiatric disorders.
- The presence of psychiatric disorders may be an important factor for the development of abdominal obesity, especially among shift workers.

OBJECTIVES

- The aim of the present study was to investigate the relationship between common mental disorders (CMD) and abdominal obesity (AO) in shift workers of southern Brazil.

MATERIALS AND METHODS

- A cross-sectional study with 1202 shift workers (785 women) aged 18-50 years was carried out;
- Common mental disorders (CMD) were assessed using the Self-Reporting Questionnaire (SRQ-20);
- We used a cutoff level of at least 5 and 7 out of 20 items for men and women, respectively;
- Abdominal obesity was defined as a waist circumference ≥88 cm in women and ≥102 cm in men.
- Unadjusted and adjusted prevalence ratios (PR) were obtained by Poisson regression;
- A multivariate regression was conducted using a robust estimation approach.

RESULTS

- The overall prevalence of AO was 23.1% (95% confidence interval [CI]: 20.7-25.6), but it was more prevalent among women than men (30.2% vs. 9.8%);
- In the total sample, 26.8% (95%CI: 30.4-35.9) was categorized as having CMD, being more prevalent in women than men (30.2% vs. 20.4%);
- Night-shift work was significantly associated with the occurrence of AO;
- After adjusting for age and shift work, CMD showed a positive relationship with the occurrence of AO especially in women;
- The prevalence ratios for AO were 1.26 (95%CI: 1.02-1.54;p=0.036) and 0.68 (95%CI: 0.31-1.48;p=0.333) in women and men with CMD, respectively.

CONCLUSIONS

- This study demonstrated that common mental disorders have an independent association with abdominal obesity among women shift workers.
- Furthermore, the prevalence of abdominal obesity and common mental disorders was higher among women.

Table 1. Sample characteristics, stratified by gender, among shift workers in southern Brazil.

Characteristics	Total (n = 1202)	Males (n = 417)	Females (n = 785)
	n (%)	n (%)	n (%)
Gender			
Male	417 (34.7)	-	-
Female	785 (65.3)		
Age (years)			
18 to 29	649 (54.0)	224 (53.3)	426 (54.2)
30 to 39	322 (26.8)	110 (26.2)	213 (27.1)
≥ 40	231 (19.2)	86 (20.5)	147 (18.7)
Work shift			
Dayshift	404 (33.6)	131 (31.2)	275 (34.9)
Nightshift	798 (66.4)	289 (68.8)	511 (65.1)

Table 2. The prevalence of common mental disorders (CMD) and abdominal obesity according to sex, age, and work shift characteristics, stratified by gender, among shift workers in southern Brazil. (n = 1202)

Characteristics	Total (n = 1202)	Males (n = 417)	Females (n = 785)
	% (95% CI)	% (95% CI)	% (95% CI)
Common mental disorders (CMD)			
Gender	<i>P</i> <0.001 ^a	--	--
Male	20.4 (16.5, 24.3)		
Female	30.2 (27.0, 33.4)		
Age (years)	<i>P</i> =0.114 ^b	<i>P</i> =0.044 ^b	<i>P</i> =0.513 ^b
18 to 29	24.7 (21.3, 28.0)	17.0 (12.1, 22.0)	28.6 (24.3, 32.9)
30 to 39	29.5 (24.5, 34.5)	22.0 (14.1, 29.9)	33.3 (27.0, 39.7)
≥ 40	29.0 (23.1, 34.9)	27.1 (17.4, 36.7)	30.1 (22.6, 37.7)
Work shift	<i>P</i> =0.471 ^a	<i>P</i> =0.359 ^a	<i>P</i> =0.657 ^a
Dayshift	25.5 (21.2, 29.8)	17.7 (11.0, 24.3)	29.2 (23.8, 34.6)
Nightshift	27.4 (24.3, 30.5)	21.6 (16.8, 26.4)	30.7 (26.7, 34.7)
Abdominal obesity (AO)			
Gender	<i>P</i> <0.001 ^a	--	--
Male	9.8 (6.9, 12.6)		
Female	30.2 (26.9, 33.4)		
Age (years)	<i>P</i> <0.001 ^b	<i>P</i> <0.001 ^b	<i>P</i> <0.001 ^b
18 to 29	14.6 (11.9, 17.3)	4.0 (1.4, 6.6)	20.2 (16.3, 24.0)
30 to 39	26.4 (21.6, 31.2)	15.5 (8.5, 22.3)	32.1 (25.7, 38.4)
≥ 40	42.1 (35.7, 48.4)	17.4 (9.2, 25.6)	56.5 (48.4, 64.6)
Work shift	<i>P</i> =0.034 ^a	<i>P</i> =0.322 ^a	<i>P</i> =0.022 ^a
Dayshift	19.5 (15.6, 23.3)	7.6 (3.0, 12.2)	25.1 (19.9, 30.2)
Nightshift	24.9 (21.9, 27.9)	10.7 (7.1, 14.3)	32.9 (28.8, 37.0)

^a *P*-values for chi-square test for heterogeneity of proportions (categorical variables)
^b *P*-values for chi-square test for linear trend (ordinal variables).
The common mental disorders were assessed by the Self-Reporting Questionnaire (SRQ-20), using different cut-offs for males (5) and females (7).

Table 3. Unadjusted and adjusted prevalence ratios (PR) for the association between common mental disorders (CMD) and abdominal obesity, in total sample and stratified by gender and adjusted for potential confounding factors, among shift workers in Southern Brazil. (n = 1202)

Common mental disorders	Abdominal Obesity n (%)	Unadjusted	Adjusted ^a
		PR (95% CI)	PR (95% CI)
Total (n = 1202)		<i>P</i> =0.010	<i>P</i> =0.026
Absence	187 (21.3)	1.00 (Reference)	1.00 (Reference)
Presence	91 (28.3)	1.33 (1.07, 1.65)	1.27 (1.03, 1.57)
Males (n = 417)		<i>P</i> =0.583	<i>P</i> =0.333
Absence	34 (10.2)	1.00 (Reference)	1.00 (Reference)
Presence	7 (8.2)	0.80 (0.37, 1.75)	0.68 (0.31, 1.48)
Females (n = 785)		<i>P</i> =0.034	<i>P</i> =0.036
Absence	153 (27.9)	1.00 (Reference)	1.00 (Reference)
Presence	84 (35.4)	1.27 (1.02, 1.58)	1.26 (1.02, 1.54)

^a Adjusted for age and work shift.
P-values: Wald test obtained by Poisson regression.
The common mental disorders were assessed by the Self-Reporting Questionnaire (SRQ-20), using different cut-offs for males (5) and females (7).

Funding

- This work was supported by the National Council of Technological and Scientific Development from Brazil (CNPq; grant 477069/2009-6 and 478366/2011-6).