Common mental disorders and chronic non-communicable diseases in adults: a population-based study

Transtornos mentais comuns e enfermidades crônicas em adultos: estudo de base populacional

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Abstract

A cross-sectional population-based study was conducted to identify the prevalence of common mental disorders and verify the association with chronic non-communicable diseases (NCDs) and the self-reported number of chronic diseases. The Self-Reporting Questionnaire (SRQ-20) was applied in a multi-stage random sample of 1,276 adults aged 40 and older. Socio-demographic, behavioral, and health-related variables were also obtained using a structured questionnaire. Prevalence of common mental disorders was 30.2%. Lower schooling and social class and the 46-55-year age bracket were associated with psychiatric morbidity. Each chronic illness was independently associated with common mental disorders. However, a stronger association was found between common mental disorders and the total number of self-reported chronic conditions, with a prevalence ratio of 4.67 (95%CI: 3.19-6.83) for five or more self-reported NCDs. The current study emphasizes the importance of common mental disorders in chronically ill patients, particularly in those with more total chronic conditions.

Mental Disorders; Chronic Disease; Morbidity

Introduction

In recent decades, studies in psychiatric epidemiology have provided valuable information leading to better knowledge of the natural history of mental disorders and the identification of groups at increased risk, thus forming the basis for policy and treatment decisions in mental health [1].

Much attention has focused on the association between chronic non-communicable diseases (NCDs) and psychiatric disorders. Various studies point to a higher rate of psychiatric disorders in patients with physical illness [2,3,4,5]. However, many studies on this association have focused on major depression [6,7,8].

Sub-clinical psychiatric syndromes, in addition to the so-called major psychiatric disorders, are known to pose a high individual and social cost, since they are associated with disability, work absenteeism, and increased outpatient visits [2,4,5,9,10]. Thus, in light of the additive role of psychiatric morbidity in relation to the disability caused by physical illness [8,11], there is an urgent need to include such syndromes in this investigation.

Common mental disorders, a concept that includes non-psychotic depressive, anxious, and somatiform disorders, is a broad diagnostic category widely used in epidemiological studies [1,12]. The spectrum includes sub-clinical conditions in addition to major psychiatric disorders, thus allowing a more complete view of the community's mental health status.

Previous studies in various countries point to factors associated with mental disorders: female gender [2,3,11], marital status (divorced or widowed) [13,14], low schooling, low income, and low social class [10,11,13,14,15], regions with great socioeconomic inequality [16,17], and stressful life events [14], among others.

The objectives of the current study were: (1) to evaluate the prevalence of common mental disorders in individuals 40 years or older, who are more prone to presenting NCDs and (2) to identify the sub-groups of this population with the highest rates of mental disorders.

Methods

Study type and target population

This was a cross-sectional study conducted in the urban area of Pelotas, Rio Grande do Sul State, Brazil, with a population of 340 thousand, of whom approximately 114 thousand are over 40 years old [18].

Sampling

The current study is part of a larger project, the aim of which was to assess the health of adults 40 years and older in the city of Pelotas. Due to the multiple study outcomes, the estimate with the largest sample size determined the number of individuals needed for the study (1,440 individuals).

A representative sample of the target population was obtained by multi-stage sampling. From the city's total of 418 census tracts, 48 were randomly selected for inclusion in the study. Next, the blocks in each tract were numbered so that one each could be selected as the point of departure for selecting the households. In each census tract that was included, 30 households were randomly selected: from the initially selected household, we "skipped" the next, and the following was selected, and so on until completing the necessary number of households. Finally, one individual per household was selected to participate in the study. If the selected person was not found, three attempts were made before defining the case as lost.

Instruments

- **Common mental disorders**

Common mental disorders were evaluated by applying the 20-item version of the Self-Reporting Questionnaire (SRQ-20), an instrument first applied by Harding and validated in Brazil by Mari & Williams [19]. In addition to detecting so-called "major" mental disorders, the SRQ-20 also identifies sub-clinical spectrums, which are highly important because they are associated with functional and social impairment [1,12]. The cutoff point adopted here was 6 for men and 8 for women (with 83% sensitivity and 80% specificity), as suggested by the author in the validation study for the Brazilian population [19].

- **Socio-demographic and behavior variables**

The socio-demographic questionnaire collected the following information: gender, age, marital status, education (complete years of schooling), socioeconomic status (according to the Economic Classification for Brazil of the Brazilian Association of Population Survey Companies, ABEP; http://www.abep.org, in which the highest-income level is "A" and the lowest "E"), and work status.

The following behavioral variables were assessed: tobacco consumption (number of cigarettes per day), alcohol consumption, and sedentary lifestyle (< 60 minutes of physical activity per week).

- **Chronic non-communicable diseases**

Interviewees were given a list with the following diseases: heart failure, arterial hypertension, bronchopulmonary diseases (asthma, bronchitis, or emphysema), back problems (lower back pain or slipped disc), joint diseases (arthritis or arthrosis), bursitis, and diabetes mellitus. Two types of variables were produced with this information: an ordinal quantitative variable, representing the number of diseases reported by the individuals, and eight dichotomous variables, indicating the presence or absence of each disease individually.

- **Use of medication**

Subjects were asked about the number of medicines they had taken in the previous two weeks. The resulting variable was coded in three categories: none, one to three drugs, and four or more drugs. The use of four or more drugs was considered polypharmacy.

Procedures

Thirty university students enrolled in health-related courses were trained to conduct the household interviews. The training consisted of one

week of activities (20 hours) with a discussion of the project's methodological and logistic issues, through role-playing and debates on various difficulties.

The pilot study, done in a census tract not included in the sample, allowed checking the sampling procedures and clarification of doubts related to the interview. Data were collected from July 2004 to June 2005, so as to avoid seasonal variations.

Data analysis

Data entry used Epi Info (Centers for Disease Control and Prevention, Atlanta, USA) with dual keying-in and subsequent consistency checks. In cases identified as inconsistencies, first the questionnaire was checked, and when the doubt persisted, the interviewee was contacted by phone to clear up the doubt.

Univariate analysis was used to obtain the prevalence rates for common mental disorders and NCDs, as well as to characterize the sample as to the socio-demographic and behavioral variables. Prevalence of common mental disorders was adjusted according to the SRQ-20 sensitivity and specificity for the cutoff point used here (83% and 80%, respectively). Associations between common mental disorders and the independent variables were verified with the Pearson chi-square test.

In order to identify and control for potential confounders, Poisson regression with robust adjustment of variance was performed, according to a previously established hierarchical model (Figure 1), with the following disposition: socio-demographic variables at the first level, followed by behavioral variables at the second, NCDs at the third, number of drugs used at the fourth, and common mental disorders as the outcome. Based on this initial model, two model variants were tested: in the first, each disease was considered individually; the second considered the total number of NCDs reported by the interviewee. Only the variables showing $p < 0.2$ remained in the hierarchical model. Stata (Stata Corp., College Station, USA) was used for the statistical analysis.

Ethical issues

The study was approved by the Institutional Review Board of the Catholic University of Pelotas.

Results

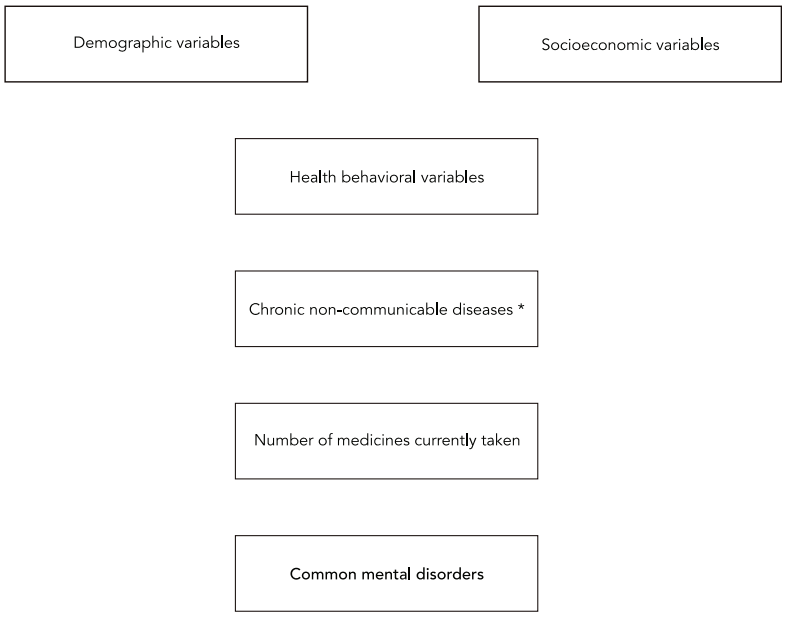
The sampling process identified 1,440 individuals, of whom 113 (7.8%) could not be located or refused to respond, resulting in a total of 1,327 interviewees. Of the total sample, 65.9% were females, with a mean age of 57.13 and standard deviation (SD) of 11.88, and 35.5% belonged to socioeconomic class "C". Table 1 describes the sample according to socio-demographic and behavioral variables.

Prevalence of common mental disorders after adjusting for the test's sensitivity and specificity was 30.2% (95%CI: 25.4-33.3), with no significant difference between genders. The rates varied inversely to schooling and socioeconomic status (SES), i.e., the lower the schooling and SES, the higher the rate of psychiatric disorders. Rates of common mental disorders were also higher in divorced and unemployed individuals. The 46-55-year age bracket showed a significantly higher prevalence of psychiatric illness. As for behavioral variables, smokers and sedentary individuals showed crude prevalence ratios (PR) for common mental disorders of 1.38 (95%CI: 1.18-1.60) and 1.68 (95%CI: 1.41-2.01), respectively.

All the NCDs analyzed, when evaluated individually, showed a statistically significant association with common mental disorders, with

Figure 1

Hierarchical model for multivariate analysis.



* In the model's first variant, chronic non-communicable diseases were analyzed individually. In the second, the total number of NCDs was considered.

Table 1

Sample distribution according to sociodemographic and behavioral variables.

Variables	N = 1,327	%
Gender		
Male	453	34.1
Female	874	65.9
Age (years)		
≤ 45	262	19.7
46-55	388	29.2
56-65	348	26.2
≥ 66	329	24.8
Marital status		
Married/Lives with partner	773	58.3
Widow(er)	260	19.6
Separate/Divorced	168	12.7
Single	126	9.5
Schooling (years)		
Illiterate	108	8.1
1-4	379	28.6
5-8	418	31.5
≥ 9	422	31.8
Socioeconomic class		
A	108	8.1
B	342	25.8
C	470	35.4
D	345	26
E	62	4.7
Work market status		
Unemployed	372	28
Retired, not working	497	37.5
Working	374	28.2
Retired and working	84	6.3
Smoking		
Never smoked	672	50.6
Smoker	337	25.4
Former smoker	318	24
Alcohol use, previous month		
None	974	73.4
Drank from 1 to 5 days	247	18.6
Drank from 6 to 19 days	57	4.3
Drank ≥ 20 days	49	3.7
Sedentary lifestyle		
Yes	913	68.8
No	414	31.2

the highest prevalence rates among the ill. In addition, the proportion of common mental disorders showed a linear increase with the number of self-reported NCDs.

Multivariate analysis showed that after controlling for each other, the following socio-demographic characteristics showed significantly higher prevalence ratios for common mental disorders: age 46-55 years (PR = 1.34; 95%CI: 1.08-1.66), separated or divorced marital status (PR = 1.50; 95%CI: 1.14-1.99), and less than four complete years of schooling (PR = 1.34; 95%CI: 1.09-1.64). In addition, as shown in Table 2, there was an upward linear trend in common mental disorders with decreasing SES. After adjusting, behavioral variables and number of medicines lost part of the strength of their association, but remained significantly associated with common mental disorders.

As shown in Table 3, the strength of association between the various NCDs and common mental disorders did not vary greatly, highlighting back problems among the NCDs. However, common mental disorders were strongly associated with the number of NCDs reported by the interviewee, even after controlling for socio-demographic and behavioral variables. Individuals that reported at least physical conditions showed a PR of 2.31 (95%CI: 1.55-3.45), while the PR was nearly 5 in those reporting more than five NCDs. The final hierarchical model is shown in Figure 2.

Discussion

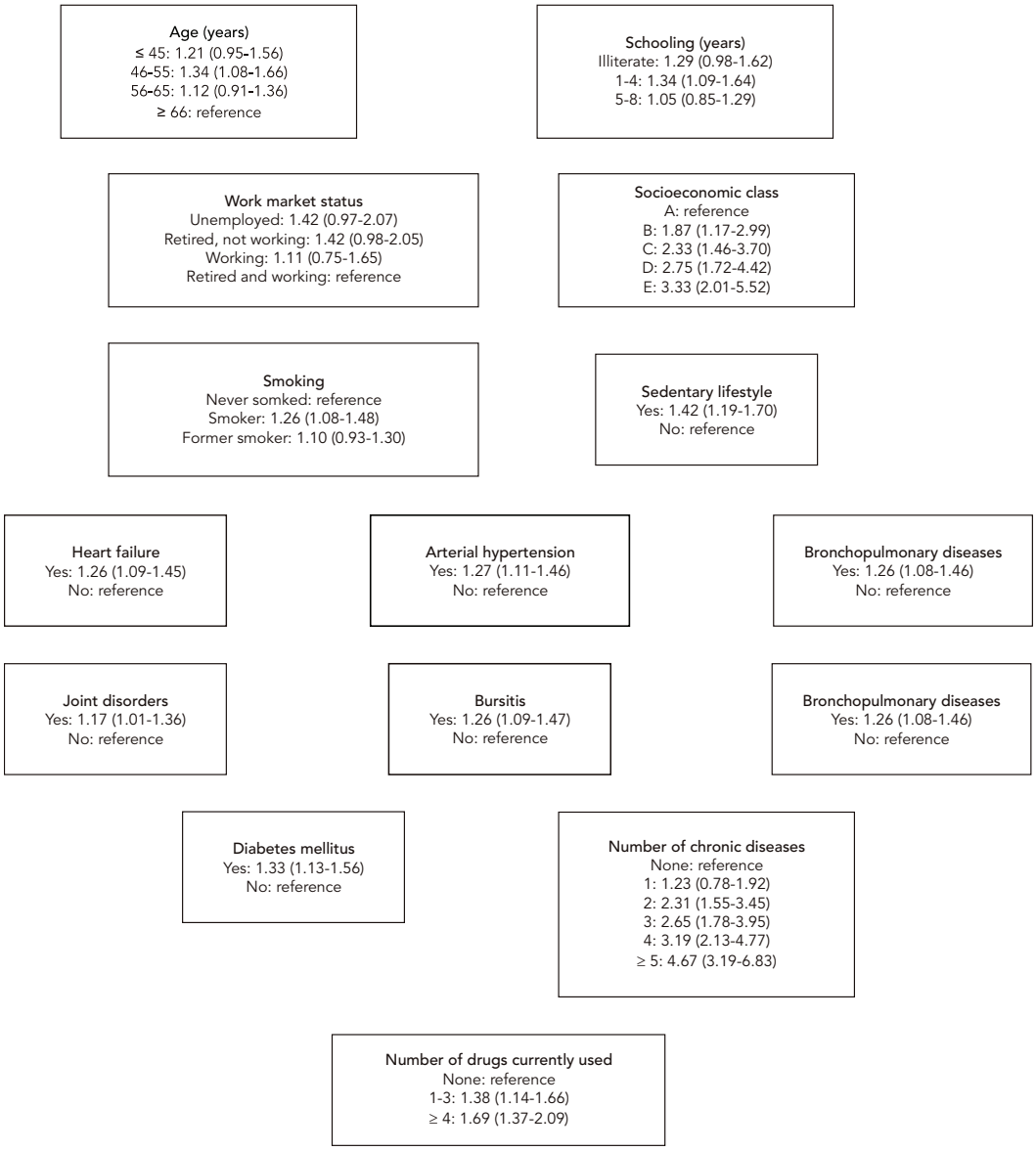
The current study evaluated the prevalence of common mental disorders in adults 40 years or older, identifying the sub-populations most associated with psychiatric illness. The study also investigated the effect both of single non-communicable diseases and the number of reported NCDs on prevalence of common mental disorders, controlling for socio-demographic and behavioral variables that might act as confounding factors.

The prevalence of common mental disorders, corrected for the sensitivity and specificity of the instrument used (SRQ-20), was 30.2%, close to the values found in studies of populations with similar characteristics [15,20]. Meanwhile, the prevalence reported here was higher than in other studies in which younger age brackets were included [10,13,14]. One hypothesis for explaining this finding is that fact that individuals in older age brackets present more chronic non-communicable diseases and use more medication. Such characteristics, as shown previously, are more heavily associated with common mental disorders.

Previous studies have indicated that characteristics of economically underprivileged population segments, such as low schooling, lower social class, and unemployment, are associated with common mental disorders. In a recent systematic review, Fryers et al. [17] reinforce these findings, stating that while lower schooling, un-

Figure 2

Final hierarchical model for common mental disorders, with prevalence ratios (PR) and 95% confidence intervals (95%CI).



employment, and low income can directly influence anxiety and depression in these individuals, a constitutional tendency towards these disorders can also lead to low schooling, income, and unemployment. In another review, Patel & Kleinman [21] point to a close connection between mental disorders and poverty.

Sedentary lifestyle was associated with common mental disorders, even after controlling for the other variables, which is consistent with previous findings [2]. Smoking was also associated with psychiatric morbidity in the model that considered diseases individually. Previous prospective studies indicate that common mental disorders increase the risk of smoking [22], which agrees with the association identified here. Meanwhile, smoking can act as a risk factor for some of the chronic non-communicable diseases investigat-

Table 2

Prevalence of common mental disorders and adjusted prevalence ratios (RP) with 95% confidence intervals (95%CI), according to first-level independent variables.

Variables	Common mental disorders (%)	Crude PR (95%CI)	p-value	Adjusted PR * (95%CI)	p-value
Gender			0.128		0.605
Male	36.2	1.00		1.00	
Female	40.5	1.12 (0.97-1.30)		1.08 (0.92-1.26)	
Age (years)			0.475		0.036
≤ 45	37.8	1.02 (0.83-1.26)		1.21 (0.95-1.56)	
46-55	42.3	1.14 (0.95-1.37)		1.34 (1.08-1.66)	
56-65	38.2	1.03 (0.85-1.25)		1.12 (0.91-1.36)	
≥ 66	37.1	1.00		1.00	
Marital status			0.013		0.634
Married/Lives with partner	37.3	1.09 (0.84-1.42)		1.25 (0.98-1.62)	
Widow(er)	39.6	1.16 (0.87-1.54)		1.17 (0.88-1.55)	
Separate/Divorced	50	1.47 (1.10-1.95)		1.50 (1.14-1.99)	
Single	34.1	1.00		1.00	
Schooling (years)			< 0.001		0.007
Illiterate	49.1	1.74 (1.36-2.22)		1.29 (0.98-1.70)	
1-4	48.8	1.73 (1.44-2.09)		1.34 (1.09-1.64)	
5-8	38.5	1.37 (1.12-1.66)		1.05 (0.85-1.29)	
≥ 9	28.2	1.00		1.00	
Socioeconomic class			< 0.001		< 0.001
A	15.7	1.00		1.00	
B	29.8	1.89 (1.19-3.02)		1.87 (1.17-2.99)	
C	40	2.54 (1.62-3.99)		2.33 (1.46-3.70)	
D	50.4	3.20 (2.04-5.02)		2.75 (1.72-4.42)	
E	59.7	3.79 (2.34-6.14)		3.33 (2.01-5.52)	
Work market status			< 0.001		0.003
Unemployed	46.8	1.71 (1.19-2.46)		1.42 (0.97-2.07)	
Retired, not working	39.2	1.43 (0.99-2.07)		1.42 (0.98-2.05)	
Working	33.7	1.23 (0.84-1.79)		1.11 (0.75-1.65)	
Retired and working	27.4	1.00		1.00	

* First-level variables adjusted for each other.

ed here, as a behavior associated with the disease which can further increase psychiatric morbidity indirectly. The findings reported here suggest that the association between smoking and common mental disorders is not mediated by the association between tobacco use and chronic noncommunicable diseases.

An important observation is that besides the NCDs studied here being significantly associated with mental disorders, the number of NCDs was more strongly associated with common mental disorders than was each NCD individually. This finding is consistent with other studies [2,3,4,5,8,11]. However, despite this strong connection, studies in outpatient settings show that physicians tend to overlook psychiatric disorders in patients with multiple chronic diseases, since the latter tend to be the greatest focus of the clinician's attention [23].

As for use of medication, it was shown that even after controlling for number of physical conditions, common mental disorders were associated with polypharmacy. Such information is particularly relevant to the age bracket studied here, which is more subject to potentially harmful drug interactions and adverse effects.

The cross-sectional design used here is a limitation that precludes establishing a causal nexus between the study variables and common mental disorders. However, the design's value lies in identifying individual and population characteristics associated with psychiatric

Table 3

Prevalence of common mental disorders according to second and third-level variables from the first hierarchical model, adjusted prevalence ratios (PR) with 95% confidence intervals (95%CI), and p-values.

Variables	Common mental disorders (%)	Crude PR (95%CI)	p-value	Adjusted PR * (95%CI)	p-value
Smoking			< 0.001		0.114
Never smoked	34.5	1.00		1.00	
Smoker	47.5	1.38 (1.18-1.60)		1.26 (1.08-1.48)	
Former smoker	39.6	1.15 (0.98-1.36)		1.10 (0.93-1.30)	
Sedentary lifestyle			< 0.001		< 0.001
Yes	44.7	1.68 (1.41-2.01)		1.42 (1.19-1.70)	
No	26.6	1.00		1.00	
Heart failure			< 0.001		0.002
Yes	65	1.81 (1.57-2.09)		1.26 (1.09-1.45)	
No	35.9	1.00		1.00	
Arterial hypertension			< 0.001		0.001
Yes	48.6	1.53 (1.34-1.75)		1.27 (1.11-1.46)	
No	31.7	1.00		1.00	
Bronchopulmonary diseases			< 0.001		0.003
Yes	56.9	1.58 (1.36-1.83)		1.26 (1.08-1.46)	
No	36.1	1.00		1.00	
Joint disorders			< 0.001		0.037
Yes	51.1	1.44 (1.26-1.66)		1.17 (1.01-1.36)	
No	35.4	1.00		1.00	
Bursitis			< 0.001		0.002
Yes	59.3	1.65 (1.42-1.91)		1.26 (1.09-1.47)	
No	36	1.00		1.00	
Back problems			< 0.001		< 0.001
Yes	48.8	1.82 (1.56-2.12)		1.51 (1.30-1.75)	
No	26.9	1.00		1.00	
Diabetes mellitus			< 0.001		< 0.001
Yes	60.1	1.64 (1.41-1.92)		1.33 (1.13-1.56)	
No	36.6	1.00		1.00	
Number of chronic diseases			< 0.001		< 0.001
None	14.7	1.00		1.00	
One	17.3	1.17 (0.74-1.86)		1.23 (0.78-1.92)	
Two	33.2	2.26 (1.50-3.40)		2.31 (1.55-3.45)	
Three	40.5	2.75 (1.83-4.12)		2.65 (1.78-3.95)	
Four	46.5	3.16 (2.10-4.76)		3.19 (2.13-4.77)	
≥ Five	70.2	4.77 (3.27-6.95)		4.67 (3.19-6.83)	
Number of drugs currently used **			< 0.001		< 0.001
None	25.8	1.00		1.00	
One to three	39.1	1.52 (1.26-1.84)		1.38 (1.14-1.66)	
≥ Four	60.4	2.35 (1.93-2.85)		1.69 (1.37-2.09)	

* Second-level variables adjusted for each other and for first-level variables. Third-level variable adjusted for first and second-level variables and fourth-level variables adjusted for the others;

** Variable adjusted according to the second variant of the hierarchical model, which considered the total number of chronic non-communicable diseases.

disorders, important information for orienting public health measures. Another limitation of this study was the self-reporting of chronic non-communicable diseases, a difficulty shared by other population-based studies [2,3,9]. According to Neeleman et al. [3], there appears not to be any consistent evidence that individuals with mental disorders overestimate the reporting of chronic diseases in population-based studies, which would constitute a systematic error.

Meanwhile, incipient diseases, still not diagnosed, could lead individuals to underestimate their reporting. Thus, according to the same author, at worst the two tendencies would cancel each other out [3].

Based on the above discussion, we highlight the importance of focusing on common mental disorders in individuals with multiple chronic diseases, given the extensive disability related to them.

Resumo

Estudo transversal de base populacional foi conduzido tendo como objetivos avaliar a prevalência dos transtornos mentais comuns e verificar sua associação com determinadas enfermidades crônicas e com o número de doenças crônicas relatadas pelo indivíduo. Para a avaliação de transtornos mentais comuns, o Self-Reporting Questionnaire *(SRQ-20) foi aplicado em 1.276 adultos com 40 anos ou mais. Variáveis sócio-demográficas, comportamentais e relacionadas à saúde foram obtidas por meio de um questionário estruturado. Os transtornos mentais comuns apresentaram uma prevalência de 30,2%, estando associados à baixa escolaridade e classe social, e à faixa etária de 46-65 anos. Todas as doenças crônicas pesquisadas mostraram-se associadas aos transtornos mentais comuns. Entretanto, o número de enfermidades apresentadas pelo indivíduo teve maior importância do que cada uma delas individualmente, com uma razão de prevalência de 4,67 e intervalo de 95% de confiança: 3,19-6,83 para cinco ou mais doenças relatadas. O presente estudo realça a importância de se atentar para os transtornos mentais em indivíduos com enfermidades crônicas, principalmente naqueles que se apresentam com um grande número de doenças.*

Transtornos Mentais; Doenças Crônicas; Morbidade

Contributors

F. M. C. Coelho participated in the data analysis and coordinated the literature review, discussion of the results, and organization of the article's final draft. R. T. Pinheiro participated in the elaboration of the research instrument and study design, accompanied the data collection, coordinated the data analysis, and contributed to the article's discussion and final draft. B. L. Horta participated in the elaboration of the research instrument and study design, planned the data collection, and coordinated the discussion of the results. P. V. S. Magalhães participated in the discussion and analysis of the data and collaborated in the article's final draft. C. M. M. Garcias participated in the data analysis and writing of the article. C. V. Silva contributed to the literature review and drafting of the article.

References

1. Lima MS. Epidemiologia e impacto social. Rev Bras Psiquiatr 1999; 21 Suppl 1:1-5.
2. Gispert R, Rajmil L, Schiaffino A, Herdman M. Sociodemographic and health-related correlates of psychiatric distress in a general population. Soc Psychiatry Psychiatr Epidemiol 2003; 38:677-83.
3. Neeleman J, Ormel J, Bijl RV. The distribution of psychiatric and somatic ill health: Associations with personality and socioeconomic status. Psychosom Med 2001; 63:239-47.
4. Buist-Bouwman MA, de Graaf R, Vollebergh WAM, Ormel J. Comorbidity of physical and mental disorders and the effect on work-loss days. Acta Psychiatr Scand 2005; 111:436-43.
5. Koopmans GT, Donker MCH, Rutten FHH. Common mental disorders and use of general health services: a review of the literature on population-based studies. Acta Psychiatr Scand 2005; 111:341-50.
6. Nöel PH, Williams Jr. JW, Unützer J, Worchel J, Lee S, Cornell J, et al. Depression and comorbid illness in elderly primary care patients: impact on multiple domains of health status and well-being. Ann Fam Med 2004; 2:555-62.
7. Wells KB, Sherbourne CD. Functioning and utility for current health of patients with depression or chronic medical conditions in managed, primary care patients. Arch Gen Psychiatry 1999; 56:897-904.
8. Ormel J, Kempen G, Deeg D, Brilman E, van Sonderen E, Relyveld J. Functioning, well-being, and health perception in late middle-aged and older people: comparing the effects of depressive symptoms and chronic medical conditions. J Am Geriatr Soc 1998; 46:39-48.
9. Schmitz N, Kruse J. The relationship between mental disorders and medical service utilization in a representative community sample. Soc Psychiatry Psychiatr Epidemiol 2002; 37:380-86.
10. Andrews G, Henderson S, Hall W. Prevalence, comorbidity, disability and service utilisation. Overview of the Australian National Mental Health Survey. Br J Psychiatry 2001; 178:145-53.
11. Melzer D, Fryers T, Jenkins R, Brugha T, McWilliams B. Social position and the common mental disorders with disability. Soc Psychiatry Psychiatr Epidemiol 2003; 38:238-43.
12. Harpham T, Reichenheim M, Oser R, Thomas E, Hamid N, Jaswal S, et al. Measuring mental health in a cost-effective manner. Health Policy Plan 2003; 18:344-9.
13. Araya R, Rojas G, Fritsch R, Acuña J, Lewis G. Common mental disorders in Santiago, Chile: prevalence and socio-demographic correlates. Br J Psychiatry 2001; 178:228-33.
14. Lima MS, Beria JU, Tomasi E, Conceição AT, Mari JJ. Stressful life events and minor psychiatric disorders: an estimate of the population attributable fraction in a Brazilian community-based study. Int J Psychiatry Med 1996; 26:211-22.
15. Ludermir AB, Melo Filho DA. Condições de vida e estrutura ocupacional associadas a transtornos mentais comuns. Rev Saúde Pública 2002; 36: 213-21.
16. Weich S, Lewis G, Jenkins SP. Income inequality and the prevalence of common mental disorders in Britain. Br J Psychiatry 2001; 178:222-7.
17. Fryers T, Melzer D, Jenkins R. Social inequalities and the common mental disorders: A systematic review of the evidence. Soc Psychiatry Psychiatr Epidemiol 2003; 38:229-37.
18. Instituto Brasileiro de Geografia e Estatística. Dados do censo demográfico da cidade de Pelotas, RS, 2000. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2000.
19. Mari JJ, Williams PA. A validity study of a psychiatric screening questionnaire (SRQ-20) in primary care in the city of São Paulo. Br J Psychiatry 1986; 148:23-6.
20. Almeida-Filho N, Mari JJ, Coutinho E, França JF, Fernandes J, Andreoli SB, et al. Brazilian multicentric study of psychiatric morbidity. Methodological features and prevalence estimates. Br J Psychiatry 1997; 171:524-9.
21. Patel V, Kleinman A. Poverty and common mental disorders in developing countries. Bull World Health Organ 2003; 81:609-15.
22. Ismail K, Slogget A, De Stavola B. Do common mental disorders increase cigarette smoking? Results from five waves of a population-based panel cohort study. Am J Epidemiol 2000; 152:651-7.
23. Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D. Multimorbidity and quality of life in primary care: a systematic review. Health Qual Life Outcomes 2004; 2:51.

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