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Article

Causal factors of occupational mental illness: decisions analysis from the regional labor courts of São Paulo State

Fatores causais do adoecimento mental ocupacional: análise das decisões dos tribunais regionais do trabalho do Estado de São Paulo

Factores causales de la enfermedad mental profesional: análisis de las decisiones de los tribunales regionales del trabajo del Estado de São Paulo

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Abstract

Objective: to analyze the judicial decisions handed down by the regional labor courts of the state of São Paulo, between 2019 and 2020, with the aim of identifying the symptoms related to the mental disorders alleged in the labor lawsuits, as well as associating such symptoms with clinical diagnoses, also investigating the relationship between the symptoms presented and the causality recognized in the judgments. Identify mental disorders and symptoms related it, associate sociodemographic and work data with symptoms and mental disorders, as well as associate mental disorders and their causality with the symptoms. **Method:** retrospective, descriptive, investigative study with a quantitative and qualitative approach from decisions published by the Regional Labor Courts in the period from 2019 to 2020 regarding occupational mental disorders. Document analysis was carried out using univariate descriptive statistics, including frequencies for nominal variables and measures of position (mean and median) and dispersion (standard deviation and maximum and minimum values) for ordinal variables. Fisher's Exact Test was applied to verify the association between two categorical variables when frequencies were less than 5. A significance level of $\rho < 0.05$ was used. **Results:** the main causes of occupational mental disorders were related to bullying practices, excessive demands on goals and results and work overload. **Conclusion:** it is important to understand the work processes, the causal factors related illness and psychological suffering, in order to raise awareness among workers, employees and society regarding promotional and preventive intervention, from an organizational, individual and collective perspective.

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Keywords: Work; Occupational Health; Mental Disorders; Causality; Occupational Risks.

Resumo

Objetivo: analisar as decisões judiciais proferidas pelos tribunais regionais do trabalho do Estado de São Paulo, entre os anos de 2019 e 2020, com o intuito de identificar os sintomas relacionados aos transtornos mentais alegados nas ações trabalhistas, bem como associar tais sintomas aos diagnósticos clínicos, investigando ainda a relação entre os sintomas apresentados e a causalidade reconhecida nos julgados. **Método:** estudo retrospectivo, descritivo, investigativo e de abordagem quanti-qualitativa da análise jurisprudencial dos tribunais regionais do trabalho no período de 2019 a 2020, referentes aos transtornos mentais ocupacionais. A análise documental foi realizada por meio de estatística descritiva univariada, incluindo as frequências para as variáveis nominais e medidas de posição (média e mediana) e de dispersão (desvio padrão e valores máximos e mínimos) para variáveis ordinais. Foi aplicado o Teste Exato de Fisher para verificar a associação entre duas variáveis categóricas quando as frequências foram menores do que 5. Utilizou-se nível de significância de $\rho < 0,05$. **Resultados:** as principais causas dos transtornos mentais ocupacionais foram relacionadas às práticas de assédio moral, cobrança excessiva de metas e resultados e sobrecarga de trabalho. **Conclusão:** é importante compreender os processos do trabalho, os fatores causais desencadeadores do adoecimento e sofrimento psíquico, a fim de conscientizar os trabalhadores, empregadores e sociedade na intervenção promocional e preventiva, sob a ótica organizacional, individual e coletiva.
Palavras-chave: Trabalho; Saúde Ocupacional; Transtornos Mentais; Causalidade; Riscos Ocupacionais.

Resumen

Objetivo: analizar las decisiones judiciales dictadas por los Tribunales Regionales del Trabajo del estado de São Paulo, entre 2019 y 2020, con el objetivo de identificar los síntomas relacionados con los trastornos mentales alegados en las acciones laborales, así como asociar dichos síntomas con diagnósticos clínicos , investigando también la relación entre los síntomas presentados y la causalidad reconocida en las sentencias. Identificar síntomas relacionados con trastornos mentales en procesos laborales, asociar datos sociodemográficos y laborales con síntomas y trastornos mentales , así como asociar los trastornos mentales y su causalidad con los síntomas presentados. **Método:** estudio investigativo, descriptivo, retrospectivo, con enfoque cuantitativo y cualitativo del análisis jurisprudencial de los Juzgados Regionales del Trabajo en el período 2019 al 2020, referido a los trastornos mentales laborales. El análisis de los documentos se realizó mediante estadística descriptiva univariada, incluyendo frecuencias para variables nominales y medidas de posición (media y mediana) y dispersión (desviación estándar y valores máximos y mínimos) para variables ordinales. Se aplicó la prueba exacta de Fisher para verificar la asociación entre dos variables categóricas cuando las frecuencias eran inferiores a 5. Se utilizó un nivel de significancia de $\rho < 0,05$. **Resultados:** las principales causas de los trastornos mentales laborales estuvieron relacionadas con prácticas de acoso moral, exigencias excesivas de metas y resultados y sobrecarga de trabajo. **Conclusión:** es importante comprender los procesos de trabajo, los factores causales que desencadenan la enfermedad y el sufrimiento psicológico, con el fin de concientizar a los trabajadores, empleadores y la sociedad sobre la intervención promocional y preventiva, desde una perspectiva organizacional, individual y colectiva.
Palabras clave: Trabajo; Salud Ocupacional; Trastornos Mentales; Causalidad; Riesgos Laborales.

Introduction

Workers' Health (WH) is a field of scientific, theoretical and practical knowledge that is aimed at intersectoral, interdisciplinary and interinstitutional actions of a political, technical, social and human nature. Its purpose is set out in article 6, paragraph 3 of Law 8.080/1990, which provides for the promotion, protection and recovery of health, as well as the organization and operation of

occupational health services. The aim is to ensure the recovery and rehabilitation of the health of workers exposed to risks and problems arising from working conditions[1].

The area of occupational health is crossed by a structural tension between capital and labor, reflecting the dilemma between acting as an instrument for preserving the workforce and valorizing capital or positioning itself as a broad promoter of workers' health. In this context, the actors involved play a central role in the search for integral quality - both organizational and quality of life at work - promoting opportunities for personal growth and development, based on the social value of work and a balanced working environment[2].

WH's main activities include: care and treatment for injured or ill workers, guidance on the use of personal protective equipment (PPE), prevention of accidents and occupational illnesses, training and capacity building with a focus on self-care, and encouraging health promotion practices in organizations. It is therefore a multi-professional field, with a strong role in the inspection and surveillance of work environments[3].

Comprehensive protection of workers' health is a fundamental right, essential to personal fulfillment, the construction of their identity and the full exercise of citizenship, in a sustainable environment that fosters feelings of belonging, recognition and human development[4]. The right to workers' health is linked to the promotion of a culture of prevention and the defense of biopsychosocial integrity, as inseparable dimensions of human dignity[5,6].

Safe and healthy working environments should be the guiding principles of public policies and guidelines for the private sector, aimed at human development integrated with the professional environment. This is in line with the Sustainable Development Goals (SDGs), especially SDG 8, which promotes decent work and economic growth, and SDG 3, which ensures a healthy life and well-being for all[7].

Various factors contribute to suffering in the workplace: work overload, pressure for results, rigidity in complying with rules, staff shortages, centralization of power, lack of autonomy and recognition, among others. These conditions lead workers to develop coping strategies in the face of mental suffering, in a process that impacts not only their professional lives, but also their personal and family lives, recognizing them as biopsychosocial beings[8].

Mental health directly affects the various players in these policies and psychosocial rehabilitation programs often ignore the demands of the job market, seeking reintegration without questioning the structures that generate suffering. The process of workers becoming mentally ill, as well as the social determinants of mental health, reveals the weaknesses of public policies in the face of the capitalist mode of production[9].

The book "Cidadania Perigosa" by Sônia Fleury[10] highlights the labor and social security reforms implemented by the Temer and Bolsonaro governments. The measures showed deliberate political initiatives that weakened social and labor rights, pointing to the precariousness of contractual ties, informality in labor relations, lack of worker protection and increased economic insecurity. These factors have triggered a democratic regression, due to the structural precariousness of work, deregulation of protections and the weakening of public policies, which have increased psychosocial factors, resulting in the intensification of mental health problems and a significant increase in sick leave due to mental disorders in Brazil[11].

In 2023, after 24 years, the Ministry of Health updated the list of work-related illnesses, incorporating 165 new pathologies, including various mental disorders. Ordinance GM/MS Nº. 1,999 of 27 November 2023 recognizes psychosocial factors associated with organizational management,

work tasks and working environment conditions, broadening the scope of work-related mental illnesses[12].

Among the recognized disorders are: burnout syndrome, substance use disorders (sedatives, cannabinoids, cocaine, caffeine), anxiety, recurrent depression, insomnia, attempted suicide, all linked to exhausting working hours, bullying, discrimination and violence in the workplace[13].

In Brazil, 446,881 accidents at work were recorded in 2020, with 1,866 deaths. In 2021, this figure rose to 612,920 notifications and 2,538 deaths - an increase of 36%. On average, one person dies as a result of work every 3h47min in the country[14]. Outsourced workers are among the most vulnerable, due to their greater exposure to risks and the lack of adequate prevention policies[15,16].

In addition to human losses, accidents at work cause financial losses of approximately R$13 billion a year for the state, considering the costs of accident benefits paid by the INSS. Every year, more than 46,000 working days are lost due to sick leave[15].

According to the Occupational Health and Safety Observatory (SMARTLAB), 148,400 sickness benefits were granted for accidents at work in 2022. Between 2012 and 2022, mental and behavioral disorders were the third biggest cause of sick leave, with 2,233,721 benefits for common diseases (ICD 31) and 110,079 for occupational diseases (ICD 91)[17].

Anxiety disorders accounted for 426,822 absences due to common illnesses and 28,308 due to accidents at work. Depressive disorders accounted for 582,579 absences under ICD 31 and 28,308 under ICD 91. Other mental disorders, such as stress and adjustment disorders, accounted for 468,261 cases. In 2022 alone, 2,424 cases of work-related mental disorders were reported[18].

Between 2012 and 2021, Brazil spent R$23.4 billion on accident sickness benefits, R$43.1 billion on disability pensions and R$20.6 billion on death pensions. In 2022, 17.9 million working days were lost, totaling 461.4 million days in the period from 2012 to 2022[14].

The state of São Paulo, according to data from the Brazilian Institute of Geography and Statistics (IBGE), has 21.9% of Brazil's population and is still the leader in terms of number of inhabitants. Considered the richest state in Brazil, it has representatives from all regions of the country and the world, with the greatest presence of industries and the greatest diversity in productive activities and the highest nominal monthly household income per capita, highlighting its economic and social relevance in the national context[19].

The Gross Domestic Product (GDP) of the state of São Paulo is approximately U$ 603.4 billion, making it the third largest economy and the third largest consumer market in Latin America. Among its main potentialities, it stands out as the world's largest producer of orange juice, sugar and ethanol. In addition, its GDP is made up of intense industrial activity (46%), a large trade and services sector (47%) and highly technological farming (7%) which is relatively important in trade[20].

Given this scenario, there is an urgent need for actions that go beyond the treatment of symptoms and tackle the structural causes of psychological distress at work. The persistence of sickening work environments, added to the naturalization of suffering and the invisibility of work-related mental disorders, reveals a gap in institutional care and prevention practices. Despite regulatory and statistical advances, there is still insufficient in-depth understanding of the psychosocial factors that impact on workers' mental health, especially in contexts where precarious working relationships, pressure for performance and the weakening of collective bonds prevail[10].

In this context, this research is based on the following problem: how do the psychosocial factors present in work environments contribute to the psychological suffering of workers, and how have organizations recognized and dealt with this process of mental illness?

Based on this guiding question, we sought to analyze the judicial decisions handed down by the regional labor courts in the state of São Paulo between 2019 and 2020, with the aim of identifying the symptoms related to mental disorders alleged in labor lawsuits, as well as associating these symptoms with clinical diagnoses (ICD), while also investigating the relationship between the symptoms presented and the causality recognized in the judgments.

Methodology

Type of study

This is a retrospective, descriptive, exploratory, investigative study with a mixed approach. The jurisprudential research made it possible to identify sociodemographic and work data, as well as the incidence of occupational mental disorders, which were the subject of judgments by the regional labor courts in the state of São Paulo in 2019 and 2020. The analysis focused on the judgments handed down.

The investigation of the data extracted from the Labor Judiciary of the State of São Paulo, such as the actors who intervene in the application of the rules, as well as the lawsuits selected for analysis of "reparations for psychological damage", makes visible the behavior of the employer, civil society and the State in verifying the inefficiency of preventive and promotional measures.

The Regional Labor Court of the 2nd Region is the labor court that covers the city of São Paulo and the regions of Guarulhos, Osasco, ABC Paulista and Baixada Santista. The Regional Labor Court of the 15th Region, in turn, is the body of the Labor Courts that covers the region of Campinas and the interior of the state of São Paulo. The scientific research was conducted based on a methodology specially designed to answer questions that can be solved by analyzing data extracted from judgments. The particularity of jurisprudential research lies in the fact that the variables are answered through the analysis of procedural data and judgments, guided by a research methodology[21].

Population and sample/Data collevtion period/ Selection criteria

Based on an objective analysis of the facts and data of each decision, we studied the judgments published in 2019 and 2020, which dealt with occupational mental disorders. The judgments were searched for on the *websites of* the regional labor courts of the State of São Paulo in the 2nd Region (https://juris.trt2.jus.br/jurisprudencia/) in the "Case Law System" field, typing in "Free Search" the keywords "mental illness" or "mental disorder" or "psychopathology". Likewise, the procedure for searching for decisions took place in the 15th Region (https://trt15.jus.br/jurisprudencia/consulta-de-jurisprudencia) in the "Jurisprudence Consultation" field.

In the process of selecting the sample, the inclusion criteria were lawsuits based on work-related mental disorders whose causal link had been discussed in court. Lawsuits that did not specifically address occupational mental illness were excluded, as were cases whose discussions centered on issues such as: (i) pre-existing mental disorders; (i) moral or material damage unrelated to mental illness; (iii) arbitrary dismissal unrelated to pathogenic working conditions; (iv) interpersonal conflicts not associated with work organization. These exclusions are justified by the lack of discussion on the causal link between work activity and the onset/aggravation of mental disorders.

The sample selection of labor lawsuits was based on the matters discussed in court about occupational mental disorders, considering the plaintiffs' initial requests in the light of the mental illness process. Through searches using the keywords "mental illness" or "mental disorder" or

"psychopathology", 230 judgments and decisions published in 2019 and 2020 were identified in the Regional Labor Court of the 2nd Region, 122 of which were selected for analysis because they were lawsuits related to the discussion of occupational mental disorders.

In the Regional Labor Court of the 15th Region, 228 decisions were identified with the keywords "mental illness" or "mental disorder" or "psychopathology", 147 of which were the object of analysis in this study, totaling 269 labor lawsuits to be investigated.

Data collection intruments/Data organization and analysis

After selecting the decisions judged by the São Paulo regional labor courts, the data extracted from the labor claims was collected. A *Microsoft Excel* form® was developed to store the data, taking into account the following variables: ICD/mental disorders, symptoms and causes of mental disorders.

The data was analyzed using *SPSS software*® , using univariate descriptive statistics, including frequency distribution for the nominal variables and measures of position (mean and median) and dispersion (standard deviation and maximum and minimum values) for the ordinal variables studied. To investigate the association between sociodemographic and work-related variables and mental symptoms and disorders (ICD), the data was analyzed using Fisher's Exact Test. This test makes it possible to assess the significance ($\rho < 0.05$) of the association between two categorical variables when the expected frequencies are less than 5[22].

To measure the magnitude of the effects of the associations between ICD, symptoms and causes, the Phi coefficient was calculated (φ), which is indicated when analyzing 2x2 tables and dichotomous variables (yes and no). The coefficientφ can vary from 0 to |1|, and the effect sizes can be interpreted as (i) weak = |0.10|; (ii) medium = |0.30| and; (iii) strong = |0.50| [23]. To better visualize the size of the effect of significant associations, the differences between the expected and observed frequencies of the variables analyzed were presented.

Results and discussion

The analysis of court decisions revealed the predominance of factors triggering occupational mental disorders in the state of São Paulo (2019-2020). As shown in the workers' allegations, bullying emerged as the main cause, present in 98 cases (36.4%), followed by excessive demands for targets and results in 61 cases (22.7%), and work overload, appearing in 50 cases (18.6%). In addition, this scenario highlighted insecurity physical/psychological (48 cases), psychological/physical violence (45 cases), interpersonal conflicts (43 cases), accidents at work (37 cases) and psychological pressure (36 cases).

Table 1 summarizes the causal hierarchy, showing that organizational practices, especially those related to people management and work overload, are the core causes of psychological illness in the workplace.

Causes related to occupational mental disorders

Table 1. Distribution of causes alleged by workers related to mental disorders, in São Paulo, 2019-2020

	Causes	**N**
Cause 3	Moral Harassment	98
Cause 2	Excessive demands for targets and results	61
Cause 1	Work overload	50
Cause 9	Physical and/or psychological insecurity	48
Cause 5	Psychological and/or physical violence	45
Cause 11	Interpersonal conflicts	43
Cause 7	Accident at work	37
Cause 10	Psychological pressure	36

Source: Prepared by the authors

Table 1 reflects the multifactorial complexity of occupational mental illness. In a single lawsuit, it was possible to see multiple causes associated with mental disorders, considering that the total sum of occurrences (N = 418) exceeds the total number of cases analyzed (n = 269). This overlap shows that mental disorders, as a rule, are not the result of a single isolated factor, but rather of interactions between organizational practices and unfavourable working conditions.

A Tabela 1 reflete a complexidade multifatorial do adoecimento mental ocupacional. Em uma mesma ação judicial foi possível evidenciar múltiplas causas associadas aos transtornos mentais, considerando que a soma total das ocorrências (N = 418) supera o número total dos casos analisados (n = 269). Essa sobreposição evidencia que os transtornos mentais, em regra, não decorreram de um único fator isolado, mas sim de interações entre as práticas organizacionais e as condições laborais desfavoráveis.

Association between ICD, symptoms and causes

After being described, the associations between the variables in question ICD/mental disorders, symptoms and causes were tested using Fisher's Exact Test, with a significance level of $\rho < 0.05$. As can be seen in Table 2, the results of the associations highlighted should be analyzed in terms of the categorizations detailed below.

Table 2. Associations shown by Fisher's Exact Test between ICD, symptoms and causes, in São Paulo, 2019-2020[4]

p	Sint1	Sint7	Sint10	Cause 1	Cause 3	Cause 5	Cause 6	Cause 7	Cause 9	Cause 10	Cause 11	Cause 12	Cause13
ICDF32	0,045	0,023											
ICDF41										0,020			
ICDF43						0,000		0,003					
ICDF33			0,019										
ICDF20												0,018	
ICDZ56													0,049
Sint1				0,005			0,003					0,001	0,045
Sint2											0,006		
Sint3									0,004		0,040		
Sint5				0,005	0,003			0,007					
Sint13				0,047				0,038					

Source: Prepared by the authors

[4] ICD F32 Depressive episode not otherwise specified; ICD F41 Anxiety disorder not otherwise specified; F43 Post-traumatic stress disorder; ICD F33 Recurrent depressive disorder; F20 Schizophrenia; ICD Z56 Employment-related problems; Symptom 1: Musculoskeletal system; Symptom 2: Respiratory system; Symptom 3: Cardiovascular system; Symptom 5: Neurological system; Symptom13: Reproductive system; Cause 1: Work overload; Cause 3: Moral harassment; Cause 5: Psychological and/or physical violence; Cause 6: Exhaustive working hours; Cause 7: Work accidents; Cause 9: Physical and/or psychological insecurity; Cause 10: Psychological pressure; Cause 11: Interpersonal conflicts; Cause 12: Physical illness; Cause 13: Organizational factors.

The results, represented by the values of $\rho<0.05$ in Table 2, show that between ICD and Symptoms, the significant associations were between ICD F32 (Unspecified Depressive Episode) and Symptoms 1 (Musculoskeletal System) and 7 (Endocrine System) and between ICD F33 (Recurrent Depressive Disorder) and Symptom 10 (Mental Disorder).

With regard to ICD and causes, the significant associations were between ICD F41 (Unspecified Anxiety Disorder) and cause 10 (Psychological Pressure), between ICD F43 (Post-traumatic *stress disorder*) and causes 5 (Psychological and/or physical violence) and 7 (Work accident), between ICD F20 (Schizophrenia) and cause 12 (Physical illness) and between ICD Z56 (Problems related to employment) and cause 13 (Organizational factors).

As for symptoms *versus* causes, the significant associations were between symptom 1 (Musculoskeletal System) and cause 1 (Work overload), cause 6 (Exhaustive working hours), 12 (Physical illness) and 13 (Organizational factors); between symptom 2 (Respiratory System) and cause 11 (Interpersonal conflicts); between symptom 3 (Cardiovascular System) and causes 9 (Physical and/or psychological insecurity) and 11 (Interpersonal conflicts); between symptom 5 (Neurological System) and causes 1 (Work overload), 3 (Bullying) and 7 (Work accident); and between symptom 13 (Reproductive System) and causes 1 (Work overload) and 7 (Work accident). The variables associated with the symptoms, causes and ICD are described in the Tables (attached).

Associations between ICD and symptoms

Fisher's Exact Test showed significant associations between the variables ICD F32 (Depressive Episode) and endocrine symptoms (weight change, appetite disorders) and Musculoskeletal System symptoms (tiredness, physical pain, cramps, adynamia). The coefficient φ measures these associations, showing that the observed frequency of cases with ICD F32 and endocrine (12 cases) or musculoskeletal (19 cases) symptoms was significantly higher than the expected frequency. Table 3 shows that the degree of association between ICD F32 and endocrine symptoms was 13.9% and between ICD F32 and musculoskeletal symptoms was 12.2%.

The variable ICD F33 (Recurrent Depressive Disorder) was associated with symptoms of mental disorders (discouragement, demotivation, nightmares, apathy, psychological pressure, depressive and anxious symptoms, aggressiveness, mood disorder, hallucinations, anguish, slow thinking, forgetfulness, transient dementia symptoms, sadness, bruxism, sweating, crying, embarrassment, dissatisfaction, worry, panic, irritation, nervousness, suicidal thoughts, stress, phobia, emotional disorder, disorientation, despair, insecurity, discomfort, drunkenness, isolation, fear, outbreaks, delusions, crises), occurring in 39 cases, with a degree of association of 13.8%, as shown in Table 3.

Table 3. Associations shown by Fisher's Exact Test between ICD and symptoms in São Paulo, 2019-2020

ICD	Symptom	N observed	N expected	Coefficient φ[5]
F 32: Unspecified Depressive Episode	Symptom 7: Endocrine System	12	7,1	0,139
F 32: Unspecified Depressive Episode	Symptom 1: Musculoskeletal System	19	13,4	0,122
F 33: Psychic mood condition	Symptom 10: Mental disorder	39	35,1	0,138

Source: Prepared by the authors

Association between ICD and causes

Table 4 shows that the variable ICD F20 (Schizophrenia) was associated with the cause of physical illness in three cases, with an association size of 19.5%. The variable ICD F41 (Unspecified Anxiety Disorder) was associated with the cause of psychological pressure, with an association size of 14.1%.

The variable ICD F43 (Post-traumatic *stress disorder*) was associated with two causes: psychological and/or physical violence (φ = 37.0%) and an accident at work (φ = 18.4%), with 25 and 15 cases, respectively. With regard to the variable ICD Z56 (Problems related to employment), the association with the cause related to organizational factors was significant, with a degree of association of 16.8%.

Table 4. Associations shown by Fisher's Exact Test between ICD and causes, in São Paulo, 2019-2020

ICD	Cause	N observed	Expected N	Coefficient φ[6]
F 20: Schizophrenia	Cause 12: Physical illness	3	0,6	0,195
F41: Unspecified Anxiety Disorder	Cause 10: Psychological pressure	16	10,2	0,141
F 43: Post-traumatic *stress disorder*	Cause 5: Psychological and/or physical violence	25	9,7	0,370
F 43: Post-traumatic *stress disorder*	Cause 7: Accident at work	15	8	0,184
Z 56: Employment-related problems	Cause 13: Organizational factors	2	0,4	0,168

Source: Prepared by the authors

[5] Effect size: measures the size of the associations between variables.

[6] Effect size: measures the size of the associations between variables.

Association between symptoms and causes

Table 5 (attached) shows that Musculoskeletal System symptoms (tiredness, physical pain, cramps, adynamia) were associated with the causes of physical illness (23.8%), exhausting working hours (18.2%), work overload (17.0%) and organizational factors (12.9%).

The Respiratory System symptom (shortness of breath) was associated with interpersonal conflicts in the workplace, with an association of 18.4%.

Cardiovascular system symptoms (tachycardia, pressure changes, palpitations, chest pain, paleness) were associated with physical and/or psychological insecurity and interpersonal conflicts by 17.5% and 12.5 respectively.

Neurological symptoms (insomnia, headache, seizures, paralysis, dizziness, malaise, fainting, tremor, numbness, nightmares, oversleeping) were associated with excessive demands for targets and results (18.3%) and work overload (17.0%).

Reproductive System symptoms (sexual impotence, frustration, low self-esteem, impotence, humiliation, feeling of inferiority, compulsion) were associated with work overload to a degree of 12.1%.

Table 5. Associations shown by Fisher's Exact Test between Symptoms and Causes, in São Paulo, 2019-2020

Symptom	Causes	N observed	N expected	Coefficient φ[7]
Symptom 1: Musculoskeletal system	Cause 12: Physical illness	8	2,5	0,238
Symptom 1: Musculoskeletal system	Cause 6: Exhaustive working hours	12	5,9	0,182
Symptom 1: Musculoskeletal system	Cause 1: Work overload	15	8,4	0,170
Symptom 1: Musculoskeletal system	Cause 13: Organizational factors	6	2,8	0,129
Symptom 2: Respiratory system	Cause 11: Interpersonal conflicts	9	3,8	0,184
Symptom 3: Cardiovascular System	Cause 9: Physical and/or psychological insecurity	15	8,2	0,175
Symptom 3: Cardiovascular system	Cause 11: Interpersonal conflicts	12	7,4	0,125
Symptom 5: Neurological system	Cause 2: Excessive demands for targets and results	61	49,2	0,183
Symptom 5: Neurological system	Cause 1: Work overload	34	25,1	0,170
Symptom 13: Reproductive System	Cause 1: Work overload	11	6,7	0,121

Source: Prepared by the authors

It should be noted that in corporate environments, anxiety disorders were associated with causes related to psychological pressure, often stemming from work overload and demands to meet targets

[7] Effect size: measures the size of the associations between variables.

and results. With regard to post-traumatic stress, two possible causes of mental illness were associated, namely psychological and/or physical violence and accidents at work. In some professional categories, such as the health, education, security and financial sectors, psychological harassment and physical violence were prevalent, due to the risk of death and risks to physical integrity, with exposure to robberies, threats and kidnappings, the events of which cause intense suffering and insecurity outside and inside the workplace [24,25,26].

With regard to the prevalent causes shown in the study, it is suggested that psychological violence practices, such as bullying and abusive acts stemming from interpersonal conflicts, were the cause of this result. The factors that triggered symptoms in the cardiovascular system (tachycardia, pressure changes, palpitations, chest pain, paleness) were associated with physical and/or psychological insecurity and interpersonal conflicts, corroborating a cohort study carried out in European countries which showed that practices of moral and/or psychological violence, such as bullying, were associated with a considerable increase in cardiovascular diseases and exposure to any type of conflict or violence (physical or psychological) in the workplace[27].

Some studies from different countries in Europe and Japan show that the mental health of workers is associated with various factors, depending on the employment model or even the activities to which they are subjected[28,29,30]. According to indicators from the European Agency for Safety and Health at Work[30] European Union countries have adopted measures to control psychosocial risks triggered by work-related stress. Both the causes and management of work-related stress involve the way work is constituted, managed and organized, with interventions based on scientific literature related to work-related stress, which recognizes psychosocial risks arising from stressors intrinsic to work. These factors are: high workload, lack of work-life balance, lack of involvement in decisions that affect the worker, lack of autonomy and influence, lack of role clarity, poor communication in the workplace and lack of support from managers. Other factors include bullying, sexual harassment and intimidation, and working with the public, including the risk of violence and insecurity at work[30].

In addition, studies carried out in the European countries of Denmark, Sweden and Finland show that there are adverse psychosocial factors in the workplace that can negatively affect workers' cardiovascular systems. Collective follow-up studies in workplaces have associated psychosocial factors, including high work demands, low job control, an imbalance of effort and rewards, long working hours, bullying and violence at work, poor organization and job insecurity, particularly when prolonged, with an increased risk of cardiovascular disease[27].

A cohort study carried out in Denmark and Sweden with 79,201 people found that bullying practices or any psychological violence at work were associated with a 1.6 times greater risk of cardiovascular disease. Being exposed to any type of violence (physical or psychological) in the workplace was associated with a 1.3-fold increase in cardiovascular disease. According to indicators from the *Occupational Safety and Health Administration* (OSHA), half of European workers consider stress to be a common situation in the workplace, which contributes to around 50% of lost working days. Like many other mental health issues, stress is often misunderstood and stigmatized[31,32].

In addition, the results show that bullying (36.4%), excessive target-setting (22.7%) and work overload (18.6%) are the main catalysts of occupational mental disorders in São Paulo. Cavalcante [33]analyzed several labor decisions in five Brazilian states and found that 52% of cases of mental illness were linked to bullying and psychological pressure for results and productivity, corroborating the centrality of these psychosocial factors[34].

Moronte & Albuquerque[24] Moronte & Albuquerque[24], in a review of bank employees' illnesses, pointed out that abusive targets and intense hierarchical control accounted for 68% of absences due to depression and anxiety in the Brazilian financial sector. The predominance of physical/psychological insecurity (17.8%) reflects the precariousness of work in Brazil, amplified after the labor reforms of 2017. According to Fleury[10] protective deregulation has intensified vulnerabilities, especially in outsourced sectors - a reality confirmed by the 13.8% of cases linked to accidents at work in the São Paulo sample.

The correlations between ICD, symptoms and causes (Tables 2-5) reveal patterns consistent with Brazilian research. Depressive disorders and musculoskeletal symptoms (φ =0.122) corroborate some studies in other states such as the Northeast[26] whose health professionals in the Northeast reported low back pain and chronic fatigue, attributed to work overload.

In addition, post-traumatic stress (ICD F43) associated with violence at work showed a strong coefficient (φ =0.370) in studies on public security. In a study carried out in the states of São Paulo and Rio de Janeiro, it was found that military police officers exposed to risky activities such as robberies were 5.2 times more likely to develop mental disorders[35].

The link between interpersonal conflicts and cardiovascular symptoms (φ =0.125) is particularly relevant in the Brazilian context. Paula et al[25] identified that *call center* workers in São Paulo and Minas Gerais had tachycardia and hypertension in 89% of cases when subjected to environments with psychological violence and harassment.

Conclusion

Analyzing the factors related to mental illness at work is fundamental for constructing and formulating measures, as well as providing elements for drawing up policies in the public and private sectors by investigating possible solutions applicable to the management of occupational epidemiology related to mental disorders. This analysis aims to establish preventive and promotional practices, taking into account the organizational factors at work.

The results showed that bullying, excessive target-setting and work overload are potential factors in making people ill, and are capable of triggering occupational mental disorders. The statistically significant association between adverse working conditions and depressive disorders (ICD F32-F33), anxiety disorders (ICD F41) and post-traumatic stress disorder (ICD F43) reinforces the causal link between work organization and mental illness, added to the correlation between cardiovascular, musculoskeletal and neurological symptoms and practices of psychological violence, interpersonal conflicts and exhausting working hours, which transcend the merely psychological sphere, resulting in the somatization of symptoms.

Facing the new challenges of the world of work requires intersectoral coordination between public authorities, the judiciary, the Labor Prosecutor's Office, trade unions, employers and health services. The promotion of occupational mental health must go beyond legal compliance and it must be strategic to build a new ethical, preventive and promotional organizational structure, based on respect for human dignity, whose evidence-based preventive practices can minimize occupational mental illness.

Finally, work is a central element in the construction of individuals' health and identity and its influence, which is reflected beyond the working day, reaching the worker's personal, social and family

life, and can have an impact, in addition to mitigating the risks of illness, on staff retention, increased productivity and results, as well as greater motivation for teamwork.

Conflict of interest
The authors declare that there is no conflict of interest.

Authors' contribution
Rodrigues TMLC contributed to the conception/design of the article, data analysis and interpretation, writing of the article, critical revision of its content and approval of the final version. Dalri RCMB contributed to the conception/design of the article, critical revision of its content and approval of the final version. Manosso TWS contributed to critically reviewing the content and approving the final version.

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