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# Predictors of common mental disorders among Brazilian elementary school teachers: A cross-sectional exploratory study

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**Abstract:** Intensification of the work of elementary school teachers over the years has influenced teachers' health, mainly mental health outcomes. The aim of the present study was to analyze the predictors of common mental disorders among Brazilian elementary school teachers. The sample involved 530 elementary school teachers from 63 schools in Londrina, Paraná, Brazil. Common mental disorders were assessed through a self-report questionnaire. The independent variables were related to work, lifestyle, and health disorders. Poisson regression was used to estimate prevalence ratios. The prevalence of common mental disorders in the overall sample was 31.6%. In the multivariate analysis, the work predictors associated with higher common mental disorder prevalence were inadequate infrastructure of schools, experience of violence, and low job support. With regard to health characteristics, teachers with musculoskeletal symptoms, problems related to dust, emotional exhaustion, low professional achievements, and one or more chronic diseases presented a higher prevalence of common mental disorders. The magnitude of associations varied from  $PR = 1.27$  to  $2.52$ . The high prevalence of common mental disorders suggests a public health problem among these professionals. Educational systems should provide adequate work conditions and monitor health-related characteristics to prevent common mental disorders among Brazilian elementary school teachers.

**Keywords:** chronic disease; lifestyle; mental health; school health promotion; work

## 1. Introduction

Common mental disorders are psychosomatic symptoms of depressive and anxiety disorders, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, sadness, disturbed sleep or appetite, feelings of tiredness, poor concentration, anxiety, and fear (WHO, 2017). These disorders are highly prevalent among the population and are associated with comorbidities such as chronic diseases, disability, and mortality. Furthermore, people that present common mental disorders are also exposed to marginalization due to social isolation, discrimination, poverty, and poor life conditions (WHO, 2013). In the context of low- and middle-income countries, mental health disorders are also included in the five main multimorbidity patterns, conditions with similar etiology that interact, potentially worsening functional impairments (Berner et al., 2025). This public health issue is concerning when analyzing developing countries, mainly due to the rapid increase in chronic and other diseases, including mental disorders; the emergence of multimorbidity; the presence of health systems that are not designed to cope with these emerging health challenges; and social disparities regarding health risk exposure and access to health services (Basto-Abreu et al., 2022).

Although common mental disorders have a multifactorial etiology, work is an

important aspect in the emergence of this outcome (Niedhammer et al., 2022), and teachers are among the professionals with the highest prevalence of common mental disorders (Coledam et al., 2022). Teachers have a variety of responsibilities, such as preparing and conducting lessons, applying and correcting exams, assessing students' work performed during classes or at home, preparing students for institutional tests, attending meetings, participating in school pedagogical planning, constantly remaining updated, being involved in extracurricular activities, filling out students' institutional forms, and performing extra work (Erick and Smith, 2013). As a consequence of the intensification of work (Creagh et al., 2023), there is a high prevalence of common mental disorders among Brazilian teachers, varying from 17 to 75% (Coledam et al., 2022). The prevalence among teachers from other countries is also high independently of the psychological disorder analyzed (Agyapong et al., 2022).

Due to the high prevalence, studies have reported that the variables associated with common mental disorders among teachers of different grades are low social and coworker support (Borreli et al., 2014; Carlotto and Câmara, 2015; Mahan et al., 2010; Nakada et al., 2016), job dissatisfaction (Kidger et al., 2016), overload and low self-efficacy (Carlotto and Câmara, 2015), violence and poor work conditions (Gasparini and Assunção, 2006; McMahan et al., 2024), work demands and requirements (Borreli et al., 2014; Nakada et al., 2016), and lifestyle variables (Corbett et al., 2024). Despite the large amount of epidemiological studies focusing on the mental health of teachers, there is a scarcity of epidemiological studies investigating the work-related, lifestyle, and health variables associated with common mental disorders, mainly in developing countries, information that has already been described in developed countries (Corbett et al., 2024).

Identification of variables associated with common mental disorders could improve knowledge about the characteristics that negatively impact the mental health of elementary school teachers and guide future programs aimed at monitoring and preventing this outcome. This is relevant since this outcome leads to less productivity, absenteeism (Kidger et al., 2016), sick leave (Coledam and Silva, 2020), higher health service use (Coledam et al., 2023), and poor quality of life (Zamri et al., 2022). Furthermore, teachers experience higher levels of mental health disorders compared both to other professions and the general population (Coledam et al., 2022; Titheradge et al., 2019). In addition to teacher health, common mental disorders impact work quality, such as providing poor classroom instructional experiences (McLean and Connor, 2018), increasing the risk of poorer well-being and psychological distress of students (Harding et al., 2019), and indirectly affecting the academic achievement of students (Madigan and Kim, 2021). During elementary education, students have less autonomy due to their young age, and for this reason, children need higher support on academic and other daily activities during the school routine. This can increase the physical and psychological demands of teaching work, and consequently, the presence of common mental disorders in these grades can negatively influence students' development at the early stage of formal education.

Thus, the aim of the present study was to analyze the prevalence and predictors of common mental disorders among elementary school teachers from Brazil.

## **2. Materials and methods**

### **2.1. Study sample and design**

This is a cross-sectional study conducted on the Municipal Education System in Londrina, Paraná, Brazil, from July to December 2014 (Coledam and Silva, 2020). The population consists of 2500 teachers distributed in 74 schools in five urban regions of the city. The sample was composed of elementary school teachers that met the following inclusion criteria: a-) having been a teacher in municipal schools for at least 1 year and working in an elementary school; b-) not being retired or on medical leave during data collection; c-) not having been work relocated (i.e., a teacher working as a secretary or in administration). Sample size was estimated using the following parameters:  $N = 2.500$ , a 50% outcome prevalence, 5% sample error, confidence interval of 95%, design effect of 1.5, and sample loss of 15%, using the software OpenEpi 3.01. The prevalence of 50% was used as a conservative value considering the upper values found in studies involving teachers (Coledam et al., 2022). Considering the sample size calculations, the minimum number of participants required was 500, which allows the identification of any prevalence value of common mental disorders in the present study.

### **2.2. Procedures**

After approval by the Ethics Committee for Research Involving Human Beings of the State University of Londrina, process 118/2014, the researchers contacted all schools and invited the principals to participate in the study. Only 63 schools agreed to participate, and the schools were visited, teachers invited, and the purpose and procedures of the study presented to them. An informed consent was signed, and data collection was scheduled. All procedures were carried out at the school where teachers were working by the coordinator of the project, and data were obtained through an anonymous self-report questionnaire (Coledam et al., 2023). No information that could identify the participant's identity was collected. The participant inserted the questionnaire into an opaque box that was only opened at the end of data collection for data analysis.

### **2.3. Variables and instruments**

#### **2.3.1. Dependent variable**

The dependent variable was the presence of common mental disorders and was assessed by the Brazilian version of a Self-Report Questionnaire (Santos et al., 2009). The questionnaire contains 20 questions related to psychosomatic symptoms in the previous 30 days, distributed into four dimensions: depressive-anxious mood, decrease in vital energy, somatic symptoms, and depressive thoughts. For each question, the participant has two answer options, "yes" or "no". The cutoff adopted was  $\geq 8$  positive answers.

#### **2.3.2. Independent variables**

Independent variables were length of employment, number of schools where worked, work shifts, school infrastructure, violence at school, extra work, low job support, overweight, physical activity, strength and flexibility activities,

musculoskeletal symptoms, binge drinking, tobacco use, voice disorders, problems related to chalk powder, work stress, burnout, and chronic disease and disability due to musculoskeletal disorders.

Work stress and low job support were assessed by the Brazilian version of the questionnaire Job Stress Scale (Alves et al., 2004). The Brazilian version presented appropriate validity and reproducibility for demand, control, and social support dimensions. Physical activity was estimated by the long form of the International Physical Activity Questionnaire (Matsudo et al., 2001). The questionnaire assesses physical activity volume during work, domestic, transport, and leisure time in low, moderate, and vigorous intensities. Only leisure-time physical activity was considered for this study, and the cutoff adopted was 150 min/week of moderate to vigorous intensity and equal to or more than two times a week of strength and stretching exercises. Overweight was estimated by the body mass index, calculated through self-report measures of weight and height (Chia et al., 2023). Musculoskeletal symptoms in the past 30 days (i.e., ache, pain, discomfort, or numbness) and disability due to symptoms were estimated by the Standardized Nordic Questionnaire (Barros and Alexandre, 2003). The Brazilian version of the Maslach Burnout Inventory was used to assess burnout (Carlotto and Câmara, 2004). The Brazilian version presented acceptable validity, and the factorial analysis confirmed the theoretical model of three dimensions of burnout (emotional exhaustion, low professional achievement, and depersonalization).

Length of employment, number of schools where teachers currently worked, extra work, and work shifts were analyzed using open questions (Coledam and Silva, 2020). School infrastructure was assessed through the question “Do you consider the infrastructure of your school to be appropriate?” (A list of items that should be considered was displayed: noise, temperature, lighting, cleaning, ventilation, size, and furniture) with answer options “yes”, “no”, and “partially” (Coledam et al., 2019). Physical violence was reported by the question, “Have you ever suffered physical violence at the current work?” with the response options “yes” and “no”. Alcohol consumption: “Usually, how many times in a normal month do you consume  $\geq 5$  doses of the drinks below (men) or  $\geq 4$  doses (women) in less than 2 h? (Doses of beer, wine, and distilled drinks in milliliters were displayed); Tobacco use: “Have you smoked at least 100 cigarettes in your entire life?” “Yes” and “no”; “How often during a typical week do you smoke?” “None,” “1–2 days”, “3–4 days”, “5–6 days”, and “daily”; Voice disorders: “Do you have a frequent voice-related problem?” “Yes” and “no”; Problems related to chalk powder: “Do you have a frequent problem with dust or chalk powder?” “Yes” and “no” for each problem (nasal stuffiness, eye irritation, rhinitis, coryza, cough, and skin problems). Strength exercise: “How many times a week do you perform muscle-strengthening exercises?” and the same question was asked for flexibility exercises. The question used to estimate chronic diseases was “Has a doctor or psychologist reported that you have any of the following chronic diseases?” with answer options “yes” and “no” for a list of categories of chronic diseases (cardiometabolic, orthopedic, respiratory, gastrointestinal, nervous system, and cancer) (Coledam et al., 2019).

### 2.3.3. Covariates

In addition to the independent variables, the covariates sex, age, skin color and income were assessed. Income was estimated by the questionnaire proposed by Brazilian Market Research Association (2012), which classify the population according to socioeconomic strata using household education, public utility service use and housing characteristics such as rooms, appliances, maid and automobiles. The categorization of each variable used in the study is presented in **Table 1**.

**Table 1.** Cut-off points used in the present study.

Variable	Categorization
Presence of common mental disorders	Positive answer in $\geq 8$ positive answers on SRQ.
Length of employment	1–9 years/10–19 years/ $\geq 20$ years.
Number of schools	One/two or more.
Number of work shifts	One shift/two shifts/three shifts.
School infrastructure	Adequate/Inadequate.
Violence at school	Report of physical violence episode during work.
Extra-work	$< 10$ h/week/ $\geq 10$ h/week.
Low job support	$<$ Percentile 50 on Job Stress Scale.
Overweight	Body mass index $> 24.9$ kg/m <sup>2</sup>
Physical activity	150 min/week on moderate to vigorous intensity, and equal to or more than two times a week of strength and stretching exercises on IPAQ.
Musculoskeletal symptoms	Report symptoms in one, two, or three or more body regions on the Nordic musculoskeletal questionnaire.
Binge drinking	Any consumption of $\geq 5$ doses (men) or $\geq 4$ doses (women) in less than 2 h during a normal month.
Tobacco use	Any tobacco used during a typical week.
Voice disorders	Any report of a voice-related problem.
Problems related to chalk powder	Any respiratory symptom related to chalk powder.
High stress	$>$ Percentile 50 for demand and $<$ Percentile 50 for control on the Job Stress Scale.
Emotional exhaustion	$>$ percentile 75 on MBI.
Depersonalization	$>$ percentile 75 on MBI.
Low professional achievements	$<$ percentile 25 on MBI.
Chronic disease	One or more chronic diseases diagnosed.
Disability	Report of a disability due to musculoskeletal symptoms in any body region on the Nordic Musculoskeletal Questionnaire.

Note: SRQ—Self Report Questionnaire; IPAQ—International Physical Activity Questionnaire; MBI—Maslach Burnout Inventory.

### 2.4. Instrument quality

The self-report questionnaire applied in this study was based mainly on previously validated instruments described in section 2.3. However, some variables were assessed through questions constructed to achieve the aims of the present study

(Coledam et al., 2019). The steps conducted to ensure the information quality were proposal of the questions, assessment of the content validity by a panel of experts, and modification of the questions according to suggestions from the judges. Furthermore, a pilot study with 50 elementary teachers was conducted to assess comprehension and the reproducibility of the questions within a seven-day test-retest. The cut-off for the inclusion of variables in this study was a one-way intraclass coefficient  $> 0.5$  for continuous or discrete variables and a kappa index  $> 0.40$  for categorical variables.

## 2.5. Statistical analyses

The descriptive statistics were performed using absolute and relative frequency. The Kappa index and intraclass coefficient correlation were used to evaluate the reproducibility of the questions proposed in this study. The association between the independent variables and common mental disorders was tested by the chi-squared test for bivariate analysis and Poisson regression to estimate Prevalence Ratio (PR) and 95% confidence intervals (CI 95%) in the multivariate analysis. Variables that presented  $P < 0.20$  in the bivariate analysis were inserted in the final model into three hierarchical levels: Level 1 (work-related characteristics), Level 2 (health-related characteristics), and Level 3 (chronic diseases and disability), all adjusted for age, sex, skin color, and income covariates. The analysis considered strata, weight, and primary sample units using the package “survey” from the software STATA 13.0, and the variables were considered significant when  $P \leq 0.05$  in the multivariate model.

## 3. Results

Due to incomplete information on the questionnaires, 65 teachers were excluded from the analysis, and the final sample was composed of 530 teachers. The missing values did not affect the representativeness of the sample according to regions of the city analyzed.

The sample was composed of a higher proportion of female teachers (95.1%), while age ranged from 22 to 66 years with no significant difference in proportion, and the same occurred for length of employment: 0 to 9 years (31.7%), 10–19 years (34.1%), and  $\geq 20$  years (34.3%). A higher proportion of teachers were from medium (44.5%) to high (40.4%) income. The prevalence of health-related characteristics among the participants of the study were overweight (43.7%), physical activity recommendation achievement (8.6%), musculoskeletal symptoms in any region of the body (83.3%), binge drinking (32.9%), current smoker (3.6%), voice disorders (35.4%), problems related to dust (38.4%), high stress (28.8%), emotional exhaustion (26.8%), depersonalization (28.8%), low professional achievement (27.1%), a chronic disease (79.0%), and disability due to musculoskeletal disorders (35.8%). The prevalence of common mental disorders among the sample studied was 31.6%.

The bivariate and multivariate associations between independent variables and common mental disorders according to level of analysis are described in **Tables 2–4**. Teachers who reported inadequate infrastructure of schools (PR = 1.27), violence experience (PR = 1.38), and low job support (PR = 1.58) presented a higher prevalence of common mental disorders in multivariate analysis (**Table 2**). Only the variable extra work lost statistical significance before adjustment for all variables of Level 1.

**Table 2.** Association between work-related characteristics (Level 1) and common mental disorders among elementary school teachers.

Variables	%	Crude PR (CI 95%)	Adjusted PR (CI 95%)
Length of Employment	$P = 0.558$		
1–9 years	28.5	Reference	-
10–19 years	31.3	1.10 (0.77–1.55)	-
≥ 20 years	34.0	1.17 (0.73–1.89)	-
Number of schools	$P = 0.629$		
One	32.4	Reference	-
Two or more	30.4	0.91 (0.66–1.26)	-
Number of work shifts	$P = 0.693$		
One shift	29.6	Reference	-
Two shifts	32.5	1.13 (0.80–1.60)	-
Three shifts	35.9	1.21 (0.74–1.96)	-
School infrastructure	$P = 0.004$		
Adequate	28.6	Reference	Reference
Inadequate	43.1	1.50 (1.15–1.96)	1.27 (1.02–1.69)
Violence at school	$P = 0.007$		
No	28.2	Reference	Reference
Yes	43.3	1.48 (1.14–1.92)	1.38 (1.06–1.79)
Extra-work	$P = 0.033$		
<10 h/week	28.9	Reference	Reference
≥10 h/week	39.1	1.35 (1.03–1.77)	1.17 (0.89–1.54)
Low job support	$P < 0.001$		
No	24.3	Reference	Reference
Yes	41.8	1.72 (1.33–2.22)	1.58 (1.21–2.07)

Note: PR (CI95%)—Prevalence Ratio (confidence interval of 95%); %—relative frequency; Crude—Bivariate association; Adjusted—Multivariate analysis adjusted for all variables of the model plus age, sex, skin color, and income.

The second-level analysis included lifestyle and health-related characteristics and was described in **Table 3**. Musculoskeletal symptoms (PR = 2.13 to 2.52), problems related to chalk powder (PR = 1.65 to 1.72), emotional exhaustion (PR = 1.94), and low professional achievements (PR = 1.73) were variables positively associated with common mental disorders in multivariate analysis, all  $P < 0.05$ . Tobacco use, voice disorders, and high stress present significant associations in bivariate analysis but lose significance when the final model is adjusted for the variables of Level 1 and 2.

Chronic diseases and disability due to musculoskeletal disorders were included in the third hierarchical level (**Table 4**). In the final model, only the presence of diagnosed chronic disease was associated with a higher likelihood of presenting common mental disorders among teachers (PR = 2.06),  $P < 0.05$ .

**Table 3.** Association between lifestyle and health-related characteristics (Level 2) and common mental disorders among elementary school teachers.

Variables	%	Crude PR (CI 95%)	Adjusted PR (CI 95%)
Overweight	<i>P</i> = 0.377		
No	30.0	Reference	-
Yes	33.6	1.12 (0.86–1.44)	-
Physical Activity	<i>P</i> = 0.097		
No	32.6	Reference	Reference
Yes	20.5	0.62 (0.34–1.14)	0.75 (0.44–1.27)
Musculoskeletal symptoms	<i>P</i> < 0.001		
None	10.6	Reference	Reference
One region of body	27.7	2.61 (1.29–5.25)	2.13 (1.11–4.09)
Two regions of body	29.3	2.76 (1.41–5.42)	2.18 (1.01–4.11)
Three or more regions of body	43.9	4.14 (2.19–7.85)	2.52 (1.39 – 4.57)
Binge drinking	<i>P</i> = 0.397		
No	30.8	Reference	-
Yes	34.6	1.12 (0.85–1.47)	-
Tobacco use	<i>P</i> = 0.023		
Never smoke	30.1	Reference	Reference
Not currently	36.2	1.20 (0.80–1.80)	1.11 (0.79–1.55)
Currently	55.6	1.84 (1.19–2.86)	1.52 (0.92–2.50)
Voice disorders	<i>P</i> = 0.001		
No	26.3	Reference	Reference
Yes	40.8	1.55 (1.20–1.99)	1.10 (0.86–1.42)
Problems related to chalk powder	<i>P</i> < 0.001		
No	15.3	Reference	Reference
One	31.8	2.07 (1.33–3.24)	1.65 (1.04 – 2.60)
Two or more	43.4	2.83 (1.87–4.30)	1.72 (1.09 – 2.69)
High stress	<i>P</i> < 0.001		
No	37.5	Reference	Reference
Yes	17.0	0.45 (0.30–0.66)	0.71 (0.48–1.04)
Emotional Exhaustion	<i>P</i> < 0.001		
No	20.7	Reference	Reference
Yes	60.3	2.91 (2.28–3.70)	1.94 (1.47–2.56)
Depersonalization	<i>P</i> = 0.071		
No	29.2	Reference	Reference
Yes	37.4	1.28 (0.98–1.66)	0.89 (0.69–1.15)
Low Professional achievements	<i>P</i> < 0.001		
No	24.3	Reference	Reference
Yes	50.7	2.09 (1.63–2.66)	1.73 (1.35–2.22)

Note: PR (CI95%)—Prevalence Ratio (confidence interval of 95%); %—relative frequency; Crude—Bivariate association; Adjusted—Multivariate analysis adjusted for all variables of the model, work-related characteristics (Level 1) plus age, sex, skin color, and income.

**Table 4.** Association between chronic diseases and disability (Level 3) with common mental disorders among elementary school teachers.

Variables	%	Crude PR (CI95%)	Adjusted PR (CI95%)
Chronic disease diagnosed	$P < 0.001$		
None	13.1	Reference	Reference
One or more	36.5	2.78 (1.61–4.82)	2.06 (1.13–3.80)
Disability	$P = 0.001$		
No	26.5	Reference	Reference
Yes	40.9	1.54 (1.19–1.98)	1.24 (0.97–1.60)

Note: PR (CI95%)—Prevalence Ratio (confidence interval of 95%); %—relative frequency; Crude—Bivariate association; Adjusted—Multivariate analysis adjusted for all variables of the model, work-related characteristics (Level 1), lifestyle and health-related characteristics (Level 2), plus age, sex, skin color, and income.

#### 4. Discussion

The present study described a high prevalence of common mental disorders and that work-related and health variables are important predictors of this outcome among Brazilian elementary school teachers. In a recent meta-analysis (Coledam et al., 2022), the pooled prevalence of common mental disorders among Brazilian teachers was 40% (CI 95% 0.32 to 0.48), while in the present study the prevalence was slightly lower (31.6%). This figure can be considered a high prevalence, meaning that the monitoring, prevention, and treatment of this outcome are priorities among elementary school teachers. Some aspects could explain the differences in prevalence, such as the instruments adopted to assess common mental disorders and work and school environments, since the studies were conducted in regions with heterogeneous characteristics.

It was found that inadequate infrastructure of schools, experience of violence, and low job support increase the prevalence of common mental disorders in the sample studied. These results are in line with previous findings that demonstrated a higher risk of common mental disorders among teachers exposed to violence (Gasparini et al., 2006; McMahan et al., 2024) and those with a poor school infrastructure (Gasparini et al., 2006). In addition, this study corroborates a study that demonstrates higher scores of anxiety and depression in those with less coworker support (Mahan et al., 2010). Some previous results also demonstrated a higher likelihood of common mental disorders in those with low social support (Borrelli et al., 2014; Carlotto and Câmara, 2015; Mahan et al., 2010); however, the present study analyzed low job support, referring specifically to the relations between employees of the institution. The influence of work environment among teachers should be interpreted cautiously, since the associations can be dependent on the outcome analyzed. For example, adequate perceived climate and peer group interaction are associated with better teaching for creativity, while supervisory relationships presented no significant effect (Ma and Yang, 2024).

Another variable that is related to work conditions and was positively associated with common mental disorders was the presence of health problems related to dust or chalk powder. It is known that classroom conditions are associated with respiratory symptoms (Claudio et al., 2016), and the present study complements previous

information since it was observed that problems related to dust or chalk powder also result in common mental disorders. An important aspect to be cited is that there is a high number of teachers at risk of developing common mental disorders due to poor work conditions, since the prevalence of negative perception of work environment was high (Pereira et al., 2014). These results reinforce the need for improvement in teachers' work conditions to prevent or decrease the prevalence of common mental disorders.

Musculoskeletal symptoms are associated with the mental health of teachers and occur independently of the body region (Coledam et al., 2019). For this reason, the hypothesis of higher common mental disorders in those who present clustering of body regions affected by musculoskeletal symptoms was analyzed. Curiously, in the multivariate analysis, the likelihood of common mental disorders was similar across the clustering categories, suggesting that musculoskeletal symptoms should be prevented independently of whether they occur singly or clustered. Another aspect to be considered is that musculoskeletal symptoms and common mental disorders have a causative effect on each other (Sun et al., 2024), and this interdependence implies monitoring of both variables among teachers.

Burnout syndrome is defined as a psychological syndrome that results in emotional exhaustion, depersonalization, and reduced personal accomplishment and is more likely to occur among individuals who work with other people (Maslach, 1996). In the present study, burnout (low professional achievement and emotional exhaustion dimensions) was associated with common mental disorders, which can be explained by the consequences of this syndrome. Burnout leads to several negative effects on work and also on physical and mental health (increased irritability, depression, anxiety, fatigue, and insomnia; decreased self-esteem; and deteriorating social and family interactions) (Maslach, 1996). Some burnout symptoms are similar to those presented in common mental disorders (WHO, 2017); however, burnout emerges from work (Maslach, 1996). It can explain the associations that were found between burnout and common mental disorders in the present study. Evidence that reinforces this relationship emerges from a recent review involving 3812 teachers demonstrating the detrimental effect of burnout on both job satisfaction and emotional regulation (Wang et al., 2024). The associations described in the present study are alarming since low professional achievement is commonly reported among Brazilian teachers (Ribeiro et al., 2022), which can be observed through the negative perception about work (Pereira et al., 2014), while emotional exhaustion is associated with higher workload (Van Droogenbroeck et al., 2014), an aspect that has increased over time in Brazil.

Chronic disease was the variable that best predicted common mental disorders. The relationship between these variables is complex since mental health can lead to chronic diseases via neurological, endocrinological, and metabolic mechanisms, and people affected by chronic diseases have a higher likelihood of developing mental disorders due to the severity of clinical conditions and disability imposed by disease (Hare et al., 2014). In the present study it was not possible to infer the direction of the association; however, the positive association found reveals the need to prevent both variables among teachers. Information that emphasizes this statement is that the prevalence of any chronic disease diagnosed in the sample included in this study was

78.7%.

In addition to the mentioned variables, overweight, physical activity, binge drinking, and tobacco use were additional health and lifestyle variables analyzed in the present study. In a recent study involving Australian teachers and analyzing psychological distress, well-being, and burnout, the results were heterogeneous (Corbett et al., 2024). Being physically active and smoking status were not associated with any outcomes, while binge drinking and being overweight were positively associated with higher psychological distress. In view of this, the present study partially corroborates those described by Corbett et al. (2024), since no lifestyle variable was associated with common mental disorders. These results broaden the understanding of the etiology of common mental disorders among teachers, indicating that work-related variables and health characteristics such as musculoskeletal symptoms and the presence of chronic disease diagnosed have a higher impact on mental health compared to lifestyle variables. Despite the present results, it cannot be disregarded the positive effect of a healthy lifestyle on the emergence of chronic non-communicable diseases (Lai et al., 2024), the main variable associated with common mental disorders in this study, which suggests a possible indirect effect.

Some limitations should be considered for the generalization of the results. First, although the cross-sectional design allowed achievement of the purpose of the study, the direction and causality of the associations cannot be confirmed, despite the fact that the analyses were conducted based on the conceptual framework of the independent variables and the outcome. All variables were assessed using a self-report questionnaire, and it is known that bias related to information recall is a limitation when using this instrument. To reduce this limitation, we adopted questionnaires with validity and reproducibility described in the literature, and the construct validity and reproducibility of the questions constructed for this study were confirmed. The high schooling level of the study participants also contributes to minimizing this limitation.

Another limitation of the present study involves the healthy worker effect. We did not include teachers who were retired or on medical leave during data collection, which may have reduced the estimate of common mental disorders. However, to reduce this bias, we included all teachers that were working during data collection, independently of their history of previous mental disorder, retirement, or prescribed medication use (Coledam and Silva, 2020). Finally, the sample of the present study was composed of elementary school teachers from a southern region of Brazil. The differences in work conditions and social and cultural factors between regions of the world, as well as characteristics of education systems, suggest that generalization of the results should be performed carefully. Despite the mentioned limitations, the study presents the following strengths: a probabilistic sample of a population from a Brazilian region not yet fully studied; variables to which teachers are commonly exposed; a three-level multivariate analysis of predictors; and an outcome that is a public health priority among teachers.

## **5. Conclusion**

It can be concluded that the prevalence of common mental disorders was 31.6%, with a higher likelihood of the outcome found in elementary teachers who reported

inadequate infrastructure of schools, experience of violence, low job support, musculoskeletal symptoms, problems related to dust or chalk powder, emotional exhaustion, low professional achievement, and chronic disease. The high prevalence of common mental disorders suggests that continuous monitoring of mental health is required in this professional group. In addition, public policies aimed at preventing common mental disorders should focus on teachers who have both negative work conditions and present health risks.

Despite the results found, the adoption of cross-sectional design and the use of a self-report questionnaire instead of a face-to-face interview conducted by a psychologist are the main limitations of the present study. Future studies should focus on describing the long-term effects of work and health-related variables on mental health and well-being, considering teachers working at different educational levels, in addition to its impact on the academic performance of students.

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**Institutional review board statement:** This study was approved by the Ethics Committee for Research Involving Human Beings of the State University of Londrina, process 118/2014, in accordance with Resolution 466/2012 of the National Health Council (approval date: 21 July 2014).

**Informed consent statement:** Informed consent was obtained from all subjects involved in the study before data collection.

**Conflict of interest:** The author declares no conflict of interest.

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