Indicators of working conditions and health among basic education teachers in Brazil*[1]

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Abstract

This study aimed to present indicators of teachers' working conditions and health and to describe the results of a national study that surveyed 6,510 teachers using a validated questionnaire. A nationally representative sample was obtained through simple stratified sampling, with strata defined to cover key domains of analysis (five geographic regions, two census areas, four age groups, gender, three types of school administration, five contract types, and six levels of teaching). Teachers were randomly selected from within each stratum based on the 2014 School Census. Nine health indicators were developed and assessed: prevalence of poor self-rated health and occupational illnesses; rates of absenteeism due to general illness, voice-related issues, respiratory problems, and emotional distress; use of anxiolytic or antidepressant medication; access to periodic medical exams; and medical leave for personal health reasons. Regarding working conditions, high noise levels, verbal abuse, lack of support, low autonomy, and work pressure were associated with poorer health outcomes. In the context of the debate on teacher appreciation, these findings support the need for health surveillance initiatives guided by the principle of comprehensive healthcare for teachers.

Keywords

Teacher appreciation – Educational policies – Occupational health – Teacher working conditions.

*English version by Luiz Fernando Silva Pinto. The authors take full responsibility for the translation of the text, including titles of books/articles and the quotations originally published in Portuguese.

1- Data Availability: The full dataset supporting the findings of this study is available within the published article.

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Introduction

Working conditions refer to the circumstances under which workers carry out their professional activities. Psychosocial working conditions pertain to the degree of control that management exerts over work processes. Physical or material working conditions relate to the facilities, comfort, and other determinants of the classroom and school environment. When working conditions are well-suited to the tasks required, teachers perceive this as a form of reward for their engagement and effort toward the goals of the educational system and the school. From this perspective, working conditions are intrinsically linked to teacher appreciation (Akiba *et al*., 2023).

In this article, we approach schools not just as institutions for teaching and learning, but more importantly, as workplaces (Oliveira, 2004). Drawing on the work of several authors (Stacey *et al*., 2020; Madigan *et al*., 2021; Assunção, 2019), we will examine the relationship between working conditions and teacher health within the broader context of professional appreciation.

The principles of Brazilian educational policy are laid out in the 1988 Constitution and the 1996 National Education Guidelines and Frameworks Act. A key component of these principles, made explicit in the National Education Plan, is the emphasis on the appreciation of the teaching profession. Among the arguments presented in the plan is the need for a comprehensive policy that integrates working conditions, training, salary, and career paths for Basic Education teachers (Brasil, 2014).

Teacher health is directly linked to these appreciation goals, whether or not they are explicitly included in educational policies. Teachers' access to the essential resources needed to protect their health depends on their socioeconomic status and the level of security their employment provides. As workers, the infrastructure and pedagogical tools available to them reflect the overall quality of the school's services. Understanding the connections between teacher health and work strengthens the case for reversing inequalities in the provision and quality of education. If this is the case, improvements in the health of these professionals will likely contribute to overcoming this challenge.

This article has a twofold objective: first, to propose indicators for evaluating the working conditions and health of this professional group, and second, to describe the findings in this area from Educatel, a national study using a probability sample of basic education teachers (Assunção, 2019).

The article is structured in six parts, including this introduction. The second section presents the rationale for examining teachers' working conditions and health as a matter of professional appreciation. In the third section, based on the understanding that working conditions are linked to the social value of teachers, we define the indicators for these conditions and for teacher health. The design and key procedures of the Educatel Study

are outlined in the fourth section. The following section describes and discusses the results of the assessment using these indicators. The sixth and final section offers concluding remarks, where the initial results from applying these indicators are interpreted in light of the goals for the appreciation of the teaching profession.

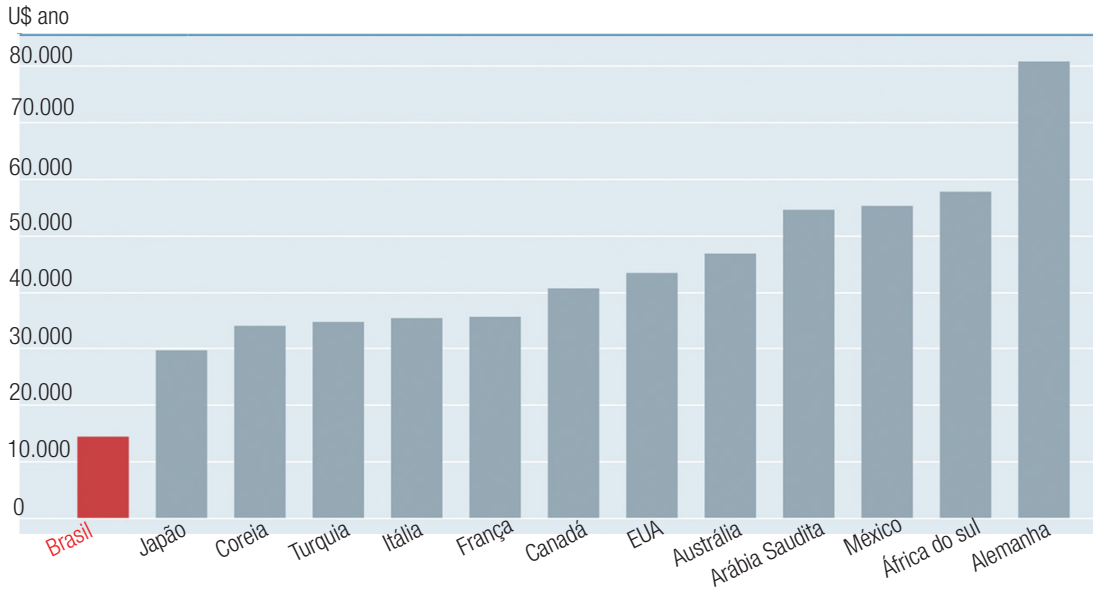
Appreciation goals and teacher health

Why focus on working conditions when the primary goal is to promote teacher appreciation? First, the role of teachers is fundamental to the teaching-learning process. Second, teachers represent a numerically significant portion of the workforce, and their rights as citizens and workers must be recognized. Third, the infrastructure and pedagogical resources available to them are not only working conditions but are also directly linked to the quality of educational services (Vasconcelos *et al.*, 2021; UNESCO, 2019). Educational challenges such as dropout rates, grade repetition, and poor student performance are likely influenced by the daily realities teachers face in their work (Madigam; Kim, 2021; Toropova; Myrberg; Johansson, 2021; Hypolito, 2015). Fourth, recent research in Brazil (Simões; Cardoso, 2022; Tavares; Honda, 2021; Silva; Fischer, 2020; Araújo *et al.*, 2019; Maia *et al.*, 2019) and in other countries (Akiba *et al.*, 2023; Toropova; Myrberg; Johansson, 2021; Madigan; Kim, 2021; Scheuch *et al.*, 2015) has pointed to unacceptable rates of absenteeism for health reasons, chronic physical and psychological illnesses, and confrontations with physical and verbal aggression from students and their families, among other issues.

The social value of the profession depends on a complex web of relationships within society at large and within the specific sector where it is practiced. It is known that the way occupations are organized and regulated lends prestige to their professionals (Akiba *et al.*, 2023). Moreover, the social value of an occupation is related not only to the degree and type of specialization required but also to the income its members earn in relation to other occupations (Estormovski; Esquinsani, 2022; Silva *et al.*, 2019). This is not a new finding. Esteve Zaragoza's classic 1999 work, *O mal-estar docente* (The Malaise of Teaching), had already identified salary as a key determinant of the profession's low prestige in society.

The Organization for Economic Co-operation and Development (OECD, 2023) compiled data on the annual salaries of teachers in various countries. As we can see, Brazilian high school teachers are the lowest-earning group in the ranking (Graph 1). This trend holds true for other levels of education (data not shown here).

Graph 1- Annual salary distribution (in US dollars) for upper secondary teachers, by country, 2021



Translation note: Brazil, Japan, Korea, Türkiye, Italy, Frence, Canada, EUA, Australia, Saudi Arabia, Mexico, South Africa, Germany

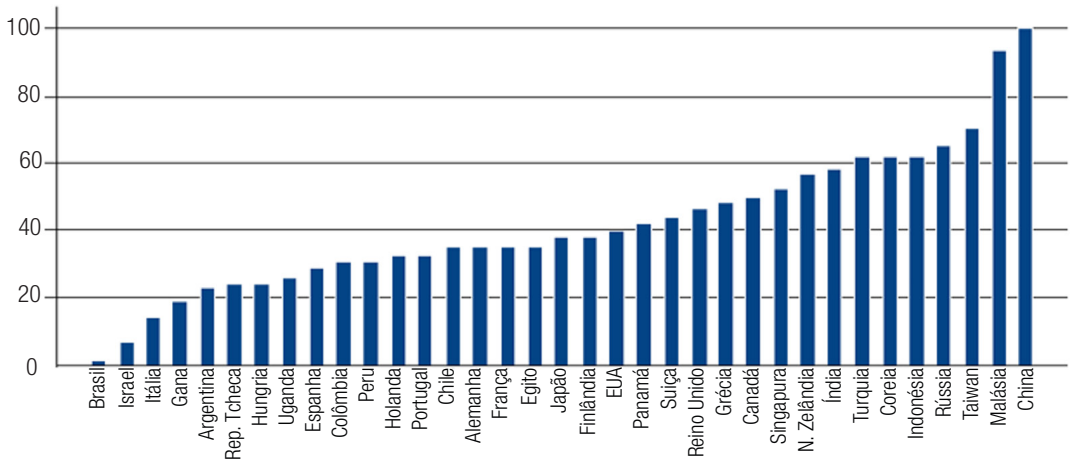
Source: Organization for Economic Co-operation and Development (OECD, 2023).

The salary gap between Basic Education teachers and the average for professionals in other fields in Brazil is well-documented (Silva *et al.*, 2019). This issue became particularly prominent in 2021, when Brazil was identified as the country with the lowest teacher pay (OECD, 2023).

Gender constructs, which assign specific roles to men and women in our society, underlie the feminization of certain occupations, such as Basic Education, where women form the majority. Women are stereotypically associated with caregiving skills and maternal instincts, and are therefore perceived as being naturally suited to the demands of teaching (Prá; Cegatti, 2016). This gender stereotype helps explain, at least in part, the lower value placed on women's work compared to men's. This is because occupational segregation by gender leads to the devaluation of predominantly female professions, which in turn has negative effects on pay and social prestige (Vaz; Botassio, 2023).

Prestige is another key variable in the social representation of an occupation's value. A study conducted across 35 countries used open-access data to measure the prestige of teaching relative to other professions, creating the Global Teacher Status Index (GTSI) (Dolton *et al.*, 2018). When comparing GTSI scores (on a scale of 0 to 100), Brazil had the lowest result (below 10 points), while China had the highest (above 90 points) (Graph 2). Notably, there is a positive correlation between a country's GTSI score and its teachers' own perception of how valued their profession is within society (OECD, 2023).

Graph 2- Global Teacher Prestige Index, by country, 2018



Translation note: Brazil, Israel, Italy, Ghana, Argentina, Czech Republic, Hungary, Uganda, Spain, Colombia, Peru, Netherlands, Portugal Chile, Germany, Frence, Egypt, Japan, Finland, EUA, Panama, Switzerland, United Kingdom, Greece, Canada, Singapore, New Zealand, India, Türkiye, Korea, Indonesia, Russia, Taiwan, Malaysia, China

Source: Dolton *et al.*, 2018.

Defining indicators for the working conditions and health of basic education teachers in Brazil

An indicator is an estimate of a specific dimension to be evaluated within a target population. A health indicator is a measure that reflects a particular health situation (OPAS, 2018). Similarly, a working conditions indicator is a measure of the circumstances under which work is performed in a specific environment. These indicators are considered key for informing the development of prevention strategies and resource allocation. For public health purposes, they are generally studied through cross-sectional surveys conducted via questionnaires. Self-reported results are considered reliable and useful. Since the 1960s, health surveys have been conducted in various countries to identify the prevalence of morbidities, health habits, and access to services, among other goals (Assunção *et al.*, 2019).

When applied to occupational health, this set of indicators pertains to specific groups—that is, subsets of the general population—who share a common employment relationship under particular working conditions. In essence, the strategy of conducting surveys within occupational groups using specific indicators makes it possible to examine the hypothesis that working conditions contribute to health outcomes in working adults (Assunção *et al.*, 2019).

Two sets of indicators were developed based on an in-depth literature review and workshops with managers and researchers experienced in the field. These indicators are aligned with the state of the art concerning the prevalence of health problems within this professional category, its associated risk factors, and potential consequences.

- Working Conditions Indicators: intense workplace noise; verbal abuse from students; long working hours; perceived lack of social support at school; perceived restriction of autonomy in school work; pressure to come to work (presenteeism); absenteeism due to school transportation issues; and absenteeism due to experiencing a stressful event at school (Table 1).
- Teacher Health Indicators: absenteeism due to general illness; absenteeism due to vocal issues; absenteeism due to respiratory problems; absenteeism due to mental/emotional health issues; occupational illnesses; negative self-rated health; use of anxiolytic or antidepressant medication; medical leave for personal health reasons; and access to periodic medical examinations (Table 2).

The indicators were expressed as relative frequencies, composed of a numerator (the number of teachers who answered affirmatively to the key question) and a denominator (the total number of respondents). These relative frequencies represent relevant data on dimensions of teacher health and on occurrences of interest within school environments across the country's five regions.

Table 1- Description of indicators for working conditions in Basic Education schools and the corresponding survey question(s) used for their calculation. Educatel Study, 2015/2016

Working condition indicators
Percentage of reports on exposure to intense noise in the work environment: Number of teachers who need to raise their voice to speak with another person due to intense noise at work / number of teachers surveyed who answered "frequently" or "sometimes" to the question, "*How often is the noise at work so loud that you have to raise your voice to talk to someone?*"
Percentage of reports on verbal abuse from students: Number of teachers who experienced verbal abuse from students / number of teachers surveyed who answered "once" or "two or more times" to the question, "*In the last 12 months, have you experienced VERBAL abuse from students?*"
Percentage of reports on long working hours: Number of teachers who work 40 or more hours per week / number of teachers surveyed who answered "40 hours" or "more than 40 hours" to the question, "*Considering all the schools where you currently work AS A TEACHER, what is your weekly workload?*"
Percentage of reports on social support at school: Number of teachers who perceive they have social support at school / total number of teachers surveyed. To calculate this indicator, a score was created by summing the responses to the following questions: "I*s there a calm and pleasant environment where you work?*"; "*Does everyone at work get along well?*"; "*Can you count on the support of your colleagues*?"; "*If you're having a bad day, are your colleagues understanding?*"; "*Do you get along well with your superiors at work?*"; and "*Do you enjoy working with your colleagues?*". The score was calculated by assigning points as follows: "frequently" = 1, "sometimes" = 2, "rarely" = 3, and "never" or "almost never" = 4. Teachers with a score higher than seven (50th percentile) were classified as having weak perceived social support at school.
Percentage of reports on restricted autonomy in school work: Number of teachers reporting restricted autonomy at school / number of teachers surveyed who answered "rarely," "never," or "almost never" to the question, "*Does this school give staff the opportunity to actively participate in decision-making?*"

Percentage of reports on pressure to come to work (presenteeism): Number of teachers who find it difficult to miss work even when in pain or with another health issue / number of teachers surveyed who answered "yes" to the question, "*Do you find it difficult to miss work even when you are in pain or have any other health problem?*"
Percentage of absenteeism due to transportation or commuting issues: Number of Basic Education teachers who missed at least one day of work due to a transportation or commuting problem / number of teachers surveyed who answered "yes" to the questions, "*In the last 12 MONTHS, have you missed at least one day of work (for any reason)?*" and "*Was it because you had a problem with transportation or your commute to school?*"
Percentage of absenteeism due to a stressful event at school: Number of teachers who missed at least one day of work because they experienced something stressful at school / number of teachers surveyed who answered "yes" to the questions, "*In the last 12 MONTHS, have you missed at least one day of work (for any reason)?*" and "*Was it because you experienced something stressful at school?*"

Source: Prepared by the authors.

Table 2- Description of teacher health indicators and the corresponding survey question(s) used for their calculation. Educatel Study, 2015/2016

Teacher health indicators
Percentage of absenteeism due to general illness: Number of teachers who missed work due to their own health problems / number of teachers surveyed who answered "yes" to the questions, "*In the last 12 MONTHS, have you missed at least one day of work (for any reason)?*" and "*Was it because of YOUR own health problems? I'm not talking about other people's health problems, but your own.*"
Percentage of absenteeism due to voice problems: Number of teachers who missed work due to voice problems / number of teachers surveyed who answered "yes" to the questions, "*In the last 12 MONTHS, have you missed at least one day of work (for any reason)?*"; "*Was it because of YOUR own health problems?*" and "*What was the health reason... A voice problem (such as hoarseness or voice loss)?*"
Percentage of absenteeism due to respiratory problems: Number of teachers who missed work due to respiratory problems / number of teachers surveyed who answered "yes" to the questions, "*In the last 12 MONTHS, have you missed at least one day of work (for any reason)?*"; "*Was it because of YOUR own health problems*?" and "*What was the health reason... Respiratory problems (such as asthma, bronchitis, rhinitis, or sinusitis)?*"
Percentage of absenteeism due to emotional problems: Number of teachers who missed work due to emotional problems / number of teachers surveyed who answered "yes" to the questions, "*In the last 12 MONTHS, have you missed at least one day of work (for any reason)?*"; "*Was it because of YOUR own health problems*?" and "*What was the health reason? Emotional problems (such as depression, stress, or anxiety)?*"
Percentage of occupational diseases: Number of teachers who were diagnosed with an occupational disease after seeking medical care / number of teachers surveyed who answered "yes" to the questions, "*Have you sought care from a health service (public or private) for any of these problems?*" and "*At the service you visited, was the problem considered an occupational disease?*"
Percentage of negative self-rated health: Number of teachers who rated their health as very poor, poor, or fair / number of teachers surveyed who answered "very poor," "poor," or "fair" to the question, "*In general, how would you rate your health?*" were classified as having a negative self-rating of their health.
Percentage of anxiolytic or antidepressant use: Number of teachers who used anxiolytic or antidepressant medication / number of teachers surveyed who answered "yes" to the question, "*In the last 4 WEEKS, have you used any anxiolytic (e.g., tranquilizer) or antidepressant medication (either purchased from a pharmacy or obtained from a health clinic)?*"
Percentage of medical leave for a personal health problem: Number of teachers who were granted medical leave for a personal health problem / number of teachers surveyed who answered "yes" to the questions, "*Have you sought care from a health service (public or private) for any of these problems?*" and "*Were you granted medical leave for this personal health problem?*"
Percentage of reports on access to regular health check-ups: Number of teachers who have access to regular, school-provided health check-ups / number of teachers surveyed who answered "yes" to the question, "*Do you have access to regular health check-ups arranged by the school?*"

Source: Prepared by the authors.

Educatel study methodology

Data from the national School Census were used to inform the probabilistic sample calculation and to obtain contact numbers for the selected teachers. A complex sampling design was employed, involving population stratification followed by random sampling of teachers within each stratum. Stratification was based on a combination of the following variables: (a) geographic region (North, Northeast, Center-West, Southeast, and South), (b) census area (urban/rural), (c) age group (≤34, 35–44, 45–54, and ≥55), (d) gender (male/female), (e) school administration type (state, municipal, private, or other), (f) employment status (tenured/permanent, temporary contract, private sector [CLT], or other), and (g) education level (preschool, elementary, high school, youth and adult education, vocational, or other).

Based on these parameters, a minimum sample size of approximately 6,500 teachers was calculated. This was sufficient to estimate the absenteeism rate for the entire study population with a 95% confidence level and a maximum margin of error of approximately 1.15 percentage points. Further details on the sampling method are available in an open-access article (Vieira *et al*., 2019).

Statistical adjustments were required to weight participant responses and ensure the sample was representative of the universe of Basic Education teachers in Brazil. The weighting factor was estimated in two stages. The first stage accounted for the sampling design by using the inverse of each teacher's probability of selection (the basic sampling weight). The second stage corrected for the influence of non-response on the study's estimates. An additional post-stratification factor was also applied to align the sample's distribution with that of the School Census, based on the variables used in the survey's sampling plan (Vieira *et al*., 2019).

Given the logistical complexity and high cost of in-person interviews, we chose to conduct telephone interviews. Teachers were first contacted via a call to the landline of their sampled school. After a school assistant confirmed that the selected teacher was employed at that school (an eligibility requirement), the interview began upon receiving the teacher's consent. At the beginning of the interview, and again during it, teachers were reminded of the importance of their participation, emphasizing that their school had been randomly selected and highlighting the value of their testimony regarding health and working conditions. The team consisted of 30 interviewers, two supervisors, and a general supervisor. The eight-minute interviews were conducted between October 2015 and March 2016.

The questionnaire covered the following topics: a) Absenteeism; b) Health and lifestyle; c) Overall workload; d) Work environment conditions; e) Psychosocial work conditions, and f) Demographic and socioeconomic characteristics. The questionnaire's development process began with a review of national and international studies in the fields of health, occupational health, and teacher health in particular. The evaluation phase of the questionnaire involved three rounds with volunteer teachers and graduate students to assess the appropriateness and clarity of the terminology, the question format (open-ended or closed-ended) and response options, the internal structure of the instrument, the ease of generating responses, and the interview length. The questionnaire's suitability was

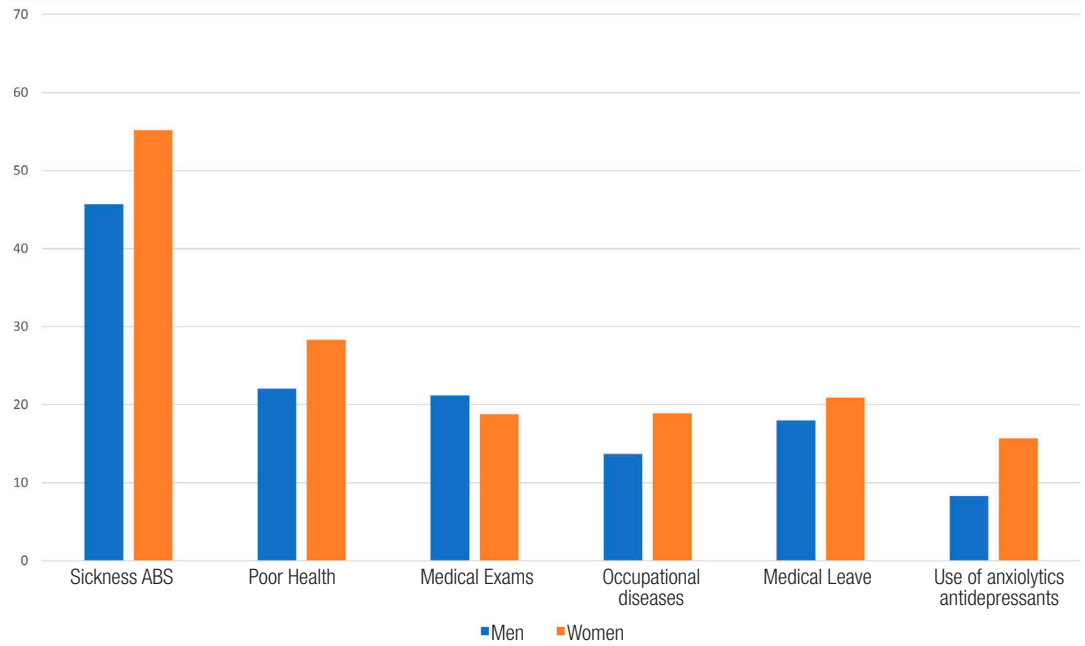
confirmed after each question was evaluated for its clarity and purpose. The format and appropriateness of the questions and answer choices were also addressed. Ultimately, the final questionnaire was approved, consisting of 54 short, simple questions, most of which were closed-ended.

It should also be noted that relevant information such as gender, age (from date of birth), employment status, residential area, and the teacher's educational level was obtained from the 2014 School Census (Assunção *et al.*, 2019).

Educatel study: results and discussion

The participants included 4,116 women and 2,394 men. One in four teachers interviewed rated their health status as poor (Graph 3). Certain work-related factors, rather than individual ones, increased the likelihood of a poorer health self-assessment. These included feeling pressured to work while sick, experiencing verbal abuse from students, having more years of service in the profession, and dealing with classroom indiscipline, as well as having a long commute (over 50 minutes) from home to school (Morais *et al.*, 2023).

Graph 3- Frequency distribution (%) of self-reported health and access to medical exams, by gender. Educatel, 2015/2016



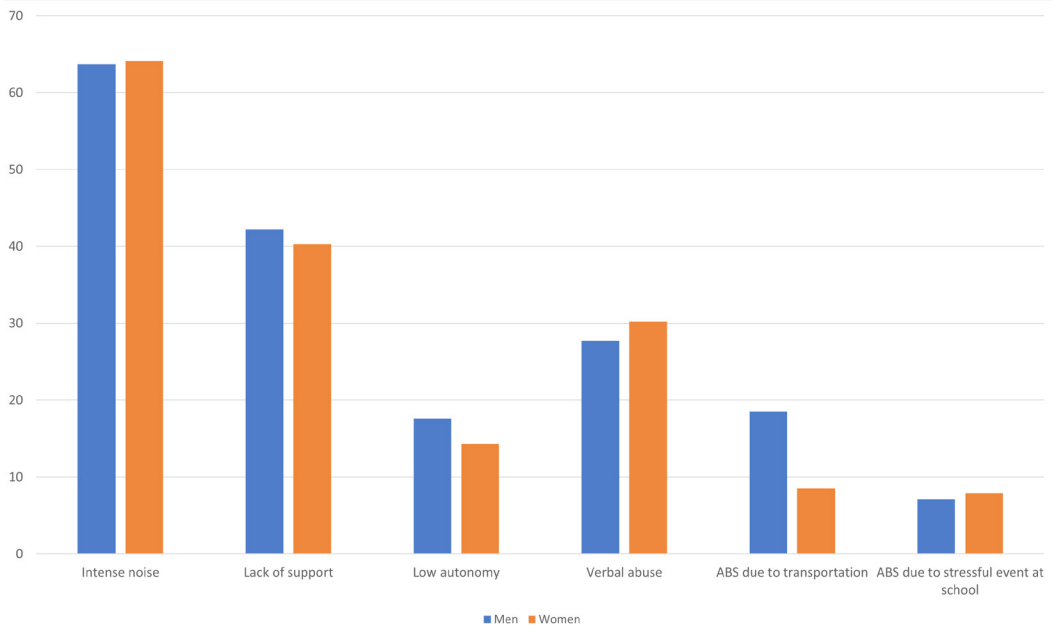
ABS - absenteeism.
Source: Prepared by the authors.

Absenteeism due to transportation or commuting issues was most frequent among teachers in the Northeast region (14.2%) and least frequent in the South region (4.9%). The

rate was twice as high in rural areas (18.5%) as in urban areas (7.2%). These reports were more frequent among men (11.2%) than women (8.5%) (Graph 4) and tended to decrease after the age of 44, ranging from 10.3% for those aged 35-44 to 4.8% for those 55 and older.

Evidence suggests an increased risk of heart disease (Kivimäki *et al.*, 2015), cerebrovascular conditions and diabetes (Wong, 2019), and depression (Ogawa *et al.*, 2018), among other illnesses, for groups exposed to long weekly working hours. Chronic fatigue from sleep deprivation is a mediating factor in the link between exposure to long work hours and poorer health outcomes (Wong, 2019). With the exception of teachers in the Southeast region, all others reported working more than 40 hours per week, with a notable difference between those in rural versus urban areas (Graph 5).

Graph 4- Frequency distribution (%) of self-reported working conditions, by gender. Educatel, 2015/2016



ABS - absenteeism.

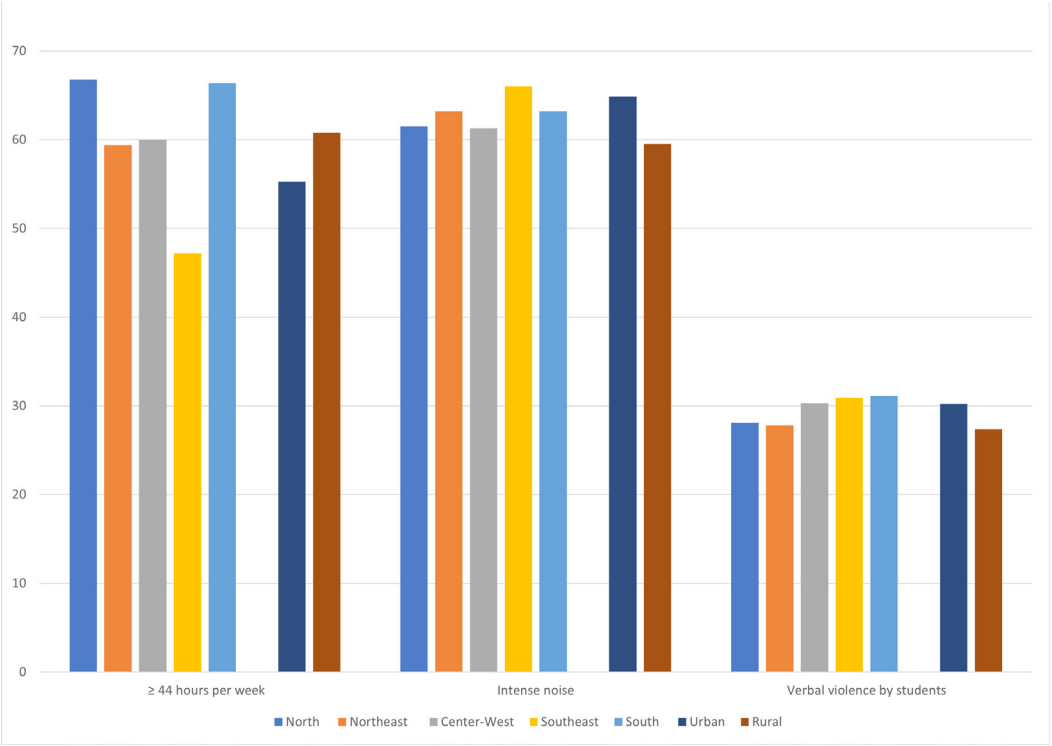
Source: Prepared by the authors.

The frequency of reports of exposure to high noise levels in the workplace (Rezende *et al.*, 2019) was 64.0%. The rate was higher in urban areas (64.9%) than in rural areas (59.5%) and was similar for men and women (Graph 4). This frequency was highest among teachers in the Southeast region (66.0%) and lowest in the Central-West region (61.3%) (Graph 5).

These findings are consistent with the literature. Background noise is the most frequently cited environmental risk by teachers in studies from different countries (Caviola *et al.*, 2021; Mogas-Recalde *et al.*, 2021), originating from external sources (traffic, hallways, playgrounds, and sports courts) or from within the classroom itself (fans, air

conditioning, and technological devices in general). Analyses of sound levels in Brazilian schools have identified levels that exceed the limits recommended by technical standards (Klock *et al.*, 2016).

Graph 5- Working condition indicators by region and census area of the teacher's school. Educatel, 2015/2016

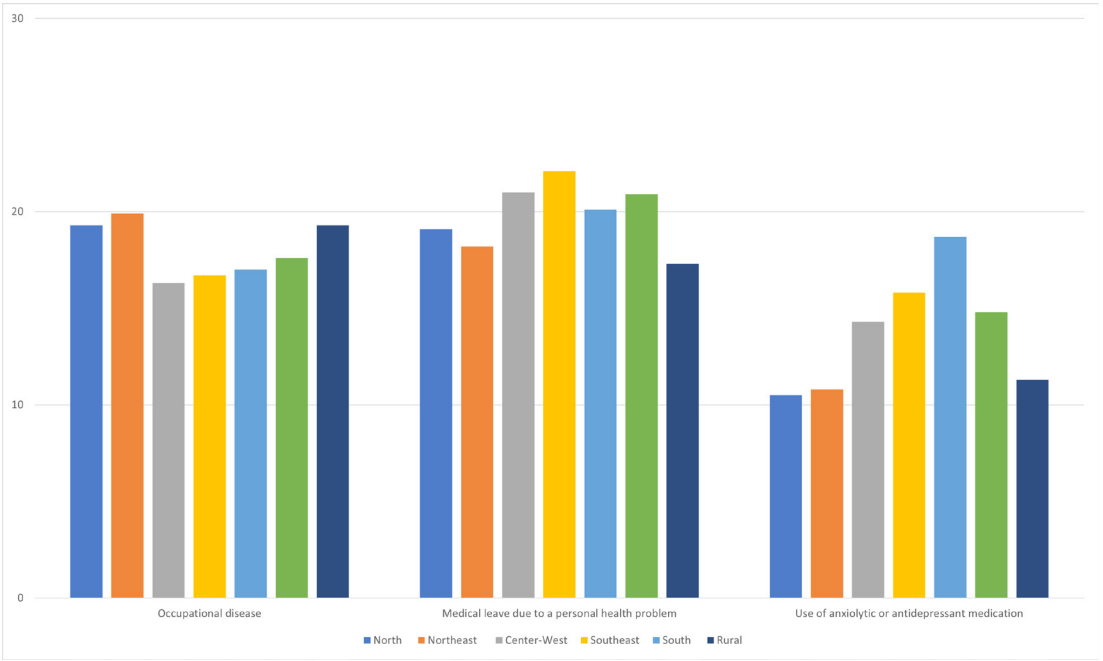


Source: Prepared by the authors.

The link between noise, classroom acoustics, student misbehavior, and teacher's voice has been widely explored in recent years (Mogas-Recalde *et al.*, 2021; Klock *et al.*, 2016; Mendes *et al.*, 2016). The vocal strain from compensating for background noise leads to voice disorders, which is the primary health reason for work absences cited by teachers in the Educatel Study (Medeiros; Vieira, 2019).

In the four weeks prior to being interviewed, 14.3% of teachers reported using anxiolytic or antidepressant medication. This rate was higher in urban areas (14.8%) than in rural ones (11.3%). The frequency was highest among those working in the South region (18.7%) and lowest in the North region (10.5%) (Graph 6). The rate for women (15.7%) was approximately double that of men (8.3%) and tended to increase with age (Graph 3). Considering the findings on exposure to intense noise and long working hours, this high frequency of anxiolytic and antidepressant use is not surprising.

Graph 6- Health indicators by region and census area of the teacher's school. Educatel 2015/2016



Source: Prepared by the authors.

The rate of stress-related absenteeism was highest among teachers working in the Southeast region (9.9%) and lowest in the Center-West region (5.8%). By location, this type of absenteeism was more frequent in urban areas (8.3%) compared to rural areas (4.9%). The rate was similar for men (7.1%) and women (7.9%) (Graph 4). We observed that these reports tended to decrease among teachers aged 55 and over (5.3%).

These results are consistent with findings that link episodes of verbal violence from students to work absences caused by stressful school events and emotional problems (Maia *et al.*, 2019). Verbal violence by students against teachers was more frequent in schools in the South (31.1%) and Southeast (30.9%) regions, and in urban schools (30.2%) compared to rural ones (27.4%) (Graph 5). The rate was 30.2% among female teachers and 27.7% among male teachers (Graph 4).

Verbal violence encompasses a range of aggressive student behaviors, such as arrogantly refusing to follow instructions, using profanity, personal insults, racist comments, and obscene gestures. This type of aggression tends to escalate, with indirect incidents followed by direct confrontations and eventually attacks, which is a growing concern worldwide (Lamula-Mthanti, 2023). Surprisingly, indirect violence remains largely invisible to society. The issue typically only gains media attention when the violence escalates to the level of an attack, such as a school shooting or mass stabbing (Folha

de São Paulo, 2023). In São Paulo city schools, 60% of teachers suffering from severe burnout had experienced aggression at school in the past year (Simões; Cardoso, 2022). Violence from students can lead teachers to consider leaving the profession (Lamula-Mthanti, 2023).

A higher frequency of sick leave for personal health reasons (at least one day in the past year) was observed among teachers in the Southeast region (22.1%), with the lowest frequency found in the Northeast region (18.2%). By location, these leaves were more common in urban areas (20.9%) than in rural areas (17.3%). This difference may reflect disparities in access to healthcare services, which puts the North and Northeast regions, as well as rural areas, at a disadvantage (Graph 6). Consistent with Holmgren *et al*. (2009), the frequency was higher among women than men (20.9% vs. 18.0%, respectively) (Graph 3). These results can be interpreted through the lens of the sexual division of labor, as will be discussed later.

The frequency of occupational diseases was higher among teachers in rural areas (19.3%) compared to urban areas (17.6%) (Graph 6). The lowest rate was found among those teaching in the Center-West region (16.3%). One in five teachers in the Northeast region reported having been diagnosed with an occupational disease. Occupational diseases were also more frequent among women (18.9%) than men (13.7%) (Graph 3).

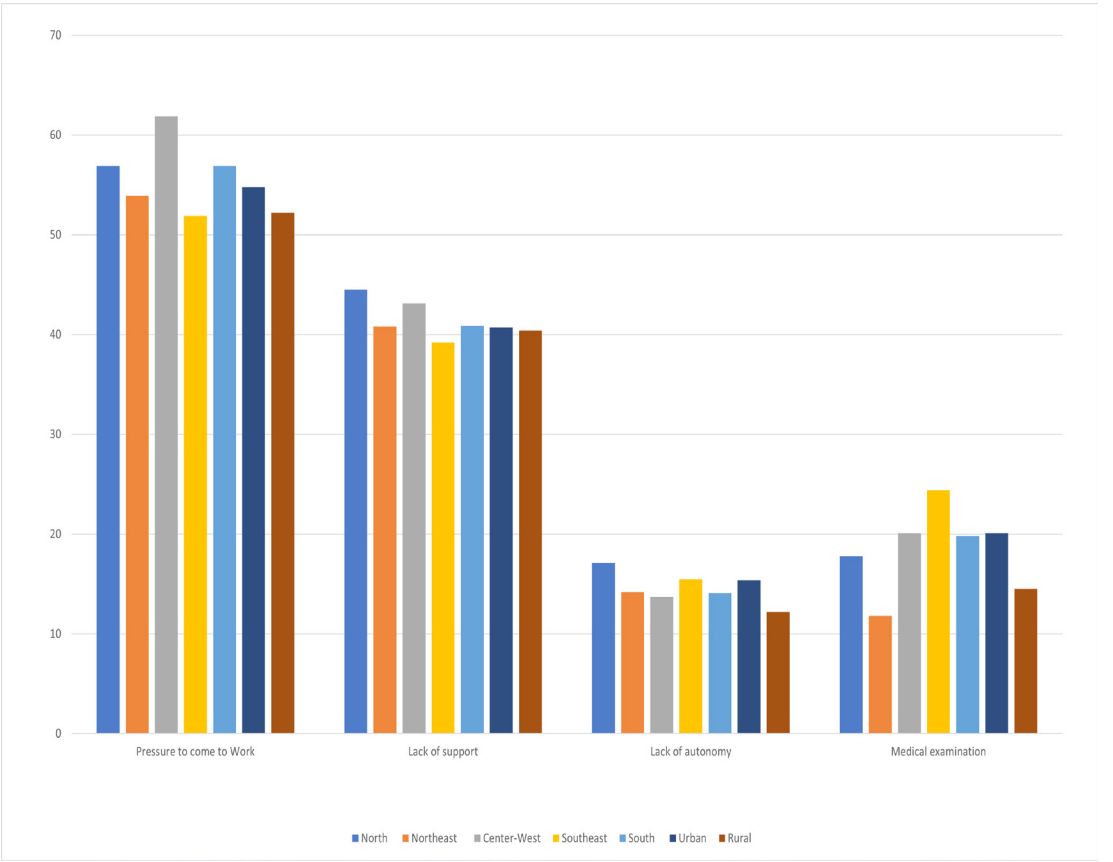
Increased workload has been linked to both occupational diseases and sick leave. Gender inequality in the time spent on unpaid domestic labor helps explain the higher frequency of these outcomes among women (Holmgren *et al*., 2009). The greater prevalence of occupational diseases and sick leave among female teachers may be a result of the time constraints they face in caring for their own health, a consequence of their dual workload (Carvalho; Santos, 2022).

Only one in five teachers reported having access to periodic medical exams offered by their school. The rate for teachers in the Southeast region (24.4%) was more than double that of their counterparts in the Northeast (11.8%). In urban schools, the rate was 20.1%, compared to 14.5% in rural schools (Graph 7). Men reported slightly higher access to these exams than women, at 21.2% and 18.8%, respectively (Graph 3).

Differences in the regional distribution of this indicator may be related to the poor quality of school infrastructure observed in rural areas (Pereira; Castro, 2021), placing the North and Northeast regions at a disadvantage (UNESCO, 2019). Disparities in access to quality education between urban and rural areas have been documented since the first school census was conducted in 1964 (Souza-Chaloba; Moraes, 2022).

The National Network for Comprehensive Worker Health Care within the Unified Health System (Renast-SUS) was established in 2002 to work in coordination with different levels of the healthcare system. Its goal is to identify work-related health issues and implement appropriate interventions. Regarding healthcare for teachers, few initiatives were found within Renast. Moreover, within school administration, actions are handled primarily by medical expert management offices (GPMs), meaning the focus is on occupational health (Santana; Neves, 2017).

Graph 7- Working condition indicators by region and census area of the teacher's school. Educatel 2015/2016

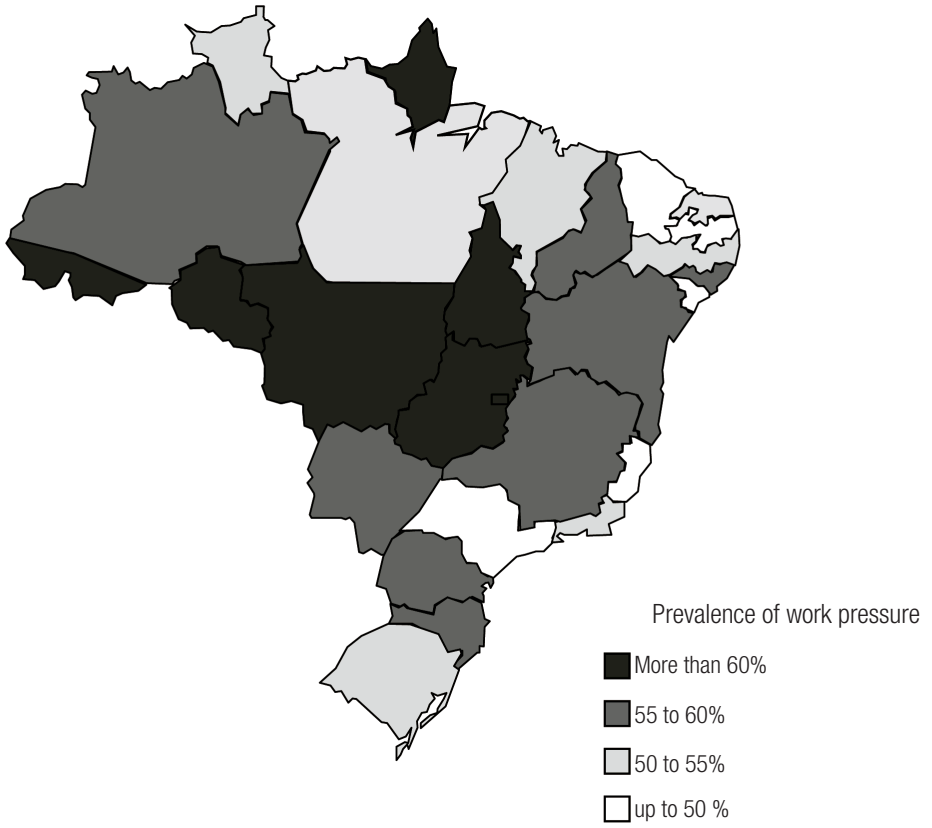


Source: Prepared by the authors.

Social support is a psychosocial working condition related to the quantity and quality of social relationships and the availability of instrumental resources an organization provides to support its members (Woodhead *et al.*, 2016). A high proportion of teachers reported a lack of social support at work (Graph 7). This graph was highest among those working in the North region (44.5%) and lowest in the Southeast region (39.2%). The results were similar when comparing urban (40.7%) and rural (40.4%) areas. The frequency was comparable across age groups and between genders, at 42.2% for men and 40.3% for women (Graph 4).

Reports of curtailed autonomy at school were more frequent among teachers working in the North region (17.1%) and less frequent in the Center-West region (13.7%). The frequency of these reports was 15.4% in urban schools and 12.2% in rural schools (Graph 7). These reports were also more common among men (17.6%) than women (14.3%), with no differences across age groups (Graph 4).

Figure 1- Thematic map showing the prevalence of work-related pressure reported by teachers, by state. Educatel 2015/2016



Source: Prepared by the authors.

Consistent with findings on psychosocial working conditions, over half of the sample (55%) reported feeling pressured to come to school even when ill or in pain, a trend that is more frequent in the Center-West region (Graph 7) (Assunção; Abreu, 2019). Differences were also observed between federal units (Figure 1).

Absenteeism is defined as the failure to report to work (Badubi, 2017). The term is used by administrators, particularly in human resources, regardless of the reason for the absence. Since 1995, epidemiologists have highlighted the multidimensional origins of missing work (Marmot *et al*., 1995). From a management perspective, however, absence is considered a form of misconduct aimed at avoiding professional duties (Badubi, 2017).

Regarding health-related absenteeism, 17.7% of respondents reported having missed work due to vocal disorders. Absences due to musculoskeletal problems (Barbosa *et al*., 2023), respiratory issues, and emotional problems (Medeiros; Vieira, 2019) were mentioned by 14.7%, 14.6%, and 14.5% of respondents, respectively.

Although the literature highlights the benefits of teacher incentives in reducing such occurrences (Lepine, 2022), an integrated approach that analyzes various factors to explain sick leave has proven more consistent than a purely administrative one (Bekker *et al*., 2009).

This research process led to the development of the following hypothesis: Macrostructural factors, rather than individual idiosyncrasies, drive the causal chain of teacher overload → physiological distress → symptoms → illness → diminished physical, mental, and emotional capacity → absence from work (Barbosa *et al*., 2023; Assunção; Abreu, 2019; Maia *et al*., 2019; Medeiros; Vieira, 2019).

Conclusion

Given the consistency of our findings, the indicators developed for this study appear to be appropriate. We observed that, across the country, teachers' perceptions of their working conditions and health are linked to structural factors, with significant geographical differences.

Analyses by major region and census area align, to some extent, with the country's well-known patterns of health inequality. Sick leave and medication use are dependent on access to healthcare services. Accordingly, these were more frequently reported by teachers in the South and Southeast regions, where the provision of healthcare services is greater than in other regions (Arruda *et al*., 2018). Notably, the frequency of occupational diseases is higher in the North and Northeast regions, which is striking given that diagnosing these conditions requires specialized medical assessment. It is also worth noting the consistency in the regional distribution of health and working condition indicators—as shown in the Educatel Study—and school infrastructure indicators (UNESCO, 2019). Future research will need to investigate which diseases are most prevalent according to the regional characteristics of school systems and whether they are being monitored. This concern stems, for instance, from findings that indicate a lower frequency of periodic medical check-ups in the North and Northeast. This suggests that the number and type of occupational diseases are likely significant, regardless of the difficulties in accessing specialized care.

The disparity between educational indicators in rural and urban settings is particularly stark. This difference was also reflected in the distribution of indicators for working conditions. As expected, absenteeism due to transportation issues was more frequent in rural areas. Meanwhile, noise, verbal abuse, and adverse psychosocial working conditions were more common in urban schools. To a certain extent, urban centers are hubs of greater noise and interpersonal conflict. Regarding psychosocial conditions like autonomy and social support, these depend on school management models. Could it be that these models are more detrimental in urban areas? Promoting autonomy and supporting staff—for example, by acknowledging teachers' perspectives or providing regular feedback on evaluations—is an effective management initiative because it has a buffering effect on feelings of burnout (Madigan; Kim, 2021).

Teaching is widely recognized as a complex profession, involving a broad range of skills, responsibilities, and interactions. Teachers engage with students, colleagues, and administrators at both the school and municipal levels. The circumstances in which teachers work, including the rise of school violence, are shaped within this ecosystem of multiple interactions and expressions of social life that define the school environment. This socio-ecological perspective has proven fruitful for designing interventions aimed at reducing violence against teachers.

The working conditions mentioned are also shaped by the conditions within educational institutions themselves. These institutional conditions, in turn, are part of official, nationwide systemic evaluations. Paradoxically, however, indicators for teachers' working conditions and health have yet to be included in these basic education assessment systems. In our view, this points to the nascent progress toward goals of professional recognition—a finding already noted by the aforementioned authors and transnational assessments.

Furthermore, we observe that teachers' health status is given little consideration in evaluations of the barriers to guaranteeing the right to quality basic education. Evidence regarding rates of medical leave and inadequate health coverage and assistance, among the other issues mentioned, is crucial to the discussion on valuing the profession. This agenda must include planning and implementing initiatives to promote health, prevent illness, and support the recovery of teachers.

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