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Highlights: (1). 1,776 health certificates were delivered by teachers in one year. (2)(. The main cause of teacher's absence was musculoskeletal problems. (3). Illness associated with age, working time, sick days and school period.

PRE-PROOF

(as accepted)

This is a preliminary and unedited version of a manuscript that has been accepted for publication in Revista Contexto & Saúde. As a service to our readers, we are providing this early version of the manuscript as accepted. The article will undergo further editing, formatting, and author approval prior to final publication.

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ABSTRACT

This study aimed to identify the primary causes of medical leave among teachers in the municipal education system of Uruguaiana, RS. It is a descriptive, documental, cross-sectional, and quantitative study which analyzed data from teachers from 1st to 9th grade, across 16 public municipal schools. Variables included sex, age, date of admission, ICD code/reason for medical consultation, school assignment, and the month/year of medical certificate submission, covering the period from July 2018 to July 2019. Statistical analyses comprise means, medians, standard deviations, absolute and relative frequencies, 95% confidence intervals (CI), and the Chi-square test, with significance set at p<0.05. An amount of 1,776 medical certificates was submitted during the study period. Among the teachers, 33.3% were aged 50.1 years or older, and 67.4% worked in peripheral schools. The most frequent reasons for medical leave were miscellaneous ICD diagnoses (29.9%), various causes (25.8%), family-related appointments (17.3%), and musculoskeletal disorders (13.9%). A statistically significant association was found between the reason for medical leave and most of the analyzed variables, except for school location (p=0.387). Nonetheless, teachers from peripheral schools showed higher rates of illness and absenteeism. Musculoskeletal disorders emerged as the leading specific cause of medical leave, with a marked increase in related certificates during the second academic semester. Overall, health issues documented in the certificates were predominantly associated with age, length of service, number of sick leave days, and the academic calendar period.

Keywords: Teachers; Health; Elementary School.

1. Introduction

The act of teaching has been shaped by ongoing transformations within the labor landscape, driven by both social and political forces as time goes by. Educational reforms and public policies implemented in Brazil over recent decades place increasing responsibilities on educators, adding complexity to the execution of their professional duties¹. Within this context, such changes have significantly caused impact on school's management and organization, while teachers' workloads were intensified².

These educational changes took place without considering the existence of a physical infrastructure and sufficient human resources to support the new demands³. Consequently,

teaching increasingly became precarious, marked by poor structural conditions, lack of pedagogical resources, low salaries, and other troubling factors that unfortunately characterize the daily reality of this profession⁴. The accumulated growth of new responsibilities, combined with these adverse conditions, appears to be linked to the development of various health-related issues among teachers, including physical and emotional exhaustion².

Recent studies indicate that mental and behavioral disorders, musculoskeletal conditions, and voice-related problems are the most prevalent health concerns affecting Brazilian teachers⁵⁻⁷. An investigation about mental health issues, involving 1,021 teachers, reported rates of 75.27% for minor psychological disorders, 44% of depression, and 70% of anxiety⁶. Another study revealed that an average of 34.5% among basic education teachers in Brazil suffer from musculoskeletal disorders, being most affected in their upper back (53.5%), neck (46.4%), and lower back (44.8%)⁷.

A potential consequence of these high rates of illness is the rise of absenteeism, a phenomenon influenced by a range of cultural, social, psychological, and medical factors⁸. Within the school environment, administrative practices, working conditions, and student profiles are elements that may contribute on the worsening of teachers' health and for recurring absences⁹. Thus, dealing with this issue is a particularly complex task, considering its economic and social costs, which affect negatively and directly the quality of teaching and, consequently, learning. Moreover, absenteeism is a valuable indicator for assessing working conditions, labor relations, and educators' quality of life¹⁰.

Considering this scenario, this study justifies itself by the need of obtaining concrete data about the issues of teachers' illness and absenteeism. Therefore, the findings may inform professional development initiatives, public policy, and broader understanding how does absenteeism impacts many educational outcomes. Accordingly, this research aims to analyze the primary causes of teachers' leave within the municipal education system of Uruguaiana, Rio Grande do Sul.

2. Method

This study, defined as descriptive, cross-sectional, quantitative, and documental¹¹ searched for data analyzing the primary causes of illness and absenteeism among teachers in

the municipal education system of Uruguaiana, RS, aiming to estimate the frequency and prevalence of health-related leave in this specific context.

All the procedures of this research were approved by the Ethics and Research Committee of the researchers affiliated institution (approval number 4.235.990).

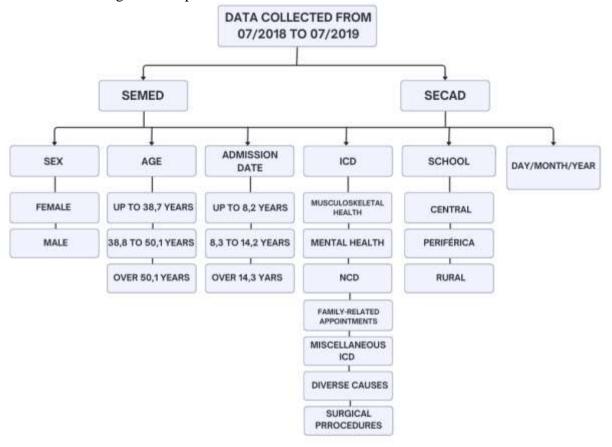
This study included data related to elementary school teachers, specifically those who teach from 1st to 9th grade in public municipal schools. According to data provided by the Municipal Department of Education (SEMED), the sample comprised approximately 582 teachers distributed on 16 schools, located in urban and rural areas.

Data collection was conducted using databases maintained by SEMED, which receive and catalog medical certificates justifying single-day absences, and by the Department of Administration (SECAD), which does the same for the certificates of two or more absent days. Both departments feed and organize systematically the archives of teachers' leave, compiling personal and professional information - such as duration of the absence, reason of the leave, and other relevant details - into spreadsheets.

For the purposes of this study, only the necessary data to address the research objectives were extracted, e. g.: sex, age, date of admission on municipal education system, International Classification of Diseases (ICD) or reason for medical consultation, school assignment and the month/year of certificate submission. The data collection period was defined as one year, spanning from July 2018 to July 2019. This interval was selected due to the high volume of medical certificates submitted annually by teachers to both departments.

To enhance the organizational structure of municipal schools, they were classified based on their geographic location, in three categories: (1) central, (2) peripheral, and (3) rural.

Figure 1. Illustrative flowchart outlining the stages and variables involved in data collection, as well as the categorization process.



Source: Authors.

The teachers' identities included in the database remained fully confidential, as the researchers did not have access to their names. Throughout the study, participants were identified using serial codes, assigned according to the chronological order of data entry, month, and year. Furthermore, the research adhered to the provisions of Brazil's General Data Protection Law (Lei Geral de Proteção de Dados Pessoais – LGPD, nº 13.709/2018), to safeguard the fundamental rights of freedom and privacy of participant's information.

Data analysis was conducted using both univariate and bivariate statistical methods. For univariate analysis, means, medians, standard deviations, and absolute and relative frequencies (proportions) were calculated, followed by the computation of 95% confidence intervals (95% CI). For this purpose, the reasons for absenteeism were categorized as outlined in Figure 2.

Figure 2. Categorization of illness and absenteeism causes among teachers in the Uruguaiana-RS for univariate statistical analysis.

Category	Causes of Illness			
Musculoskeletal Health	Conditions affecting muscles, bones, ligaments, menisci, joint capsules, axial skeleton, spinal column, and upper and lower limbs, and others.			
Mental Health	A wide range of mental conditions impacting mood, cognition, and human behavior.			
Non-Communicable Chronic Diseases (NCDs)	Hypertension and other chronic cardiovascular diseases, Diabetes Mellitus (Type I and II), obesity, cancer, respiratory diseases, and others.			
Family-Related Appointments	Instances in which the employee was not ill but accompanied a family member to a medical consultation or treatment.			
Miscellaneous ICD	Medical specialties not covered by the previously listed categories.			
Various Causes	Blood donation, imaging exams, non-surgical dental procedures, and others.			
Surgical Procedures	All types of invasive surgeries.			

Source: Authors.

In line with the variable categorization strategy, teachers' age, years teaching in municipal education and number of sick leave days were classified using tertile values.

On bivariate analysis, Chi-Square Test was applied to assess the association between each independent variable and the dependent variable ("reason for medical certificate"), with a significance level set at 5% (p<0.05). To facilitate this analysis, health-related reasons for teacher leave were regrouped into the following categories: (1) Musculoskeletal Health, (2) Mental Health, (3) Non-Communicable Chronic Diseases (NCDs), and (4) Miscellaneous Causes. The latter category encompassed all other reasons for leave, including various ICD diagnoses and surgical procedures. Consequently, data related to medical certificates submitted for family-related appointments were excluded from this stage of the analysis.

3. Results

During the period analyzed, 1,776 medical certificates were submitted to both Municipal Departments of Education and Administration. The average of leave days on the certificates was 4.4 days (± 14.85), the teachers had a mean age of 44.7 years (± 9.47) and an average of 13.40 years (± 8.03) teaching in the municipal education of Uruguaiana-RS.

Out of the total number of teachers, 536 submitted at least one medical certificate, with 94.2% of them being female. This figure represents the prevalence of 92% of teachers experiencing work absences during the evaluated period. Notably, 25 teachers submitted 10 or more certificates within one year, and one female teacher submitted 34 certificates during the study period.

The frequency distribution of the remaining descriptive variables is presented in Table 1. It was observed that 33.3% of teachers were over 50.1 years of age, 28.9% submitted certificates for absences of three days or more, and 67.4% taught in peripheral schools within the municipality. It is important to note that no statistically significant differences were found between sexes in the frequency distribution of the analyzed variables (p>0.05).

Table 1. Frequency distribution of descriptive studies' variables, 2025.

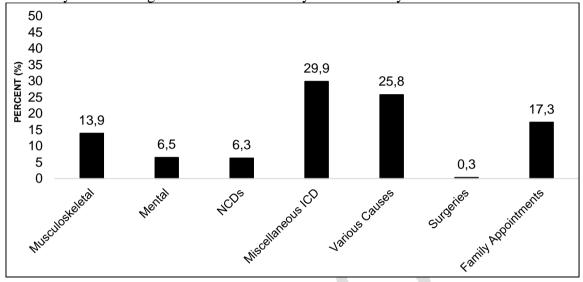
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Variables	n	% (CI95%)
Age Group		
Up to 38.7 years	593	33,4 (29,6-37,1)
38.8 to 50.1 years	592	33,3 (29,5-37,0)
Over 50.1 years	591	33,3 (29,5-37,0)
Years of Teaching in Municipal Education		
Up to 8.2 years	639	36 (32,2-39,7)
8.3 to 14.2 years	561	31,6 (27,7-35,4)
Over 14.2 years	576	32,4 (28,4-36,3)
Sick Leave Duration		
1 day	1.074	60,5 (57,5-63,4)
2 days	188	10,6 (6,1-15,0)
3 days or more	514	28,9 (24,9-32,8)
Certificates by School Location		
Peripheral	1.026	57,8 (54,7-60,8)
Rural	197	11,1 (6,7-15,4)
Central	553	31,1 (46,9-55,2)
Certificates by Academic Period		
First Semester	134	7,5 (67,6-82,3)
Second Semester	759	42,7 (39,1-46,2)
Third Semester	465	26,2 (22,2-30,1)
Fourth Semester	418	23,5 (19,4-27,5)

n =sample size; CI =confidence interval.

Source: Authors.

The distribution of frequency of the main reasons for teachers' absenteeism is presented in Figure 3. It reveals that miscellaneous ICDs represented the highest proportion of medical leave (29.9%), followed by various causes (25.8%), family-related appointments (17.3%), and musculoskeletal disorders (13.9%).

Figure 3. Frequency distribution of the reasons for teacher absenteeism in the municipal education system of Uruguaiana-RS between July/2018 and July/2019.



NCDs = Non-Communicable Chronic Diseases.

Source: Authors.

The association between the reasons for leave and illness reported in the medical certificates and the study variables is presented in Table 2. For this analysis, certificates related to family-related appointments were excluded, as they do not represent health issues directly affecting the teachers.

Table 2. Results of the Chi-square analysis between reasons for teacher illness and the categorical variables studied.

Variables		Causes of Illness					
	Muscular Health (%)	Mental Health (%)	NCDs (%)	Various Causes (%)	p		
Age Group							
Up to 38.7 years	33,3	27,8	30,4	32,2	0,005*		
38.8 to 50.1 years	23,6	36,5	26,8	35,2			
Over 50.1 years	43,1	35,7	42,9	32,7			
Years of Teaching in Municipa	l						
Education							
Up to 8.2 years	28,0	47,0	30,4	37,8	0,003*		
8.3 to 14.2 years	29,7	27,8	31,2	30,7			
Over 14.2 years	42,3	25,2	38,4	31,6			
Sick Leave Duration							
1 day	47,2	42,6	67,9	68,9	0,001*		
2 days	10,6	6,1	6,2	11,9			
3 days or more	42,3	51,3	25,9	19,2			
Certificates by School Location	1						
Peripheral	50,8	62,6	59,8	55,1	0,387		
Rural	12,2	7,8	11,6	12,1			
Central	37	29,6	28,6	32,9			
Certificates by Academic	2						
Period							
First Semester	8,5	13,9	12,5	5,7	0,001*		
Second Semester	43,1	44,3	34,8	44,5			
Third Semester	19,5	21,7	21,4	28,5			
Fourth Semester	28,9	20,0	31,2	21,2			

Muscular Health = Musculoskeletal Health; NCDs = Non-Communicable Chronic Diseases.

Source: Authors.

The analysis of Table 2 reveals a statistically significant association between the reasons for teacher illness and most of the study variables, except for the school location. Specifically, about age, the teachers who submitted medical certificates for musculoskeletal disorders and NCDs were predominantly in the age group of 50.1 years or older (p=0.005).

^{*} Statistically significant values.

The association between years of teaching in municipal education and type of illness showed that musculoskeletal disorders were significantly linked to teachers who have already been working for more than 14.2 years. In contrast, mental health issues were significantly associated with those in the category of shorter tenure (up to 8.2 years). Additionally, mental health-related certificates were significantly associated with longer durations of leave (three or more days). Conversely, certificates related to NCDs were predominantly for single-day absences (67.9%).

The period of certificate submission also demonstrated a significant association with the reasons for illness, with the second academic semester showing the highest prevalence of medical leave across all categories (p<0.001).

4. Discussion

The findings of this study reveal a high number of medical certificates submitted over the course of one year, with the majority corresponding to single-day absences (60.5%). This result warrants careful interpretation, as a considerable number of teachers submitted multiple certificates throughout the year. This suggests that many educators may require longer periods of leave due to underlying health conditions, but bureaucratic constraints and the stigma associated with taking time off for treatment often lead them to be absent only in extreme circumstances.

Unfortunately, the stigmatization of illness remains a significant issue for teachers. Society at large - and at times even the fellow educators - tends to perceive teachers' illness and absenteeism as a form of avoidance, as though the teacher simply chooses not to work¹². As a result, many teachers internalize this stigma, viewing their own health struggles as shameful. They often normalize illness and neglect their well-being in favor of fulfilling daily educational responsibilities, avoiding absence from school whenever possible³.

In this context, it becomes evident that when the State, schools, and society demand excellence in the education of children and adolescents, they frequently overlook the precarious working conditions that negatively affect teachers' mental and physical health. These conditions directly impact their educational praxis⁴. Therefore, attention must be paid to teachers' health issues, which are present in their daily routines and hinder the performance of

their duties. These issues span across all levels of education and may lead to job accommodation, reassignment, functional readjustment, abandonment of position, early retirement, or even dismissal¹³.

Moreover, teacher absences and the resulting need for functional adjustments necessitate temporary contracts or substitute appointments to cover these vacancies. Consequently, absenteeism also imposes a financial burden on public resources, as it increases personnel expenses¹⁴. Specifically in the municipality of Uruguaiana, the financial impact of absenteeism is estimated at approximately R\$ 300,000 per month, due to the need to pay both the absent teacher and their replacement¹⁴.

It is also evident that the effects of teachers' illness and absenteeism extend beyond the financial impact on the municipal education. Ribas, Ilha, and Graup¹⁴, in their study on the perceptions of school administrators and the Municipal Department of Education (SEMED) regarding the implications of teacher absences, found that teaching is indeed affected—particularly through the disruption of the emotional bond between teacher and student and the discontinuity of the teaching-learning process. Based on this significant evidence, it is estimated that the entire process of knowledge construction and socialization within the classroom may be compromised, as well as student performance in both curricular and governmental assessments.

This study also revealed that 67.4% of the teachers who required leave during the reference period were employed in peripheral schools. Notably, schools located in peripheral regions tend to have a higher incidence of substitute and temporary teachers, along with elevated teacher turnover rates¹⁵.

Considering that each area of the city has its own characteristics and identity, schools are directly influenced by the social issues surrounding them - issues that are present in the daily lives of families and students⁴. In addition to all other challenges inherent the teaching, educators in these areas are further impacted by school violence, whether related to gangs, drug use and trafficking, illegal possession of weapons, or generalized disrespect and permissiveness, which may result in physical aggression¹⁶.

Another finding that emerged from this research concerns the cause of teacher leave: 13.9% of the medical certificates were specifically related to musculoskeletal health problems.

A documental study conducted in the state of Paraná showed that, between 2017 and 2018, such conditions were responsible for 17.22% and 17.39% of teachers' absences in the state public school system¹⁷. Statistical data indicate that absenteeism rates among workers with musculoskeletal disorders are notably high¹⁸, especially considering that the daily limitations caused by these conditions may prolong the duration of leave and make it more recurrent than in other types of illness¹⁹.

Along these lines, literature indicates that between 39% and 95% of teachers experience some form of musculoskeletal disorder, which ranks among the most prevalent occupational diseases affecting this workforce⁷. These conditions may lead to altered sensitivity and localized inflammation, increasing muscular fatigue and resulting in motor, psychological, and social complications²⁰.

It is also important to note that the highest number of medical certificates related to musculoskeletal disorders and non-communicable chronic diseases (NCDs) were submitted by teachers in the last age tertile (50.1 years and older). In addition to the previously discussed characteristics of teaching and its potential to cause musculoskeletal issues, it is worth emphasizing that most of municipal teachers are women. These conditions may also be associated with the life stage many of them are experiencing, the climacteric period, which contributes to the onset of musculoskeletal disorders and other physiological changes²¹.

Understanding that senescence is not merely the passage of time but rather an accumulation of biological phenomena that unfold over the years, it is essential to consider the transformations that occur in musculoskeletal health. Over time, individuals naturally experience loss of muscle mass and strength, adipose infiltration in tissues, degeneration of cartilaginous structures, reduced ligament flexibility, and bone mass loss, among other changes²².

Although musculoskeletal symptoms may affect various anatomical regions, certain areas are more frequently impacted among teachers, including the lumbar spine, neck, and shoulders^{7,19}. The development or worsening of these conditions can be attributed to inadequate seating in schools, prolonged standing while writing on the board or assisting students, and the daily transport of poorly conditioned teaching and pedagogical materials (e.g., laptops, books,

projectors). These physical demands are compounded by the psychological strain of working in the school environment¹⁷,².

Among the numerous medical certificates submitted, most single-day absences were attributed to NCDs and various other causes. According to the Brazilian Ministry of Health, NCDs are primarily characterized by cardiovascular diseases, chronic respiratory conditions, neoplasms, and diabetes mellitus. It is important to highlight that these diseases represent a serious public health concern in Brazil and globally due to their high morbidity and mortality rates. In this study, they were found to be highly prevalent among teachers²³.

Supporting these findings, a recent study conducted with primary school teachers in Minas Gerais identified a predisposition to non-communicable chronic diseases among the evaluated sample²⁴. Furthermore, the authors found that smoking, excessive alcohol consumption, being overweight, and mental health issues were the most frequent risk factors for NCDs among teachers. These comorbidities require ongoing management and regular medical consultations due to their long-term nature. According to national data, such conditions rank among those that most demand healthcare services, procedures, and interventions²³.

On the other hand, teachers' absences lasting three days or more were predominantly associated with mental health problems. Currently, the execution of school-related activities is heavily influenced by various forms of daily stress. When combined with other factors, this environment contributes to the worsening of illness and emotional suffering among educators¹³. Moreover, the relationship between teachers and the educational environment often extends beyond the physical boundaries of the school, surpassing weekly working hours and increasingly overburdening these professionals.

It is evident that the factors influencing teachers' mental health are closely tied to school-related demands, which are becoming increasingly intertwined²⁵. These professional obligations frequently spill over into teachers' personal lives, leading to stress and other biopsychosocial impairments in both personal and professional domains. Such conditions may culminate in the development of Burnout Syndrome⁴.

Among the most widely discussed topics in the field of teachers' health and labor, Burnout Syndrome is consistently cited as one of the leading causes of illness among educators today⁵. This condition is characterized as a state of chronic stress directly linked to professional

activity and the inability to cope with recurring adversities in daily work life⁴. Additionally, the literature indicates that the professionals most affected by Burnout are those in healthcare and education - fields that involve frequent public interaction and caregiving responsibilities⁵.

Work tenure also proved to be a relevant factor when associated with the different causes of teacher illness in the municipal education system. In the present study, teachers with fewer years of service in the municipality submitted more medical certificates related to mental health issues. The onset or worsening of mental disorders is linked to a reduced sense of well-being and limited coping strategies for dealing with daily work-related adversities and demands²⁶. In this regard, the challenges faced by new professionals, who may feel unprepared to handle adverse situations or perform specific tasks due to lack of experience or training, can lead to distress and trigger mental health problems²⁷.

When analyzing the distribution of medical certificates by academic semester, the second one showed the highest concentration of illness-related absences, totaling 759 (Table 1), with most cases related to musculoskeletal health, mental health, and miscellaneous causes (Table 2). This finding should be interpreted considering the climatic characteristics of Rio Grande do Sul, the state in which the study was conducted, where extreme seasonal variations are common. The second academic semester coincides with the winter season, and it is believed that such seasonal factors significantly influence illness and absenteeism rates, which tend to increase due to the region's climatic conditions²⁸. Similarly, two other studies conducted in southern Brazil on absenteeism among workers in different professions found that its rates were higher during autumn and winter, likely due to cold temperatures and heavy rainfall^{29,30}.

As a result of significant temperature drops, winter cold appears to exacerbate various illnesses. In the literature, meteorological changes are frequently cited as factors that can intensify or alleviate acute or chronic pain conditions, both physical and psychological. These climatic shifts have also been shown to heighten pain perception in individuals with rheumatic diseases such as fibromyalgia and rheumatoid arthritis³¹.

It is important to note that, despite the relevance of these findings, collecting data on teachers' illness and absenteeism over a one-year period may not be sufficient to generalize the results beyond the timeframe studied.

Given the evidence presented and the literature used as a basis for comparison, it is hoped - and strongly recommended - that the issue of teachers' illness and absenteeism in public education be addressed with the seriousness it deserves. The negative effects of this phenomenon cannot be overlooked, as they impact not only the health of the teachers themselves but also school management, staffing logistics, public sector finances, and the continuity of teaching and learning processes.

Therefore, it is essential that public authorities approach this issue with care and invest in targeted occupational health policies aimed at prevention and health promotion for educators. The development of cost-effective alternatives, including partnerships with universities and local services that promote teacher well-being, should be prioritized by public and educational administrators as a viable strategy to reduce the rates of illness and absenteeism identified in this study.

In conclusion, further research is recommended to estimate and monitor teachers' absenteeism statistics, with the goal of encouraging the development of effective solutions to prevent and mitigate this public health concern. Such efforts would contribute to improving teachers' quality of life and health, with positive repercussions for the teaching and learning processes.

5. Conclusion

This study provided an overview of the reality surrounding teachers' illness and absenteeism within the municipal education of Uruguaiana-RS. Although the most frequent causes were categorized as miscellaneous, musculoskeletal health issues emerged as the leading specific reason for teacher's absences, with a notable concentration of related medical certificates submitted during the second academic term. Additionally, it became evident that, during the study period, teachers working in peripheral schools were the most affected and had the highest rates of absence.

The health conditions identified in the medical certificates that led to teachers' absences were predominantly associated with age group, length of service in the municipal education system, number of sick leave days, and academic calendar period. These findings suggest that

the nature of teaching and its inherent demands contribute to the deterioration of educators' health, resulting in increased rates of illness-related absenteeism.

The results should be interpreted as a warning, as absenteeism affects both public and private institutions. Within the school context, other studies have reported similarly concerning scenarios. Considering this, it is essential to gain a deeper understanding of the issue through further research. By analyzing these findings, educational and administrative leaders can develop and implement strategies aimed at preventing and reducing illness and absenteeism rates, ultimately improving teachers' health and quality of life and, by extension, the quality of education they provide.

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