# Epidemiological profile of public servants absent from work due to mental disorders from 2010 to 2013

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**Abstract** *Objective: Describe the epidemiological profile of mental and behavior disorders (MBD) of public servants in the State of Santa Catarina, which resulted in workers providing medical certificates, between 2010 and 2013. Method: A descriptive cross-sectional study with a quantitative approach, performed from data provided by the State Secretary of Administration. All medical certificates classified as in Chapter V of ICD-10 - Group "F" - Mental and Behavioral Disorders (MBD) were considered for analysis in the period. Results: The study included 71 state agencies, primarily the State Secretary of Education, which corresponds to about 46% of all workers. Considering all the pathologies, 79,306 medical certificates were registered, among which, 40.14% were for MDB. Of the 8,765 workers with medical certificated for MBD, significant differences were found in the prevalence of work absence between gender (more women, in general, with the exception of MBD caused by psychoactive substance use), levels of education, city of the working place, government agency of work, and workers job position.*

**Key words** *Epidemiological profile, Mental disorders, Sick leave, Mental health, Prevalence*

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## Introduction

The aim of this article is to describe the epidemiological profile of mental and behavioral disorders (MBD) of public servants in the State of Santa Catarina, who provided a medical certificate, in the period 2010 to 2013.

MBDs are characterized by significant clinical and behavioral changes, inhibited function, or any combination of these. They are likely to cause relevant clinical distress and damage in several areas of mental function. They may come from organic, social, genetic, chemical or psychological factors[1]. The high frequency and prevalence of these disorders, in several categories of workers in Brazil[2-5] and around the world[6-10], is one of the main causes of absence from work, impacting individuals and society.

Due to their prevalence and the risk of incapacity at work, the MBDs are a major public health problem. These disorders, especially depression[11], reduce the work capacity and cause long periods of absence, along with early retirement and mortality[7,12,13].

Between 2004 and 2013 there was a 28% increase in benefits due to MBDs[14] among the private sector workers in Brazil. This made MBDs the third cause of work incapacity between 2004 and 2006[15], and the forth cause for granting health benefits from January to April 2014[16].

MBDs are the main cause of absence among public servants in different prevalence studies, based on data collected from official data bases[17,18]. In this context, between 2001 and 2005, 2004 and 2005 and 2008 and 2009, the index for MBDs shows percentage variations between 30% and 39.59%[19-21], with prevalence among women[18,22,23], with the exception of association with psychotic substances, where prevalence is among men[23]. In addition, MBDs are responsible for the highest percentage of sick leave as they cause long absences, which has a direct cost of 23 million reais per year[4].

Higher risks of suffering from MBD were identified in workers who reported loss of quality of life, dissatisfaction with the ability to work, who were exposed to high physical demand and had reasonable or poor working conditions[22], and those exposed to high physiological demand who had little control over their work activities[24].

Another important justification for studies in this area, is the fact that the more time taken off work due to illness, the greater the disability level is and lower the possibility of returning to work[25]. Illness due to MBD, which implies high number of medical certificates, means large personal, institutional, economic and social losses such as absence from work, reduced work capacity and loss of productivity[11,26-29].

Understanding the complex and multifaceted phenomenon of absenteeism as a result of MBD, may contribute to the reduction of direct and indirect costs arising from employees' inability to work[30], and to promote the understanding of what generates satisfaction and quality of working life and more successful outcomes in terms of health[31]. It is therefore necessary to describe the MBD epidemiological profile for any analysis of sick leave, given that such a description enables more accurate and effective future action.

## Method

This was a study with epidemiological design. It was a descriptive cross-sectional study with quantitative approach, performed from data provided by the State Secretary of Administration (SEA) of the State of Santa Catarina (SC), through the agencies: Medical Expertise (GEPEM), Control and Benefit Issue (GECOB) and Monitoring and Standardization of Personnel Management (GAPES), of the Department of Public Servant Health.

The epidemiological design is characterized by analyzing the distribution of diseases, in this case mental health disorders, in a specific population group: public servants with direct, stable and active contracts with the State of Santa Catarina, absent from work due to Mental and Behavioral Disorders (MBD), through a study of the prevalence of time (number of cases in a specific period of time)[32].

This research used a database of civil servants in Santa Catarina who have medical certificates for absence from work due to MBD (code F of ICD-10). The research considered the period from January 2010 to December 2013. The database has 13 variables, nine independent and four dependent variables: 1) demographic variables (independent): gender, age, race, marital status, and level of education; 2) occupational variables (independent): position, workplace (agency of the State Government), city of work and length of service (years); 3) outcome variables (dependent): year of start of absence, amount paid, number of days granted and the ICD-10 code assigned to main reason for absence.

For prevalence calculations, it was necessary to collect data from total population (comprised

by the sample of absent workers summed to the number of non-absent workers). The base of active workers with stable contracts presents seven variables: year of observation (October was chosen as standard as it has less variation between years), government agency of work, CPF number, race, level of education, position, and city of work. Repeated CPF numbers were excluded, as some workers are placed in more than one government agency. The CPFs that appeared for the first time in the database (random criteria). This research used essentially descriptive statistics (means, standard deviations, medians, frequencies of variables, and prevalence). Prevalence rates were: a) lifetime prevalence = workers with medical certificates (2010-2013) / total workers x 100; b) prevalence of certificates = number of medical certificates (2010-2013) / total number of workers x 100.

In addition to prevalence, the Kolmogorov-Smirnov test was used to verify the normality of distributions, simple correlations (Tau-b de Kendall) and the Student t test to see if the differences between the averages by gender were statistically significant.

This study considered all ethical principles concerning its implementation (CNS Resolution No. 466/2012). It was authorized to its realization by the Secretary of Administration of the State of Santa Catarina and approved by the Ethics Committee of the Secretary of Health of the State of Santa Catarina (CEPSES-SC).

## Results and discussion

The original file provided by GECOB/SEA contained 79,306 cases of medical certificates and 21,833 workers registered for this benefit, 40.14% of which derived from MBD, the leading cause of medical certificates in the analyzed period (2010-2013). For the analysis of this study exclusions were: the ICD-10 codes other than F (mental and behavioral disorders), secondary codes (not main codes). Levels of education were grouped so that the two databases (GECOB and GAPES) stay aligned. Finally, since there were many positions, some have been grouped to facilitate analysis.

Considering the observed years (2010 to 2013) and excluding repeated CPF numbers, the total number of workers employed by the State of Santa Catarina was approximately 45,388. October was used as the month of reference for each year, to present values closer to the annual average. The amounts presented were the foundation for calculation of the cumulative prevalence (2010-2013), presented below.

Between 2010 and 2013, there were 8,765 workers and 27,231 cases of medical certificates caused by MBD in the state of SC. Repeated absences – workers who were absent more than once for MBD between 2010 and 2013 - were ordered in the database from 1 (for the 1st absence) to 15 or more (for the 15th absence or more). The number of 1st absence cases corresponds to the number of people absent in the observed period. Table 1 summarizes the quantitatives of each year.

Table 1 shows a significant result: on average, more than two thirds of absent workers, regardless of whether absent for the first or the tenth time, were again absent due to MBD between 2010 and 2013 (from the 4th absence – with 2,454 cases – to the 5th absence – with 1,742 cases, for instance, there is a recurrence of 70.99%; from the 11th to the 12th absence, the recurrence is 81.01%). These data confirm findings as portrayed in the literature. Previous episodes of health absence increase the risk of later occurrences of absence for the same reason and the association shows to be stronger the longer the period of previous absence. Short periods of absence must also be observed, as they are predictors of future absence[28].

Medical absence in a preceding year suggests 25% of future absence for the same reason, and absence two years previously, a probability of 30% of new absence[11,13]. In women, stress related to workplace and interpersonal conflicts is a predictor for absence of eight days or more. Early identification of those at risk can promote the implementation of preventive measures aimed at reducing the stress that causes these absences[27].

The statistical distribution of means and standard deviations for each of the continuous variables, namely: age (in years), length of service (in years), amount received for the duration of the medical certificate (in Brazilian Reais) and number of days granted for the medical certificate identified relevant values. The values of workers and cases are presented (67.81% of which are repeated - that is, workers who were absent more than once in the period observed). For the 8,765 workers, the average age from the first absence was 45.51 years (SD 8.65), the 15-year service time (SD 9.24), the average payment amount was R $ 3,246.78 (SD R $ 2,173.60) and the number of days granted by the medical certificate reached an average of 32.71 days (SD 22.09

**Table 1**. Distribution of absentees ordered x year of start of absence.

| Absences' order | Absences' starting year | | | | Total |
|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | |
| 1st (after 2010) | 2,937 | 2,077 | 2,012 | 1,739 | 8,765 |
| 2nd | 1,541 | 1,289 | 1,255 | 1,218 | 5,303 |
| 3rd | 811 | 935 | 877 | 870 | 3,493 |
| 4th | 429 | 675 | 702 | 648 | 2,454 |
| 5th | 186 | 513 | 530 | 513 | 1,742 |
| 6th | 70 | 388 | 407 | 434 | 1,299 |
| 7th | 19 | 277 | 335 | 349 | 980 |
| 8th | 9 | 202 | 269 | 288 | 768 |
| 9th | 3 | 118 | 234 | 241 | 596 |
| 10th | 3 | 74 | 182 | 194 | 453 |
| 11th | 2 | 38 | 144 | 153 | 337 |
| 12th | 1 | 22 | 111 | 139 | 273 |
| 13th | 0 | 13 | 81 | 109 | 203 |
| 14th | 0 | 7 | 47 | 95 | 149 |
| 15th (or more) | 0 | 4 | 114 | 298 | 416 |
| Total | 6,011 | 6,632 | 7,300 | 7,288 | 27,231 |

days). For the 27,231 cases of medical certificates, the mean age was 46.15 years (SD 8.33 years) and the service time 15.39 years (SD 9.05 years). The payment amount decreased to R $ 3,216.66 (SD R $ 2,140.21) and the number of days granted for the medical certificate rose to 41.21 days (SD 25.85 days).

These values demonstrate higher standard deviations, especially for variables of payment amount and number of days granted, suggesting a very high asymmetry. Continuous variables above showed no normal distribution (Kolmogorov-Smirnov test).

**Demographics x outcome**

Table 2 presents demographic data of medical certificate cases and data from workers with medical certificates (at least once) between 2010 and 2013. The figures relating to the total population of men and women presented below, were based on the ratio (%) of men and women informed by GECOB. Since the total population of each of the responses for marital status was not provided by the State (SC), it has been estimated based on the proportions of the population in 2012[33]. The age range used as reference was 45-49 years as the average age of absent workers was 45.51 years. The workers' educational levels were summarized into five categories: Post-graduate

(specialists, masters and doctors), higher education (graduate and technological graduation), high school (regular high school, technical, vocational, sequential college and higher incomplete education), primary education (primary complete and incomplete high school), Not Specified (when the educational level was not informed or less than complete primary education).

Table 2 shows the epidemiological profile of work absence, based on sociodemographic data. Considering gender, the population consists of approximately 45,388 workers of which 64.11% (or 29,099) are women and 35.89% are men (or 16,289). In the period analyzed, the prevalence of MBD is significantly higher among women. Among the workers absent due to medical certificates, 79.93% were women, which meant a prevalence (2010-2013) of 23.66. Men were responsible for a percentage of 20.07% of absence due to MBD, with a lifetime prevalence of 10.60.

For the variable race, it was found that 93.83% of workers absent due to MBD stated they were white, corresponding to a prevalence of 19.56 in the period considered. The black race had a higher prevalence: 20.51. Regarding marital status and education, the highest prevalence of absence due to MBD were found among widower civil servants (28.80) and among postgraduates (21.60), respectively. Further research is needed to explore qualitatively racial, social and family

**Table 2.** Distribution of demographic and epidemiological profile of absences.

| Characteristics | Absences 2010-13 | % | N 2010-13 Servants | % | Total Pop. 2010-13 | Prev. 2010-13 |
|---|---|---|---|---|---|---|
| Sex | | | | | | |
| Fem | 21,575 | 79.23 | 7,006 | 79.93 | 29,099 | 24.08 |
| Mas | 5,656 | 20.77 | 1759 | 20.07 | 16,289 | 10.80 |
| Ethnicity | | | | | | |
| Black | 826 | 3.03 | 265 | 3.02 | 1,292 | 20.51 |
| White | 25,575 | 93.92 | 8,224 | 93.83 | 42,039 | 19.56 |
| Brown | 585 | 2.15 | 180 | 2.05 | 1,096 | 16.43 |
| Indigenous | 22 | 0.08 | 13 | 0.15 | 93 | 13.98 |
| Asian | 24 | 0.09 | 10 | 0.11 | 116 | 8.64 |
| Uninformed | 199 | 0.73 | 73 | 0.83 | 752 | 9.71 |
| Estado civil | | | | | | |
| Widower | 807 | 2.96 | 231 | 2.64 | 802 | 28.80 |
| Divorced | 2,148 | 7.89 | 635 | 7.24 | 2,482 | 25.59 |
| Separated | 1,868 | 6.86 | 544 | 6.21 | 2,380 | 22.86 |
| Maried | 15,402 | 56.56 | 5,164 | 58.92 | 27,854 | 18.54 |
| Single | 7,001 | 25.71 | 2,187 | 24.95 | 11,825 | 18.50 |
| Uninformed | 5 | 0.02 | 4 | 0.05 | 46 | 8.70 |
| Education | | | | | | |
| Postgraduation | 14,036 | 51.54 | 4,775 | 54.48 | 22,103 | 21.60 |
| Higher education | 6,446 | 23.67 | 1,944 | 22.18 | 9,702 | 20.04 |
| High school | 5,043 | 18.52 | 1,518 | 17.32 | 9,620 | 15.78 |
| Elementary school | 985 | 3.62 | 290 | 3.31 | 2,392 | 12.12 |
| Uninformed | 721 | 2.65 | 238 | 2.72 | 1,570 | 15.16 |
| Total | 27,231 | 100 | 8.765 | 100 | 45,388 | 19.31 |

support, as well as the influence of education on illness caused by MBD, in public servants. It is interesting to note the fact that more years of education are associated with a higher prevalence of absence due to MBD. The distribution of MBD in gender can be seen in Table 3.

MBD most prevalent in both genders were mood disorders (F30-F39) and neurotic disorders, stress-related disorders and somatoform disorders (F40-F48), shown in Table 3. When comparing genders, statistically significant differences were found for these diagnoses (both with: $x^2 > 1,061$ and $p < .001$ - the proportion of women higher than men) and for the diagnosis of mental and behavioral disorders due to psychoactive substance use (F10 - F19) ($x^2 = 61,538$ and $p < .001$ - greater proportion of men than women).

The diagnosis of major depression is associated with long periods of incapacity to work and therefore absence due to illness (120 days on average), suggesting the need for improvements in functional capacity assessment, treatment and referral for depressed patients[34].

The prevalence of diagnosis for mood disorders (F30-F39) and neurotic disorders, stress-related disorders and somatoform disorders (F40-F48), was also found in studies with Federal and State civil servants from other regions of the country[18,21,23,35,36], predominantly female, with the exception of mental and behavioral disorders due to psychoactive substance use, prevalent in males[23], which was also observed in this study. Absence rates due to MBD observed in public servants, were around 30%, reinforcing the importance of epidemiological studies to determine the prevalence of MBD in the general population and specifically professions that favor the characterization of the causal link between health problems and work[2].

The t test showed significant differences (p <0.001) between men and women in the number of medical certificate days (36.04 and 31.88 days respectively) and amount received for the duration of the medical certificate (average for men: R$ 3.641.83, average for women: R$ 3.147.59), both with small effects (Cohen d < 0.2). The risk of early retirement and mortality for workers of both genders is greater among those with medi-

**Table 3**. MBD Distribution (ICD-F) by gender.

| Main ICD-F Groups | Sex | | Total |
| --- | --- | --- | --- |
| | Male | Female | |
| F10-F19 Mental and behavioural disorders due to psychoactive substance use | 92 | 12 | 104 |
| F20-F29 Schizophrenia, schizotypal and delusional disorders | 40 | 35 | 75 |
| F30-F39 Mood (affective) disorders | 829 | 4,202 | 5,031 |
| F40-F48 Neurotic, stress-related and somatoform disorders | 772 | 2,689 | 3,461 |
| F60-F69 Disorders of adult personality and behavior | 10 | 27 | 37 |
| Other groups (F00-F09, F50-F59, F70-F79, F80-F89, F90-F98) | 16 | 41 | 57 |
| Total | 1,759 | 7,006 | 8,765 |

cal certificates of a fortnight or more (per year). These data have been used as important public health indicators[7].

The study presented the correlation of the variable age with the variable monthly amount received for the duration of the medical certificate (Tau-b Kendal = 0.174, p < 0.001), as well as age with the variable number of days granted by the medical certificate (Tau-b Kendal = 0.127, p < 0.001). Kendal's non-parametric correlation was used because the variables in question did not show normal distribution. Although statistically significant, the values found indicate weak correlations between the observed variables.

**Occupational data x outcome**

Considering the epidemiological data of the medical certificates granted separated by the city of the State of Santa Catarina where the civil servant worked between 2010 and 2013, higher prevalence can be seen in the state's coastal cities (Penha, Imbituba, Laguna, Araranguá, Palhoça, Biguaçu and Tubarão, for example), and lower prevalence further inland in the State (Joaçaba, Chapecó, São Bento do Sul, Canoinhas and Mafra, for example), with the exception of Florianopolis and Joinville, as shown in Figure 1.

Table 4 shows the distribution of medical certificates due to MBD in the state of SC. It is possible to verify the prevalence rates in the period of 2010-2013.

The high prevalence of MBD in workers in education sectors (State Secretary of Education and the Foundation for Special Education of Santa Catarina) and health (State Secretary of Health), first, second and fourth highest prevalence (27.41; 19.47 and 16.00 respectively - Table 4) corroborates other studies in the area. Higher percentages of sick leave were identified as a result of MBD, in the sectors of education (39%), financial services (31%) and health (30%)[8]. Among civil servants, the teachers were those who were absent the most due to health issues[36] and the State Secretary of Education was responsible for the largest number of medical certificates due to MBD, considering the total number of workers - 15.9%[2].

The public service in Santa Catarina comprises a diversity of job positons. Among the 181 positions identified in the GECOB database, the study observed the 18 that had more than 260 servers and one that grouped the other positions. Smaller accumulated prevalence were observed in the following positions: physicians, civil police officer and prison/correctional officer.

Among the 19 job position analyzed, eight of them were related to education and education management (teacher, school supervisor, school administrator, education assistant, technical-pedagogical assistant, technical analyst in educational management, educational guidance, educational consultant). Of these eight, six are above the overall average of absences which is 19.31 (school supervisor - 30.14; school administrator - 29.75; educational consultant - 28.47; elementary and high school teacher - 27.55; education assistant - 23.45; teaching assistant - 23.18). The position of school supervisor and educational guidance have been abolished. Thus, there will be no entry of new workers for these careers in the State of Santa Catarina.
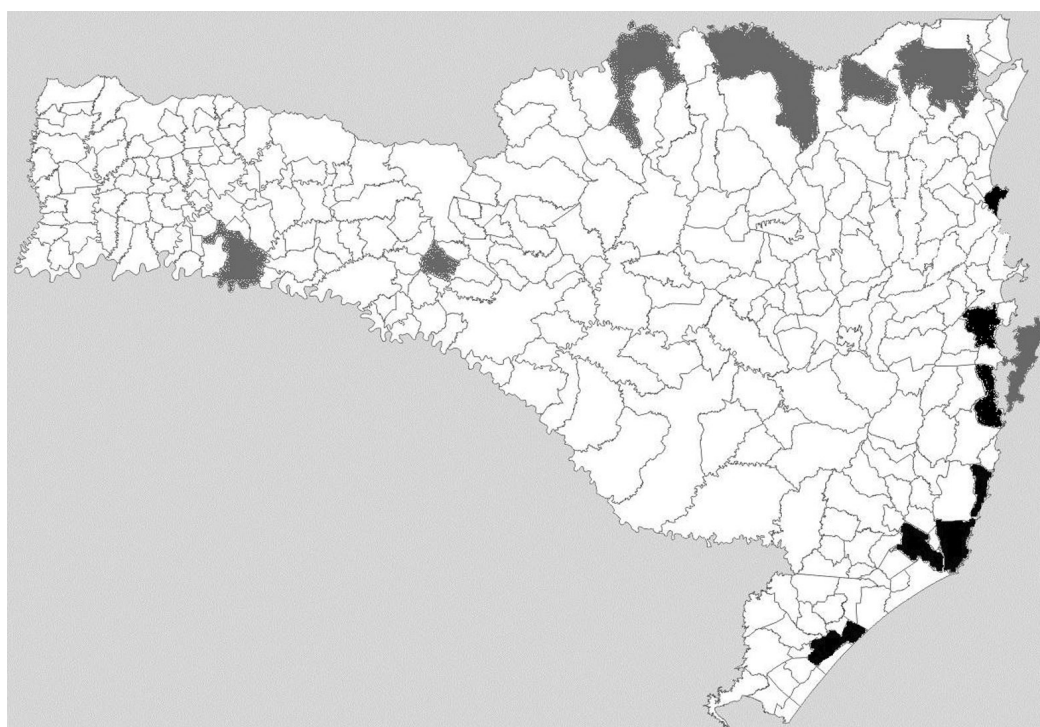
**Figure 1.** In black the seven highest and in gray the seven lowest prevalence of medical certificates due to MBD among cities of the State with more workers.

**Table 4**. Distribution of prevalence rates by worker locating body (2010-2013).

| Departments of SC state government | N Servants 2010-13 | Pop. 2010-13 | Prevalence 2010-13 |
|---|---|---|---|
| Education Department | 5,693 | 20,772 | 27.41 |
| Special Education State Foundation | 182 | 935 | 19.47 |
| SDR* Florianopolis Metropolitan | 20 | 100,5 | 19.90 |
| Health Department | 1,583 | 9,895 | 16.00 |
| Administration Department | 83 | 543 | 15.29 |
| Pension Institute | 37 | 256 | 14.45 |
| Justice and Citizenship Department | 240 | 1,685 | 14.25 |
| State Foundation of Culture | 20 | 157 | 12.72 |
| Department of Social Welfare, Labour and Housing | 33 | 267 | 12.36 |
| Environment Foundation | 34 | 286 | 11.89 |
| Department of Transportation and Terminals | 20 | 197 | 10.15 |
| State's General Attorney | 30 | 313 | 9.58 |
| Public Safety Department | 375 | 4,465 | 8.40 |
| Departament of Finance | 64 | 1,132 | 5.66 |
| State University Foundation | 78 | 1,497 | 5.21 |
| Infrastructure Department | 43 | 870 | 4.94 |
| Other Departments | 230 | 2,019 | 11.39 |
| Total | 8,765 | 45,388 | 19.31 |

Note: SDR * - Secretary of Regional Development.

The positions of educational consultant and technical analyst in educational management are not exclusive of the State Secretary of Education (SED). The position of educational consultant appears mainly in the Secretaries of Regional Development (SDR's), but also in other departments such as the State Secretary of Administration (SEA), for example. The position of technical analyst in educational management is almost exclusive to the SED. Only some of its workers are allocated to other secretaries (SDR's, SSP, among others). That is, these two positions, which are below the overall average of absences, do not act exclusively in the school environment indicating the need for more research in this area. The position of teacher (SED) had a prevalence of 27.55. University professors were not included because they are linked to the State University of Santa Catarina (UDESC) and, according to the data presented in this category, have prevalence far below the overall average (around 5%).

The position of technician in administrative activities corresponds to a prevalence of 26.69, this function is found in the various secretaries researched, and involves the operation of bureaucratic tasks. The position of general service agent also showed high prevalence - 17.87. However, according to managers of GEPEM and GECOB, this position was abolished in the State by hiring outsourced workers. Servers that have not yet retired and hold this position have been sent to various activities as operators, archivists, receptionists, among others, which limits the discussion of hypotheses about the influence of the position in the illness of the workers. They remain grouped together because of their job position, but perform various activities, which precludes generalizations.

Finally, the continuous variable "years of service" (in years) was correlated with the variable "amount paid" (money received for the duration of the medical certificate) and number of days of the medical certificate. As expected, correlations, although statistically significant, were very low (respectively: Tau-b of Kendal = .290 and .119, where $p < 0.001$).

## Final considerations

This research shows significant results about the epidemiological profile of civil servants in the State of Santa Catarina, affected by MBD and presenting medical certificates for absence, starting with the number of absent workers (more than 8,700) with medical certificates (over 27,000) during the four years analyzed . Considering the average total number of workers (about 45,000 active effective), these numbers are quite high. About 19.31% of workers had medical certificates due to MBD at least once in the four years analyzed (2010-2013). Recurrence of medical certificates due to MBD was also significant. On average, about two-thirds of workers who had medical certificates due to MBD, had reoccurrences for the same reason, in the observed period, a fact that prompts discussions and hypotheses for further research, since the reasons for such recurrence are unknown.

The average amount paid for medical certificates due to MBD also raises an important field of research with regard to the direct and indirect costs of this issue to the government. On average, more than R\$ 3,000.00 per absent worker, was spent per month on wages alone, paid for the duration of the medical certificates for MBD. Considering in particular that the absence of a teacher involves hiring at least one other teacher on a temporary basis.

This study reveals significant differences in prevalence between the compared groups. It is worth remembering, for example, the difference between the prevalence of men and women with medical certificates for MBD (prevalence in women 24,08 and men 10,80). Groups of MBD require special attention: CID-F30-39 (disorders of mood [affective]) and F40-48 (neurotic disorders, stress-related disorders and somatoform disorders), higher among women and F10-19 (MBD due to psychoactive substance use), higher in men.

This research also found results with little significant, some of which were already expected. Such as the occurrence of medical certificate for MBD in different racial groups and also the weak correlations between age of workers and number of days granted or amounts paid, or between their time in service and the number of days granted or amounts paid. Such findings raise the hypothesis that MBD does not "choose" race, age or length of service.

There were results apparently contrary to the common sense, which give grounds for further research. The prevalence of medical certificates in postgraduate workers, for example, was higher than in all other educational groups. It is noteworthy that the information about education was not fully updated with the SC government databases, as this update depends on the worker, who often does not send in their school records (diplomas, certificates) to the competent author-

ities. Still, such an outcome seems contrary to expectations. Another interesting result concerns the differences in prevalence of medical certificates among cities of the state of SC, especially with respect to coast - mainland comparison.

Finally, future research could seek explanations for the high percentage of absence due to MBD (40.14%), which puts these diseases as the main cause for worker absence in the state of Santa Catarina. In addition, observing the relationship of MBD with the other most frequent pathologies that affect state civil servants, or MBD in relation to other benefits granted by the government, such as rehabilitation and removal. The hope is that research is increasingly able to identify sociodemographic and occupational predictors of MBD, as relatively accurate predictors enable more effective interventions and, above all, the reduction of the occurrence of MBD among civil servants.

## Collaborations

D Baasch participated in the method, tabulation, treatment of data and analysis of empirical data; RL Trevisan of the introduction, grounding and discussion of results (literature); and RM Cruz from the final considerations and final revision of the text.

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