

# CUIDADO É FUNDAMENTAL

Escola de Enfermagem Alfredo Pinto – UNIRIO

RESEARCH

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## HEALTH INDICATORS OF PERIODIC EXAMINATIONS FOR FEDERAL CIVIL SERVANTS

*Indicadores de saúde dos exames periódicos para servidores públicos federais**Indicadores de salud de los exámenes periódicos para funcionarios federales***Ana Paula da Fonseca da Costa Fernandes<sup>1</sup>** **Amanda Gonçalves Gaspar<sup>2</sup>** **Alexandre Sousa da Silva<sup>3</sup>** **Joanir Pereira Passos<sup>1</sup>** 

### ABSTRACT

**Objective:** to draw the health profile of public servants of an educational institution located in Rio de Janeiro, based on the results of periodic health examinations. **Method:** a quantitative and cross-sectional approach was used, with data collected from a federal public educational institution. **Results:** the risk for developing non-communicable chronic diseases was verified, given the family history combined with the participants' lifestyle. The referred physical activity could not be associated with a reduced risk of cardiovascular diseases and, therefore, its contribution to the health of its practitioners may not be effective. Regarding occupational exposure, changes in audiometry, videolaryngostroboscopy and Gama GT exams of the teaching staff were identified. **Conclusion:** it is essential to consolidate actions aimed at public servants, as a tool to support actions to promote and protect workers' health and to strengthen public policies. focused on the theme.

**DESCRIPTORS:** Public health policy; Occupational health; Occupational exposure; Occupational risks; Health promotion.

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## RESUMO

**Objetivo:** traçar o perfil de saúde dos servidores públicos de instituição de ensino localizada no Rio de Janeiro, a partir dos resultados dos exames periódicos de saúde. **Método:** utilizou-se abordagem quantitativa e transversal, com dados coletados em uma instituição pública federal de ensino. **Resultados:** verificou-se o risco para desenvolvimento de doenças crônicas não transmissíveis, dado o histórico familiar aliado ao estilo de vida dos participantes. A atividade física referida não pôde ser associada à diminuição de risco de doenças cardiovasculares e, por isso, pode não estar sendo efetiva sua contribuição para a saúde de seus praticantes. Quanto à exposição ocupacional, foram identificadas alterações nos exames de audiometria, videolaringostroboscopia e Gama GT dos servidores docentes. **Conclusão:** torna-se fundamental consolidar as ações voltadas para os servidores públicos, enquanto ferramenta para embasar ações de promoção e proteção da saúde dos trabalhadores e para o fortalecimento de políticas públicas voltadas para o tema.

**DESCRITORES:** Políticas públicas de saúde; Saúde do trabalhador; Exposição ocupacional; Riscos ocupacionais; Promoção da saúde.

## RESUMEN

**Objetivo:** dibujar el perfil de salud de los servidores públicos de una institución educativa ubicada en Río de Janeiro, con base en los resultados de los exámenes periódicos de salud. **Método:** se utilizó un enfoque cuantitativo y transversal, con datos recopilados de una institución educativa pública federal. **Resultados:** se verificó el riesgo de desarrollar enfermedades crónicas no transmisibles, dada la historia familiar combinada con el estilo de vida de los participantes. La actividad física referida no podría asociarse con un riesgo reducido de enfermedades cardiovasculares y, por lo tanto, su contribución a la salud de sus profesionales puede no ser efectiva. Con respecto a la exposición ocupacional, se identificaron cambios en audiometría, videolaringostroboscopia y exámenes de Gama GT del personal docente. **Conclusión:** es esencial consolidar las acciones dirigidas a los servidores públicos, como una herramienta para apoyar acciones para promover y proteger la salud de los trabajadores y fortalecer las políticas públicas. centrado en el tema.

**DESCRIPTORES:** Políticas públicas de salud; Salud laboral; Exposición profesional; Riesgos laborales; Promoción de la salud.

## INTRODUCTION

The text of the National Policy for Occupational Health – PNSTT impresses the knowledge produced by the collective participation of workers, union movements and thinkers over decades of discussion.<sup>1</sup> At the federal level, the discussions culminated in the creation of the Integrated Health System. Occupational Health of the Federal Public Servant – SISOSP, later reformulated into an Integrated Health Care Subsystem of the Federal Public Servant – SIASS, through Decree No. 6.833 / 2009. The objective of this program is to “ensure the implementation of the federal public servants’ health and safety at work policy” – PASS.<sup>2</sup>

SIASS encompasses several health actions for federal civil servants. Regarding the health promotion and surveillance axis, regulated by MPOG Normative Ruling No. 03 of March 25, 2013, worker health is mentioned in Art. 10 as a priority action for health promotion.<sup>3</sup> PASS gathers in the surveillance and health promotion worker’s health actions that at the time had their own legislation, including periodic medical examinations.<sup>4</sup>

As for Decree No. 6,856 / 90, it regulates one of the articles of the RJU Law No. 8,112 / 90, which obliges public institutions at the federal level to implement the periodic examination for all federal public servants. Despite its mandatory character regarding the implementation, the Decree establishes that the civil servant can refuse to participate, by signing a specific term.

Given the mandatory implementation of periodic health examinations, the present study had as its objective the health

indicators provided for in the periodic examinations. The analysis of indicators from periodic examinations is justified by the need to ensure the health surveillance of the civil servants for subsequent implementation of specific actions based on the epidemiological profile of the evaluated civil servants, and subsequent change in the work environment, as well as specific actions with the purpose. minimize the impacts of work on the health of the civil servant. The optional nature of the participation of the civil servant, however, establishes a barrier to the performance of periodic examinations until its completion with the release of the Occupational Health Certificate.

However, this analysis is also justified by presenting to the group of civil servants that make up the campus universe studied the relevance of adherence to periodic health exams, since, when facing the results obtained through such exams, the civil servant may be motivated to participate in the following year. And yet, the civil servants participating in the study can see themselves represented in such a way that encourages other civil servants, increasing the sensitivity of subsequent results.

The objective, therefore, was to draw the health profile of public servants of an educational institution located in Rio de Janeiro, based on the results of periodic health examinations.

## METHOD

This is an analysis of the Occupational Health Coordination Database of a federal public educational institution, whose campus was part of the project to implement periodic health

examinations, which is the first campus to perform such examinations. For the treatment of the data a quantitative and transversal approach was used.

The campus in question had a capacity of 94 federal civil servants. Of these, 50 employees agreed to participate in the periodic health exams, given their non-mandatory nature, and whose occupational exams made up the database. Since these are federal civil servants, professionals hired by other employment relationships are excluded.

The results in the database were obtained through the form proposed by SIASS for periodic health examinations. The results of complementary laboratory and imaging tests were also analyzed. These results were subjected to statistical treatment using the statistical program R (R version 3.4.4, 2018). After the Shapiro Wilk test indicated rejection of the hypothesis of normality for the tested variables, non-parametric Chi-Square and Wilcoxon tests were performed, in addition to the Spearman correlation test, with a level of statistical significance considered of 0.05.

It is noteworthy that, because it is a documentary analysis related to the institution's health service database, the institution was requested to access and disseminate the data, under protocol number: 23270.102884 / 2018-99. The confidentiality of the individual results and the identity of the participants were guaranteed because they are actions established within an institutional policy. Thus, it does not violate the ethical and legal principles of research with human beings established by Article 1, Item V of Resolution 510/2016 of the National Health Council<sup>5</sup>. Data were analyzed between May and August 2018.

## RESULTS

The 50 participants can be divided according to the bond in the public service, between 28 teachers and 22 administrative technicians (TAE). We evaluated 24 women and 26 men, aged 24 to 59 years. The main health problems reported regarding the history of previous pathology were varicose veins in lower limbs (28%), dyslipidemia (16%), hypertension (12%), ear tinnitus (10%), musculoskeletal problems (10%) and lung disease. (8%).

Regarding the family history of illness, it was possible to observe a high quantity of diseases of the cardiovascular and endocrine system, followed by neoplasms. It is noteworthy that 23 (46%) employees did not know their family history, indicating that these people should be considered in their respective health promotion actions, due to ignorance of their hereditary health profile.

Regarding lifestyle, 35 (70%) reported using the computer at home, 34 (68%) reported leisure activities, 23 (46%) reported making social use of alcohol, 22 (44%) participants reported performing some type of physical activity, four (8%) former smokers, two (4%) are smokers. Regarding the use of medication, 16 (32%) participants reported regular use, with contraceptive and antihypertensive being the most cited.

### Assessment of complementary exams

Regarding the main alterations found, of the 34 civil servants that performed complementary exams, 17 (50%) presented total cholesterol above the desirable, 13 (38%) LD cholesterol above the desirable, 10 (29%) HDL cholesterol below the desirable, seven (21%) above desirable triglycerides and four (12%) elevated TGO. Table 1 shows the measurements derived from each complementary grid examination common to all civil servants.

For the chemical risk grid exams, Gamma GT, Urea were requested, both in the blood and the hyperuric and methylhyperuric acids and total chromium in the urine. Some civil servants also performed spirometry. The two civil servants that performed Gamma GT for chemical risk grid presented altered result. The other biological indices were within the allowed values. One of the civil servants with Gamma alteration GT, which also presented altered TGO, reported social use of alcohol.

For the examinations of the biohazard grade, dosages for hepatitis B and C were performed. One civil servant had a weak reaction, indicating no seroconversion, after the recommended doses of the vaccine. This indicates the need for evaluation for revaccination or specific measures in case of accidental exposure to the Hepatitis B virus, such as medical assistance for the need

**Table 1** – Descriptive analysis of the complementary exams grid common to all civil servants. Rio de Janeiro, RJ, Brazil, 2018.

Variables	Average	Standard Deviation
HDL Cholesterol	52,35	18,99
LDL Cholesterol	117,00	34,00
Total Cholesterol	192,90	38,31
VLDL Cholesterol	23,90	9,98
Glucose	82,88	11,32
Platelets	240,29	50,12
TGO	23,31	10,28
TGP	22,45	11,59
Triglycerides	118,50	48,72

to use Immunoglobulins. Civil servants exposed to dust, mites and fungi performed a chest x-ray, with normal results.

For the group of 24 professors who performed complementary exams, specific otorhinolaryngology and ophthalmology tests were performed. Videolaryngostroboscopy identified reflux in 20 (82%) teachers. Yet, the presence of glottal slit and mucus swirling. There were no changes in the ophthalmic evaluation of the teaching staff. The results related to audiometry indicated that 11 (46%) teachers had some type of hearing loss. It is noteworthy that the teacher who presented bilateral mild hearing loss is not exposed to ototoxic chemical agents, which could contribute to the worsening of hearing loss.

Of the 11 technical-administrative staff and teachers who underwent electrocardiogram, four (36%) presented alterations, with RSR in V1 indicated in three reports. Of the nine women who underwent oncotic colpocytology, six (67%) presented alterations, including inflammatory processes and vaginal candidiasis.

### Variable analysis

When assessing the Body Mass Index – BMI of the civil servants, an average of 26.38 was identified, indicating overweight of the civil servants. Both sexes are in the overweight range. The mean BMI obtained among dyslipidemics indicates obesity and the average of non-dyslipidemics indicates overweight. There is no relationship between change in BMI and occupational

exposure to psychosocial risks. Table 2 shows the measures derived from the analyzed variables.

By applying the Wilcoxon test it was confirmed that they all have the same distribution, with the variable dyslipidemia, the gender variable and the independent psychosocial risk variable ( $p > 0.05$ ). This means that the BMI value is not related to gender or changes in the lipid profile of the civil servants and is not related to their exposure to psychosocial risks for the evaluated sample.

As shown in Table 3, although the civil servants who reported dyslipidemia have only total cholesterol alteration, it is possible to notice the differences in the lipid profile of these civil servants compared to those who denied dyslipidemia. For them, the average HDL cholesterol is higher than in dyslipidemic civil servants, the average LDL cholesterol is lower compared to dyslipidemic. The same is true for triglycerides, with the average in non-dyslipidemic lower than in dyslipidemic.

Regarding the risk for the development of chronic noncommunicable diseases (NCDs), based on family history, the chi-square test showed dependence between the heart disease and hypertension variables (Fisher's test  $p < 0.05$ ). Also, the dependence between the variables dyslipidemia and diabetes mellitus (Fisher's test  $p < 0.05$ ).

Of the 11 technical and administrative staff and teachers who reported a family history of hypertension, diabetes mellitus and dyslipidemia, nine (82%) had a family history of heart disease and of these, three (33%) were dyslipidemic. Correlating family

**Table 2** – Descriptive analysis of BMI by gender, dyslipidemia and psychosocial risks. Rio de Janeiro, RJ, Brazil, 2018.

Variables	Average	Standard Deviation	p-Value
Feminine	25,68	4,09	0,51
Masculine	27,47	5,15	-
Non Dyslipidemic	26,04	4,06	0,26
Dyslipidemic	30,69	7,27	-
GHE Psychosocial Risk	25,50	4,78	0,60
Other GHE	27,08	4,77	-

Source: Prepared by the authors, november, 2018.

**Table 3** – Analysis of lipid profile by the dyslipidemia variable. Rio de Janeiro, RJ, Brazil, 2018.

Variables	Average	Standard Deviation
<b>Dyslipidemic</b>		
HDL Cholesterol	49,20	8,59
LDL Cholesterol	129,40	55,15
Total Cholesterol	206,40	68,98
Triglycerides	139,00	56,33
<b>Non Dyslipidemic</b>		
HDL Cholesterol	52,90	20,31
LDL Cholesterol	114,83	29,93
Total Cholesterol	190,52	31,81
Triglycerides	114,89	47,45

Source: Prepared by the authors, november, 2018.

history with data from Tables 02 and 03, it is possible to infer that there is a risk for the development of cardiovascular diseases in these civil servants.

Regarding lifestyle, of the 24 civil servants who reported not doing physical activity, 19 (79%) regularly use the computer at home. Among the employees who do not practice physical activities, 11 (46%) reported a family history of hypertension and heart disease, 10 (42%) made social use of alcohol and six (25%) had a family history of diabetes mellitus and dyslipidemia. It should be noted that five (21%) reported concomitant family history of heart disease, diabetes mellitus and dyslipidemia. These civil servants are at greater risk for the development of chronic diseases due to physical inactivity plus family history.

Among the 22 who practice physical activity, seven (32%) presented HDL cholesterol below 40mg / dL and of these, nine (43%) presented total cholesterol above 190mg / dL, six (29%) of them with BMI in the overweight range. In addition, three (14%) reported being dyslipidemic and two (9%) dyslipidemic and hypertensive. In general, we observed the behavior of BMI, Total Cholesterol and HDL Cholesterol of the civil servants in relation to physical activity.

By the Spearman correlation test it was possible to confirm that the BMI and Total Cholesterol variables are independent ( $p > 0.05$ ) and that the BMI and Cholesterol HDL variables are also independent ( $p > 0.05$ ). By the Wilcoxon test it was possible to verify that the Physical Activity variable has a different distribution of the Total Cholesterol variable, the BMI variable and the HDL Cholesterol variable ( $p > 0.05$ ). Such findings may indicate that the practice of physical activity proved ineffective for the lipid control of the civil servants in question.

Although the average for HDL cholesterol is within normal limits for the sample of civil servants, among those who reported physical activity, 32% ( $n = 7$ ) presented this index below normal values. Thus, it is up to these civil servants to reassess the effectiveness of physical activity for health, as well as their eating habits, which were not evaluated in the present study. Thus, they also constitute a risk group for the development or aggravation of chronic diseases.

## DISCUSSION

In the present study, the increased risk for the development of hypertension, heart disease, diabetes mellitus and dyslipidemia was observed in the evaluated civil servants, given the correlation between family history and lifestyle. The predominance of chronic noncommunicable diseases (NCDs) in the Brazilian population constitutes a health problem in Brazil, accounting for 70% of the causes of death worldwide.<sup>6</sup> Therefore, it is essential to develop health promotion actions based on identification of risk factors.

Regarding the effectiveness of physical activity, there were no changes in BMI, total cholesterol and HDL cholesterol, indicating that the activities reported by the civil servants are not being effective to control the lipid profile. One study associated

inefficient physical activity with a higher prevalence of obesity in a population sample.<sup>7</sup> Moderate to intense regular physical activity was also associated with reduced risk of developing cardiovascular disease.<sup>8</sup>

Obesity and changes in total cholesterol levels were found among the civil servants who reported dyslipidemia. It should be noted that these civil servants have a higher risk of developing heart disease and diabetes mellitus. The literature points to dyslipidemia as a risk factor for atherosclerosis and type 2 diabetes mellitus (T2DM). In addition, obesity, abdominal fat accumulation, insufficient physical activity, family history of T2DM, and low consumption of fruits and vegetables increase the risk of developing DM2.<sup>9</sup> This way, for a physical activity to be considered effective it should enable the improvement of the individual's lipid profile.<sup>10</sup>

There was also a correlation between the family history of heart disease and arterial hypertension, which may confer an increased predisposition to cardiovascular disease in these civil servants, due to the referred lifestyle. The literature highlights systemic arterial hypertension as responsible for the increased risk of developing cardiovascular disease.<sup>6,11</sup> And the combination of risk factors (overweight / obesity, dyslipidemia, physical inactivity) for cardiovascular complications.<sup>12</sup>

For the teaching staff, the risk grade exams revealed alterations in audiometry and videolaryngostroboscopy, understanding the occupational exposure to classroom noise and the use of the vocal apparatus as a working instrument. Performing audiometry with altered results points to the need for measurement by occupational safety teams and possible interventions to reduce noise, if necessary.

Hearing loss is gradual and due to continued exposure to high levels of sound pressure, being considered the most prevalent occupational disease, although studies indicate underreporting.<sup>13-15</sup> Among teachers, noise is also pointed as a factor of dissatisfaction related to environmental comfort.<sup>16</sup> However, it is possible that other factors contributed to the changes found in these civil servants, such as the use of headphones and previous auditory pathologies, for example.

Regarding voice alterations, a narrative review study indicates a high prevalence of these disorders in the teaching class, compared to other professions. Noise and absence of physical exercise were listed as a factor for chronic illness.<sup>17,18.</sup>

For exposure to biological hazards, the presence of the agent is sufficient, requiring no minimum exposure time to be potentially harmful. The literature indicates worker contamination through occupational accidents involving biological material. Studies show the high incidence of sharps accidents, relating this finding to the indifference regarding the risk of contamination and the resistance of professionals in adherence to preventive measures.<sup>19-21</sup>

Regarding chemical risk, it should be emphasized that its assessment should be based not only on laboratory diagnosis, but also on the history of exposure in clinical evaluation.<sup>22</sup> Worker exposure is given through the manipulation of these

products, whose identification through labeling becomes essential.<sup>23</sup> It is noteworthy that the correct storage and proper transportation of chemicals, as well as the training of professionals in handling and conducting accidents should be advocated.

Although the workers exposed to chemical risks did not present changes in the laboratory tests, the monitoring of these civil servants through monitoring exams, as well as the establishment of good practices for the handling and use of chemical agents are necessary. The monitoring of biological exposure indexes becomes a tool for intervention in situations that pose a risk to the health of employees.

Exposure to chemicals has action limits that vary with each chemical compound and increase the chances of developing chronic obstructive pulmonary disease, especially if associated with smoking.<sup>24</sup> Thus, occupational exposure potentially harmful to workers' safety and health teams should be investigated, mainly through the control of tolerance limits and biological exposure indices.

## CONCLUSION

Health promotion actions should be formulated respecting the limitations and conditions of the population, in order to make them viable for everyone. For teachers who presented hearing and voice alterations, an individual investigation is necessary to establish a causal link with the work. Permanent speech-language evaluation should be implemented, with follow-up of altered cases. Classroom assessment should be carried out for noise level in order to adopt relevant protective measures and individual goals should be set (e.g smoking cessation).

Regarding health promotion, it is essential to adopt strategies to raise awareness of the importance of lifestyle for the development of chronic diseases. Although eating habits have not been verified, a specific approach to healthy eating, food groups and their association with illness is necessary. And yet, educational actions that address the effectiveness of physical activities for health.

For female employees, actions related to sexual and reproductive health should also be performed. Servers who had electrocardiogram alterations should be advised regarding follow-up with an assistant cardiologist. Cases should also be reevaluated by the examining physician at each Periodic Health Check.

Despite all the above, it is noteworthy that awareness measures for adherence of servers in the next assessments of the campus Health Periodic Exam should be taken, so that the health profile of the servers more effectively prints the characteristics of this population. And further, it is possible, in subsequent studies to identify improvements in the health profile of these servers, from the implementation of the actions proposed in this study.

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