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# Knowledge about ergonomic risks and work-related musculoskeletal disorders in workers of public higher education institution in Brazil[1]

*Conhecimento sobre riscos ergonômicos e distúrbios musculosqueléticos relacionados ao trabalho em trabalhadores de instituição de ensino superior pública do Brasil*

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## Abstract

Objectives: To investigate the knowledge about ergonomic risks and Work-Related Occupational Disorders (WMSD) among workers at a public higher education institution (pHEI) in Brazil. Methods: An online questionnaire developed by the authors was sent in a snowball sampling scheme to administrative workers at a pHEI in Seropédica, RJ (Brazil). The questionnaire contained questions about the level of knowledge about ergonomic risks; ergonomic furniture and equipment; discomfort and pain during work; the most affected parts of the body; and access to information about ergonomic hazards. Results: Of the 78 respondents, 86% reported hearing about the ergonomic hazards and 67% reported knowing what they are, but only 60% of the respondents can identify ergonomic hazards. About 87% believe that ergonomic hazards affect their health, but 59% reported that they were never spoken to in their face-to-face workplace. Most respondents (87%) also recognized that access to information can allow the identification of ergonomic risks to trigger the responsible sector when necessary. Almost all respondents (96%) would like to receive information about ergonomic risks. Conclusions: This study revealed a concerning gap in knowledge about ergonomic risks and WMSD prevention among workers at pHEI in Brazil. These findings highlight the limitations of current prevention strategies while reinforces the need for worker engagement in ergonomic assessments. In the context of pHEI, educational programs that empower workers to identify and address ergonomic risks should be encouraged.

**Keywords**: Ergonomics. Absenteeism. Cumulative Trauma Disorders.

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**Resumo**

Objetivos: Investigar o conhecimento sobre riscos ergonômicos e Distúrbios Ocupacionais Relacionados ao Trabalho (DORT) entre trabalhadores de uma instituição pública de ensino superior (IESp) no Brasil. Métodos: Um questionário online desenvolvido pelos autores foi enviado em um esquema de amostragem bola de neve para funcionários administrativos de um IESp em Seropédica, RJ (Brasil). O questionário continha questões sobre o nível de conhecimento sobre riscos ergonômicos; móveis e equipamentos ergonômicos; desconforto e dor durante o trabalho; as partes do corpo mais afetadas; e acesso a informações sobre riscos ergonômicos. Resultados: Dos 78 entrevistados, 86% relataram ter ouvido falar sobre os riscos ergonômicos e 67% relataram saber o que são, mas apenas 60% dos entrevistados conseguem identificar os riscos ergonômicos. Cerca de 87% acreditam que os riscos ergonômicos afetam sua saúde, mas 59% relataram que nunca falaram com eles em seu local de trabalho face a face. A maioria dos entrevistados (87%) também reconheceu que o acesso às informações pode permitir a identificação de riscos ergonômicos para acionar o setor responsável quando necessário. Quase todos os entrevistados (96%) gostariam de receber informações sobre riscos ergonômicos. Conclusões: Este estudo revelou uma lacuna preocupante no conhecimento sobre riscos ergonômicos e prevenção de DORT entre trabalhadores de pHEI no Brasil. Estas conclusões destacam as limitações das atuais estratégias de prevenção, ao mesmo tempo que reforçam a necessidade do envolvimento dos trabalhadores nas avaliações ergonómicas. No contexto das pHEI, devem ser incentivados programas educativos que capacitem os trabalhadores para identificar e abordar os riscos ergonómicos.

**Palavras-chave**: Ergonomia. Absenteísmo. Transtornos Traumáticos Cumulativos.

## Introduction

With new challenges for the working population – including changes in the workplace, technological innovations, new organizational forms, and production processes – comes greater demand for work and exposure to occupational risks (FERREIRA et al., 2018; ORGANIZAÇÃO INTERNACIONAL DO TRABALHO, 2019). The impact of such challenges can be inferred by the increase in the incidence of occupational diseases, absenteeism, presenteeism, and early retirement (HYEDA; COSTA, 2017) over the last decade (SMARTLAB, 2021). Among the environmental risks to which workers are exposed, the ergonomic risk stands out as they can directly influence physical, mental, and social health (FERREIRA et al., 2018; IEA; ILO, 2020) Work demands, body postures, task repetitiveness, office furniture, and work conditions are among the ergonomic risks that most affect workers (ORGANIZAÇÃO INTERNACIONAL DO TRABALHO, 2019). Raising awareness about the ergonomic risk factors in the workplace may help to achieve the 8th objective of the United Nations 2030 Agenda for Sustainable Development, which aims at full, sustained, and sustainable employment, reducing risk and protecting the workers' health (ORGANIZAÇÃO INTERNACIONAL DO TRABALHO, 2019).

Work-related musculoskeletal disorders (WMSD) are conditions that most frequently remove workers from their work activity in Brazil (BRASIL, 2022) and worldwide (INTERNATIONAL LABOUR ORGANIZATION, 2019). WMSD are associated with musculoskeletal pain, low work ability and performance in the workplace, fatigue, temporary disability for both daily living and work-related activities, low quality of life, and high costs for the economy and society (CHIAVEGATO FILHO; PEREIRA

JR., 2004; HYEDA; COSTA, 2017; MORAES; BASTOS, 2017). The impacts on the world economy due to absenteeism at work represent a great economic loss; it is estimated that the days lost from work represent almost 4% of the world's gross domestic product, reaching 6% or more in other countries (HAMALAINEN; TAKALA; KIAT, 2017; TAKALA et al., 2014). In Brazil, the registration of WMSD increased by 184% between 2007 and 2016; data suggesting an increase in absence leaves and the continued top-ranking morbidity of WMSD in Brazil is a worrying factor for governments, institutions, companies, and society (SMARTLAB, 2021).

Workers exposed to inadequate and precarious workplaces are at greater ergonomic risk. Public higher education institutions (pHEI) in Brazil are ongoing in a precarious state since the 1990s, explained both by the political and economic context (CAETANO; CAMPOS, 2019) and by the changes in this work environment. In pHEI health care is predominantly based on periodic assessments, assistance, and rehabilitation (secondary-tertiary prevention) but not education or health promotion (primary prevention) (FERREIRA, 2015). Primary prevention with worker participation (self-care), using participatory ergonomics—for a self-assessment of the workplace—might allow workers to identify the ergonomic risk factors through interactive learning, with workers becoming active agents in knowledge development (BURGESS-LIMERICK, 2018; ROTHSTEIN et al., 2013). Therefore, this study aimed to investigate the knowledge about ergonomic risks and WMSD among workers of a pHEI in Brazil.

## Methods

## Ethics

This research protocol was approved by the Institutional Ethics Committee of the Augusto Motta University Center before its execution (No. 45993821.8.0000.5235) in accordance with national resolutions No. 466/2012 and No. 2/2021/CONEP/SECNS/MS. All participants were informed about the study aims and design before enrollment by reading an informed consent form signed by the researcher in electronic format. Participants were allowed to complete the online questionnaire before deciding to participate in this research. Informed consent to participate was registered by the first question of the online questionnaire.

### Study design and setting

This is a cross-sectional study carried out with the population of workers in the administrative area of the Federal Rural University of Rio de Janeiro (UFRRJ) in the municipality of Seropédica, RJ (Brazil).

### Study population and sample recruitment

The study population comprised the technical-administrative staff of UFRRJ, with positions varying from administrative assistants to managers. According to the Dean of People Management by August 2020, there are 2893 active workers during the period of this research, divided into 1303 teachers; 1143 administrative technicians from all campuses, and 447 with other contracts (e.g., reintegrated, interns, and residents) (UFRRJ, 2020). The inclusion criterion comprised being an administrative technician who works in the administrative area (649/1143 workers). Workers in technical positions

in laboratories and in the field, specialized services, and newly hired (with less than 5 years of UFRRJ) workers were excluded, with 211/649 eligible workers.

A snowball sampling technique was applied by initially sending the questionnaire to the contact list provided by the UFFRJ containing e-mail, WhatsApp® groups, and social media networks. Participants were allowed to forward the questionnaire to other individuals in their work network.

### Data collection: Online survey

Data collection was conducted using a self-administered online questionnaire (Supplementary File 1) elaborated by the principal investigator (JAC) on the Google® Forms platform. The questionnaire included 27 questions regarding the in-person period (prior to the new coronavirus pandemic) and remote work (during the COVID-19 pandemic). The questionnaire included both qualitative and quantitative, open and closed questions for a comprehensive and descriptive analysis. The questions investigated the worker's present situation, and their view of the ergonomic risks present in their work environment (at UFRRJ), checking their level of knowledge to gauge their level of awareness of RSI/WMSD and their primary prevention. These questions include information about the reasons for time off work due to WMSD (e.g., tendinitis, low back pain, neck pain, herniated discs, and others); knowledge on how to recognize ergonomic furniture (chair, desk, bench, stool, and others); the ergonomic risks to musculoskeletal health (e.g., repetitiveness, monotony, inadequate posture, inadequate furniture, lack of breaks, and others); and their opinion regarding ergonomic risks and how they would like to receive information about primary prevention (e.g., socio-educational website, lectures, courses, or others).

### Data analysis

Collected data were exported from the electronic worksheet of Google Forms and then imported into in software JASP version 0.14.1 (https://jasp-stats.org) for statistical analysis. Data were summarized as median (interquartile range) or absolute and relative frequencies (%) for numerical or categorical variables, respectively. For qualitative analysis of the open question, an analysis of content and meaning was performed. The question proposed that the participant inform what could be improved in their work environment (in-person and remote). Answers were grouped by meaning and the categories of relevant factors were labeled. With the identified factors, the separation of responses and the frequency of information were performed and inserted in their respective factors to analyze the responses.

## Results

### Sample characteristics

The questionnaire was sent to the complete list of 211 workers, of which 18/211 (8%) e-mails fail delivered. A total of 78/211 (response rate of 37%) participants replied to the questionnaire. Overall, the sample was predominantly composed of men (n=46, 59%) with ages between 40-49 years (n=17, 22%). Most participants showed a specialization (n=35, 45%) as the highest education degree, with 13 (17%) and 6

(8%) with master's and doctoral degrees, respectively; complete higher education or high school was reported by 16 (21%) and 8 (10%), respectively. Most participants reported current remote working (n=60, 77%), whereas 11 (14%) reported in-person working and 7 (9%) in a hybrid format.

## Quantitative synthesis

Table 1 shows the summary data for answers regarding awareness of ergonomic risk factors. A total of 78 workers responded to the form. Of the respondents, 86% (n=67) reported hearing about ergonomic hazards, 67% (n=52) reported knowing what they are, and 60% (n=47) of respondents can identify ergonomic hazards. However, 45% (n=35) of the participants did not know how to recognize ergonomic furniture and 60% (n=47) would not know the most comfortable posture (which does not harm their health) to carry out their work activity. 87% (n=68) believe that ergonomic hazards affect their health, but 59% (n=46) reported that they were never talked about in their in-person workplace or 50% remotely (n=39). Most respondents (87%, n=68) also recognized that access to information can allow the identification of ergonomic risks to trigger the responsible sector when necessary; and that the form of interactive participation in the assessment of their workplace is important, 96% (n=75). Almost all respondents, 96% (n=75), would like to receive information about ergonomic risks. In the qualitative aspect, most reported that both furniture and access to information could be improved in the work environment.

Most respondents (n=49, 63%) reported they feel pain or discomfort that they believe is related to WMSD, but fewer respondents (n=16, 21%) reported work leave due to WMSD. Most respondents reported knowing how to identify the most comfortable posture to adopt when working (n=52, 67%); to recognize ergonomic furniture (n=42, 54%) but fewer know how to adjust an ergonomic chair to a more comfortable position (n=31, 40%) or to identify and use ergonomic accessories (n=34, 44%); and not having any postural orientation and/or the most comfortable way to their current work activity (n=54, 69%). Almost all respondents (n=68, 87%) recognized that if they had access to information, they could identify the risks and trigger the responsible sector, managers, and co-workers; and that your participation in an interactive way (as responsible for carrying out your task) in the assessment of your workplace is important (n=75, 96%). Almost all respondents believe that ergonomic risk can cause WMSD (n=72, 92%) and that they can improve their health by being aware of them (n=71, 91%). Finally, almost all respondents would like to receive information about ergonomic risks (n=75, 96%), being a booklet/eBook (n=31, 40%) the most voted venue.

Table 1. Summary data about knowledge about ergonomic risk factors and work-related musculoskeletal disorders (n = 78)

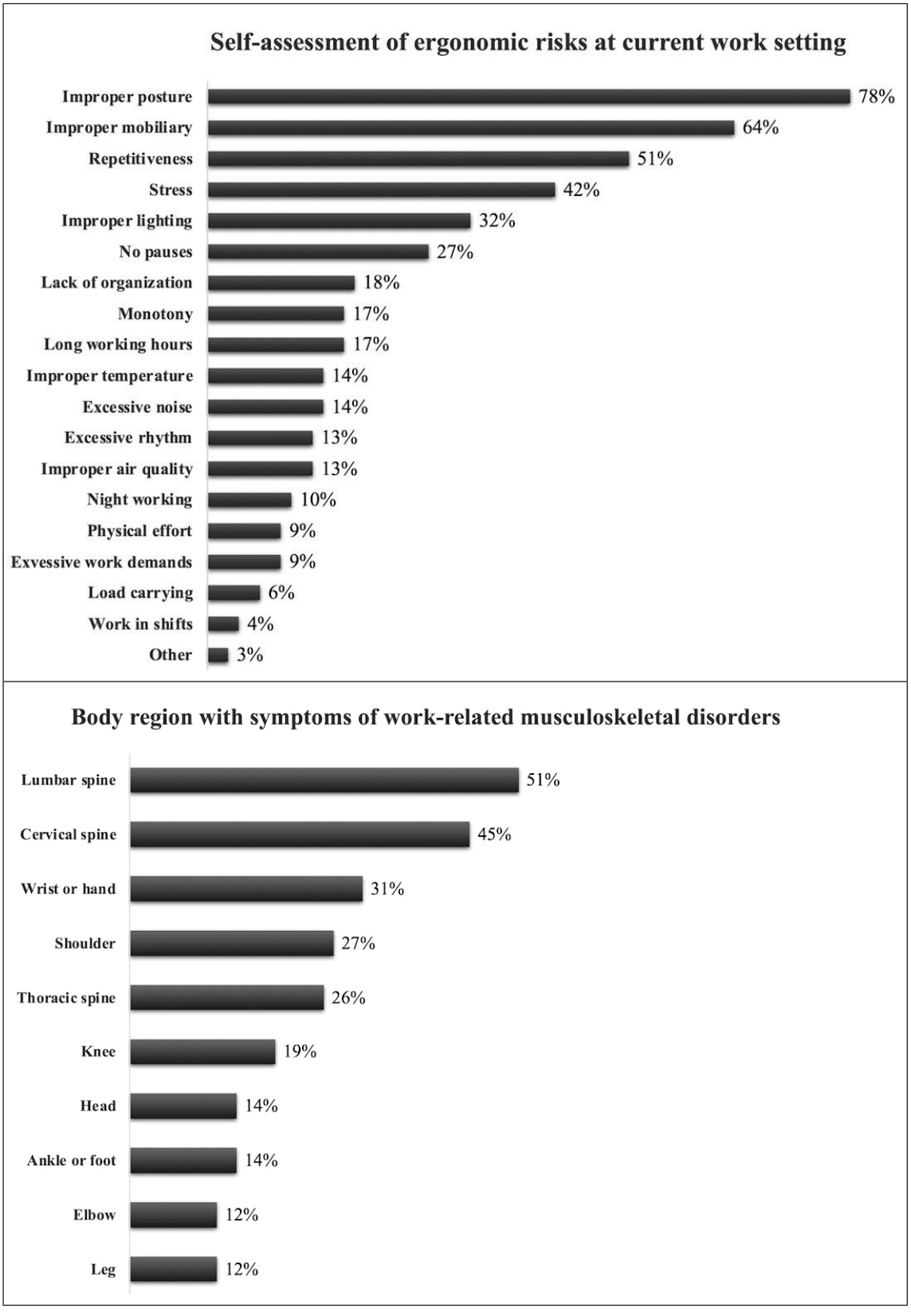
| Variables | n | % |
|---|---|---|
| Have you heard of ergonomic risks? | 67 | 86% |
| Are you aware of ergonomic risks? | 52 | 67% |
| Can you spot ergonomic risks in your current setting? | 47 | 60% |
| Can ergonomic risks affect your health? | | |
| Yes | 68 | 87% |
| No | 1 | 1% |
| Don't know | 9 | 12% |
| Have you discussed ergonomic risks in your current work setting? | | |
| No (office) | 46 | 59% |
| No (remote) | 39 | 50% |
| Do you feel any pain or discomfort related to repeated monition disorders /work-related musculoskeletal disorders - RMD/WRMD? | | |
| Yes | 49 | 63% |
| No | 16 | 21% |
| Don't know | 13 | 17% |
| Did you have work leave due to RMD/WMSD? | 16 | 21% |
| Do you known what posture to adopt when working? | 52 | 67% |
| Can you spot an ergonomic furniture? | 42 | 54% |
| Can you adjust you furniture to achieve a comfortable position? | 31 | 40% |
| Can you spot an ergonomic accessory? | 34 | 44% |
| Did you receive any information regarding comfortable postures to work? | 24 | 31% |
| Do you believe you could spot ergonomic risks if you have prior access to this information? | 68 | 87% |
| Do you feel your participation is important to evaluate your work setting regarding ergonomic risks and their prevention? | 75 | 96% |
| Do you believe ergonomic risks can cause RMD/WMSD diseases? | | |
| Yes | 72 | 92% |
| No | 0 | 0% |
| Don't know | 6 | 8% |
| Do you believe you can improve your health by knowing ergonomic risks? | | |
| Yes | 71 | 91% |
| No | 4 | 5% |
| Don't know | 3 | 4% |

| Variables | n | % |
|---|---|---|
| Would you like to receive information about ergonomic risks? | 75 | 96% |
| Booklet (eBook) | 31 | 40% |
| Lecture, online | 26 | 33% |
| Website | 24 | 31% |
| Workshop, online | 20 | 26% |
| Booklet (press) | 19 | 24% |
| Lecture | 15 | 19% |
| Workshop | 9 | 12% |

**Source:** The Authors.

Figure 1 shows the workers' self-assessed ergonomic risks in the current work setting and the most frequent body region with symptoms of WMSD. Overall, a median of 4 [2; 6] ergonomic risks were reported by the respondents. The top 5 risks were improper posture (n=61, 78%), improper furniture (n=50, 64%), repetitiveness (n=40, 51%), stress (33, 42%), and improper environmental lighting (n=25, 32%). When asked about the location of WMSD symptoms, a median of 2 [1; 4] body regions were reported by the respondents, being the top-5 body regions the lumbar spine (n=40, 51%), cervical spine (n=35, 45%), wrist or hand (n=24, 31%), shoulder (n=21, 27%), and thoracic spine (n=20, 26%).

FIGURE 1. SELF-ASSESSED ERGONOMIC RISKS AT CURRENT WORK SETTING AND MOST FREQUENT BODY REGION WITH SYMPTOMS OF WORK-RELATED MUSCULOSKELETAL DISORDERS




**Source:** The Authors.

## Qualitative synthesis

Table 2 summarizes the qualitative answers grouped by the identified factors: furniture and infrastructure; ergonomic equipment; postural and environmental assessment; education; management; and mixed factors.

Table 2. Qualitative synthesis of open question: "What do you think could improve in your work environment (face-to-face and remote) to avoid work-related musculoskeletal disorders"?

| Theme | Answers |
|---|---|
| **Furniture and Infrastructure** | • "Proper furniture"<br>• "The furniture mainly. Due to uses to have problems with READ, I have already sought information about it, and in my house, I have the correct chair, correct mouse, the correct height of the table and at remote work I do not have many problems"<br>• "Furniture"<br>• "CHAIR"<br>• "Proper furniture"<br>• "Furniture in general, ergonomic lighting and accessories"<br>• "Proper furniture, better lighting, thermal comfort especially in summer"<br>• "Suitable furniture, accessories for mouse, keyboard, screen"<br>• "A better table"<br>• "Proper furniture"<br>• "Equipment (tables and chairs, for example) suitable for my physical type"<br>• "Good quality computer, chair and desk"<br>• "Proper table, proper seating place and breaks to be able to sit"<br>• "I believe that adequacy depends a lot on the furniture, because in remote work we use what we have in a face-to-face environment would be interesting if there was work gymnastics"<br>• "Proper lighting, better equipment"<br>• "Improve, mainly, refrigeration, lighting and cleaning"<br>• "I could reform the whole department because we're in terrible working conditions"<br>• "Ergonomic tables and chairs"<br>• "More space, better lighting, layout of furniture and staff, better furniture"<br>• "Air quality, lighting, furniture, safety, soundproofing, drinking water quality"<br>• "Real estate improvements"<br>• "Furniture suitable for function"<br>• "In the face-to-face environment, we have little air circulation, inadequate light, inadequate chair, probably inadequate monitor height"<br>• "Proper furniture, proper computer equipment"<br>• "Adjustable and ergonomic furniture"<br>• "At the present moment I believe that my chair because it is wooden is not suitable"<br>• "Proper furniture and lectures on the topic" |

| | |
|---|---|
| **Ergonomic Equipment** | • “Ergonomic keyboard and mouse, laptop stand, screen saver”<br>• “Use of appropriate equipment”<br>• “Armrest, high-height monitor, keyboard with soft keys”<br>• “Suitable equipment” |
| **Environmental and Postural Assessment** | • “In the face-to-face, there could be more constant visits by the UFRRJ teams that take care of this theme (e.g., physiotherapists). I once did a great job of RPG and the physiotherapist came to my office and gave good orientation. But I think this service could be more widespread and constant, for all sectors. Of course, Adm. Central should also do its part, investing in the purchase of ergonomic equipment. In the remote, I try to take breaks and stretch a lot. As I have a problem in the spine (lumbar), the practice of stretching has become a habit, and helps me a lot to relieve any pain. (Congratulations on your research and success! I hope I’ve contributed a little.)”<br>• “The periodic presence of a technician in occupational safety and hygiene”<br>• “Monitoring of the health team in the workplace, in the case of the face-to-face”<br>• “An inspection of the professional in the area in which we work, to correct our bad habits in the sense of correcting our positions”<br>• “Correct posture, use of laptop support” |
| **Education** | • “Occupational risk information”<br>• “Access to information to improve the workplace”<br>• “Information about diseases and how to avoid them”<br>• “More investments in information and prevention”<br>• “Knowledge of the subject”<br>• “I know what that really means”<br>• “Guidelines”<br>• “Awareness”<br>• “More information in the workplace and in the press”<br>• “Periodic alert remembering this care”<br>• “Receive postural guidance and adequacy of the utensils used in the work”<br>• “More guidance and appropriate assessments”<br>• “Guidance on the subject”<br>• “Reminders and proposition of work activities (stretching, for example) at least once a day in some digital medium (e-mail for example)”<br>• “Lectures on LERT and DORT and posters with illustrations on correct posture and stretching exercise”<br>• “I don’t know”<br>• I said, “Yes”<br>• “At the moment I can’t say”<br>• I said, “Yes” |

| | |
|---|---|
| **Management** | • "More prevention management"<br>• "Supply by the institution of ergonomic accessories, committed and integrated managements in all instances aimed at structural quality in all directions of the worker's place of exercise, organizing and located each sector and server according to the type of work to be performed so that one does not compromise the other"<br>• "Good practices"<br>• "Seriousness of the administration"<br>• "Better management of activities combined with compliance with the guidelines of the worker health sector" |
| **Mixed factors** | • "Availability of suitable material and furniture, regular establishment of breaks during work for stretching exercises, encouragement and immediate management report on ergonomic risks and improvement of working conditions and health of workers in the sector"<br>• "My environment would improve if I had a better chair or learned more about posture, common mistakes, etc." |

**Source:** The Authors.

Furniture obtained most responses with great dissatisfaction on the part of workers. With short and objective answers, the participants reported, according to the qualitative analysis, the main reason for their complaints was to improve the work environment. Such panorama can be observed in the following answers: "Equipment (tables and chairs, for example) adequate to my physical type"; "Adequate furniture"; "Adjustable and ergonomic furniture" No less important, the Education factor was second place in the analysis of the answers, showing through the following reports: "Information on occupational risks"; "Access to information to improve the work environment"; "Information about diseases and how to avoid them".

The Ergonomic Equipment factor also proved to be an important factor for workers to improve the working environment, presenting the following in the answers: "Ergonomic keyboard and mouse, laptop support, screen saver" and "Use of adequate equipment".

The Environmental and Postural Assessment and Management factors were considered in the same proportion of responses and perceived by the workers through the responses: "An inspection of the professional in the area in which we work, to correct our bad habits in order to correct our positions."; and "Better management of activities combined with compliance with the guidelines of the worker's health sector."

The last factor with the lowest number of responses encompassed mixed factors, demonstrated by the workers with the following report: "Availability of adequate material and furniture, the regular establishment of breaks during work for stretching exercises, encouragement and information from the immediate supervisor on ergonomic risks and improvement of the working and health conditions of workers in the sector."

## Discussion

This study investigated the knowledge about ergonomic risks and WMSD among workers at a pHEI in Brazil. Our main findings suggest that a substantive proportion

does not know ergonomic risks and most believe that access to such information – i.e., how to recognize and avoid them – can maintain and/or help improve their occupational health in the workplace.

Regarding the representativeness of the participants, the university has a much larger number of male workers as the university initially had an agrarian profile and later opened public tenders for broader areas (UNIVERSIDADE FEDERAL RURAL DO RIO DE JANEIRO, 2021). The age range and educational background are also compatible with workers at pHEI nationwide, with a wide range of ages and varying degrees of education. Also, most participants reported being currently in remote work, which was instituted by the university since the outbreak of the COVID-19 pandemic.

Concerning the ergonomic risks, the contrast between hearing about ergonomic risks but not knowing what they are or not being able to spot ergonomic risks is worrying, as ergonomic risk factors can interfere with the physical or mental health and productivity of the worker (FERREIRA et al., 2018; IEA; ILO, 2020). It can be argued that such discrepancy arises from the predominant secondary-to-tertiary prevention of WMSD (FERREIRA, 2015), which focuses on the assessment of ergonomic risks by trained professionals without the participation of workers. Most in-person and remote workers reported that they never discussed the ergonomic risks with trained professionals, and the unanimity in confirming that ergonomic risks can influence health reinforces the lack of efficient primary prevention programs in the work environment. Also, regulatory standards, Internal Accident Prevention Commissions, and occupational risk prevention programs are thus not sufficient to decrease sick leave rates due to WMSD, which are the conditions that mainly alienate the worker in both the public and private sectors (IEA; ILO, 2020; SMARTLAB, 2021). The inclusion of workers in the self-assessment of their work environment is urgent and necessary and might help ergonomic interventions (SANAEINASAB et al., 2018; VISSER et al., 2014), adding values for primary prevention to the health of an educational program in an educational program in Work Ergonomics (PALSSON et al., 2020; SANAEINASAB et al., 2018; SHUAI et al., 2014). Most respondents recognized that, if they had access to information, they could identify the risks and trigger the responsible sector, managers, and co-workers. Also, almost all respondents agreed that their interactive participation – as responsible for carrying out their task – in assessing their workplace is important. They reported that they would like to receive information in the form of a booklet or eBook, highlighting the need for information that can be easily accessed and shared.

Most respondents reported improper posture, improper furniture, repetitiveness, stress, and improper environmental lighting as ergonomic risk factors. These factors are possibly related to the precariousness of pHEI (CAETANO; CAMPOS, 2019); the use of new technologies, the transformation of the way of working, in the environment, and more intense rhythms of work, consequently generating discomfort for musculoskeletal health (KALINIENE et al., 2016); and ultimately exposure to new risks to the occupational health of public workers (MENDES; BERGIANTE, 2018). Importantly, these findings corroborate the evidence that the causes of incapacity for work by WMSD are multifactorial (MORAES; BASTOS, 2013). Added to this, the fact that respondents reported knowing how to identify the most comfortable posture to work, but not how to prevent WMSD, suggests how much ergonomic practices aimed at raising awareness and the active participation of individuals play an important role in the prevention of occupational diseases (BAYDUR et al., 2016; RODRÍGUEZ-BLANES et al., 2019). Surprisingly, most respondents reported no

sick leave due to WMSD despite the rate of sick leave due to musculoskeletal and connective system diseases (International Disease Code – ICD “M”) being ranked first in Brazil (SMARTLAB, 2021). We may argue that such a low proportion is due to the omission of cases, possibly related to the need to maintain personal income at the cost of reduced work capacity (CHIAVEGATO FILHO; PEREIRA JR., 2004; HYEDA; COSTA, 2017; MORAES; BASTOS, 2017).

The factors identified from the qualitative analysis corroborate the quantitative analysis. Furniture and infrastructure were the main points mentioned for improvement, followed by Education, suggesting the worker’s perception of how to improve their work environment. The concern with furniture and access to information is relevant to the primary prevention of WMSD (SABRINAANTLOGA et al., 2014). The Ergonomic Equipment factor was also prevalent in the responses, as a proposal to improve the working environment, which, associated with the quantitative responses, represented the importance of accessing the information on how to use them. In the Postural and Environmental Assessment, Management and Mixed Factors, the same proportion of responses was considered and perceived by workers as not even important, but with some non-priority factors. And this is important because the work environment also brings exposure to workers with different ergonomic risks (LUZ et al., 2013) which can be physical, chemical, biological, ergonomic, and biopsychosocial (LENTZ et al., 2015). Altogether, these findings corroborate the unanimous perception in our sample that access to information about ergonomic risks could maintain and/or improve their occupational health (SANAEINASAB et al., 2018; TAKALA, 2018; VAN DER BEEK et al., 2017).

We outline some limitations of this study and recommend further studies to continue this very relevant theme. The study carried out had important limitations both in the population and sample, as well as in the type of study used and lack of research on the subject. The population defined for the study, servers in the administrative area, did not continue the snowball model, where they would send the questionnaire to workers, and the resistance to participate in a survey with a questionnaire. Another perception was to correlate the results with other samples from other public universities in Brazil. As well as the lack of research on the subject, with randomized controlled studies and with a larger sample. Another point was the statistics with underreporting, due to the lack of interest of the worker and the lack of realization of the causal nexus of the leave by the institutions.

## Conclusions

This study revealed a concerning gap in knowledge about ergonomic risks and WMSD prevention among workers at pHEI in Brazil. While most participants were aware of ergonomic hazards, many struggled to identify specific risks, lacked knowledge of proper posture, and were unsure about adjusting ergonomic furniture. These findings highlight the limitations of current prevention strategies and aligns with previous research suggesting the need for worker engagement in ergonomic assessments. Addressing potential underreporting of WMSD-related leave through improved institutional practices may also enhance the primary prevention. We expect these findings may help propose primary prevention programs for recognizing ergonomic risk factors for WMSD in the workplace in Brazil. Workers expressed a desire for information on ergonomics, particularly accessible formats like booklets or eBooks. Hence, we believe that

educational programs that empower workers to identify and address ergonomic risks are of particular interest. Future research exploring the effectiveness of these programs with larger and more diverse samples from pHEIs across Brazil are warranted.

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