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Original Article

Validation of an instrument to identify workloads of technical-administrative professionals in public universities*

Validação de instrumento para identificação das cargas de trabalho de técnico-administrativos de universidades públicas

Validación de un instrumento para identificar cargas de trabajo del personal técnico-administrativo de universidades públicas

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Abstract

Objective: to develop and validate an instrument to identify, in a qualitative manner, the workloads of technical-administrative professionals in public institutions of higher education. **Method:** a methodological study, adopting workload as a theoretical framework, carried out between February and August of 2022, whereby the experts were professionals related to occupational health, union leaders, professors, occupational safety engineers and occupational nurses. The evaluation criteria of the instrument, developed with fifteen items, enabled the assessment of various domains, with emphasis to clarity, comprehension, language and structure of the research instrument, applying the Likert Scale. **Results:** the tool used to analyze the workloads of the technical-administrative professionals of federal universities presented acceptable validation, with a Content Validity Index of 0.87. **Conclusion:** the instrument was validated and applied in the proposed research and will contribute towards other future researches, not only in occupational health, but also in other areas of health.

Descriptors: Workload; Universities; Occupational Health; Burnout, Professional; Working Conditions

Resumo

Objetivo: construir e validar instrumento para identificar, de forma qualitativa, as cargas de trabalho de profissionais técnico-administrativos de instituições públicas de ensino superior. **Método:** estudo metodológico que adotou como referencial teórico as cargas de trabalho, realizado de fevereiro a agosto de 2022, cujos especialistas foram profissionais relacionados à saúde do trabalhador, dirigentes sindicais, professor, engenheiro de segurança do trabalho e enfermeira do trabalho. Critérios de avaliação do instrumento construídos com quinze itens que possibilitaram avaliar vários domínios, com destaque para clareza, compreensão, linguagem e estrutura do instrumento de pesquisa, sendo aplicada a Escala de Likert. **Resultados:** a ferramenta para analisar as cargas de trabalho dos técnico-administrativos das universidades federais apresentou validação aceitável, com Índice de Validade de Conteúdo de 0,87. **Conclusão:** o instrumento foi validado e aplicado na pesquisa proposta e contribuirá para pesquisas futuras, não somente na saúde do trabalhador, como também nas demais áreas da saúde.
Descritores: Carga de Trabalho; Universidades; Saúde Ocupacional; Esgotamento Profissional; Condições de Trabalho

Resumen

Objetivo: construir y validar instrumento para identificar, de forma cualitativa, las cargas de trabajo de profesionales técnico-administrativos de instituciones públicas de enseñanza superior. **Método:** estudio metodológico que adoptó como referencial teórico las cargas de trabajo, realizado de febrero hasta agosto de 2022, cuyos especialistas fueron profesionales relacionados a la salud laboral, dirigentes sindicales, profesores, ingenieros de seguridad y enfermeras de salud laboral. Los criterios de evaluación del instrumento, construidos con quince ítems, permite evaluar diversos dominios con énfasis a la claridad, comprensión, lenguaje y estructural del instrumento de investigación, aplicándose la Escala Likert. **Resultados:** la herramienta para evaluar las cargas de trabajo del personal técnico-administrativo de las universidades federales presentó validación aceptable, con Índice de Validez de Contenido de 0,87. **Conclusión:** el instrumento fue validado y aplicado en la investigación propuesta y contribuirá a futuras investigaciones, no solo en la salud de los trabajadores, pero también en otras áreas de la salud.
Descriptores: Carga de Trabajo; Universidades; Salud Laboral; Agotamiento Profesional; Condiciones de Trabajo

Introduction

Workloads are efforts undertaken by workers, inserted in work processes and which are at the core of work activities. These can generate damage to the health of the worker, both physically as mentally, and are classified as physical, chemical, biological, mechanical, physiological and psychic, and which guide the theoretical framework of the study.[1]

The presence of these loads can intensify work exhaustion and generate various manifestations capable of causing physical and psychological distress. This approach emphasizes work as the central point in the analysis of biopsychosocial interactions, recognizing it as the overall efforts employed by workers to meet the demands of the

work process. Under such perspective, the debate on workloads goes beyond physical conditions in the work environment.[1-2]

In this workload context, a professional group emerges that still needs to be further developed by the academic environment and, for this purpose, needs to be the subject of detailed studies: technical-administrative professionals at public institutions of higher education. These collaborators, members of the staff of public universities, perform activities designated as support-activities, that is, they carry out roles supporting other professionals (professors) and users (students). Due to the scope of their duties, the work of these professionals takes over a complex characteristic, being subject to exposure to workloads that can result in work-related strain.[3]

In addition, there is an increasing inclination among researches to adopt methodological approaches that grant consistency to investigations, through rigorous tests and specific procedures, both in data collection as in the workload analysis. Furthermore, the field of Occupational Health is faced with the challenge of guaranteeing to the workers the right to access information on working conditions and health implications.[4]

Pursuant to this context, there was an interest in developing and validating a research instrument, capable of contributing towards understanding elements inherent to the work process of technical-administrative professionals, which resulted in exhaustion or protective measures for the health of workers.[1]

It is understood that the development of a qualitative instrument plays an essential role towards understanding the event or situation experienced. Consequently, it permits the holistic analysis of a given circumstance. In this research, focus was on working conditions and workloads inherent or absent in the work environment. The researcher aimed to understand the different perspectives that make up the studied theme, as well as the responses of the participants involved, considering the understanding of workloads, in order to understand the dynamics of the investigated phenomenon.[5]

The research was guided by the philosophical and theorical framework,[1] based on the workload concept. Under this perspective, the object was to design and validate an instrument to identify, in a qualitative manner, the workloads of technical-administrative professionals in public institutions of higher education.

Method

In qualitative researches, the design of an instrument becomes essential to understand an event or situation experienced, favoring an integrated analysis of a given circumstance. In this research, in particular, working conditions and workloads present or not in the working environment. On the whole, in the investigative scenario, the researcher tries to capture different viewpoints that make up the question and the respective answers, through the participants involved, considering relevant perspectives and seeking to understand and interpret the dynamics of the researched phenomenon.[5-6]

The development of the research occurred in four phases: in Phase 1, the objectives were defined, with the identification of the main aspects related to workloads, classified into two categories. The first one related to physical, chemical, biological and mechanical loads, which are linked to the external materiality of the body and which, when interacting with it, become a part of the internal materiality. The second one being physiological and psychic loads, that cause transformations to internal processes, once having acquired materiality in the human body and causing transformations to internal processes.[1]

Based on this classification, assessment criteria were established for each workload, considering the work process and work environment in which the workloads could be present. Each workload was analyzed separately by the technical-administrative professionals, using specific items that could express the presence or absence of such workload.

Phase 2 – literature review, based on the theoretical foundation on workload concepts, as well as on the search for similar validated instruments and good practices and modalities of approaches, as support for the creation of a new research questionnaire. The search was carried out on the online platforms: SciELO and Virtual Health Library Portal The topics were: occupational health/work process and technical-administrative aspects of a public institution of higher education. The purpose of this stage was to form a theoretical-conceptual basis for the research and corroborate the preparation of the text. And that, later, were supporting actors in the analysis of the findings.

Phase 3 – Design of the Instrument – attention was given to the objective of creating the research instrument to be submitted for validation: analyze the presence of workloads present in the work process of the professionals carrying out administrative activities in public institutions of higher education.[7]

Accordingly, the instrument was structured in two blocks: one with sociodemographic and labor questions, to characterize the profile of the interviewed parties; and another with a semi-structured script with closed and open questions, to identify workloads present or not, and the interference of these in the work processes. The instrument was structured in a very clear and organized manner, distributing the questions in accordance with each workload (physical, chemical, biological, mechanical, physiological and psychic). These were also investigated separately. In addition to the analysis, to provide consistency to the study, the assessment of ergonomic conditions was added, as these are related to physiological and psychic loads.

In order to transform the conceptual framework of workloads into questions, it was sought to link the indicatives of these to the activities developed by the segment to be researched. For example, in questions related to the psychic aspects, matters related to motivation, positive and negative issues of the work, professional appreciation, among others, can be assessed.

Lastly, in Phase 4 – Validation of the questionnaire – the content of the instrument was forwarded for assessment of a committee of professionals with relevant knowledge in relation to occupational health and safety. For this purpose, the questionnaire was tested, with content analysis as selection procedure, performed by a committee, whose recommended number is of at least five and at most ten evaluators.[8] The experts issued an opinion on the items of the scale, with the purpose of verifying what was understandable and meaningful for the respondents, thus assuring the guarantee of the validity of the construct.[8-9]

Five experts assessed the instrument: two directors of the Workers' Union for Federal Institutions of Higher Education (SINDITEST) and three specialized professionals of the health area, one professor, one safety engineer and one occupational nurse.

The instrument was forwarded to the Director of the Union, who passed it on to union colleagues and two of them issued an opinion. These were selected due to their

vast knowledge about the work process of technical-administrative professionals in higher education institutions; and three, for having over 10 years of experience in the area of occupational health and safety, and showed interest and availability in taking part of the research.

Experts were essential to avoid inaccurate results or sectarian measures that would lead to incorrect assessments. In addition, the assessment of instruments in the area of health must be multidisciplinary in order to sustain the objectivity of the phenomenon.[10]

Besides testing, a pilot test was carried out with a technical-administrative public employee who answered the questionnaire and had the task of evaluating the instrument and making considerations. This response was not included in the validation of the instrument.

The conceptual structure for validation of the research instrument was comprised of fourteen objective questions and one subjective question, the latter being the 15th question, in which the participant could express an opinion about the instrument. The responses were based on the Likert Scale,[11-12] with five gradings, these being: TA – Totally Agree (4); A – Agree (3); ND – Not Decided (2); D – Disagree (1); DT – Disagree Totally (0).

The formulated and organized questions enabled the assessment of the instrument in the items: clarity, uniformity, organization, comprehension, ease of response, greater knowledge and timeliness of the theme, structure, language, objectivity, impartiality, relevance (Table 1).

The responses issued by the experts were analyzed based on the Content Validity Index (CVI) which measures the proportion of matches on certain aspects of an instrument and its respective items. The CVI favors the possibility of analyzing items individually and then jointly.[13] Individual calculation of the questions was chosen in order to reach the general average (*Average Variance Extracted*).[14]

In the counting model, the responses marked as TA and A receive a score of 1; and responses marked as ND, D and DT obtained a value of zero. The sum of the score for each question was divided by the number of judges (five), with a result valued between 0 and 1. Emphasis is given that a favorable CVN should be of, at least, 0.78 for the individual calculation of the questions.[13-14]

In this research, seven questions had an index of 1 and five had an index of 0.8. Therefore, twelve items were within compliance, Two questions reached an index of 0.6: Question 13 – Stimulates the understanding of the topic addressed; Question 14 – Was it easy to answer? To mitigate the first non-conformity, it was proposed to present it to the technical-administrative staff. For the second one, it was decided to monitor the completion of the questionnaire or to resolve doubts during the interview.

Calculation of the overall average was carried out from the sum of the individual indexes, divided by the total number of questions, fourteen. The result obtained was of 0.87. For the researcher, acceptable index should be of over 0.80, preferably greater than 0.9. With the specific inconsistencies resolved, it was considered that the instrument had the reliability confirmed for application.

Table 1 – Description of the questions with responses from the judges and CVI results. Curitiba-PR, Brazil, 2023[13]

Description of the questions	Response scale					
	Specialist grades					CVI
1. Is the reference framework clear and uniform for those who respond?	4	4	4	4	3	1
2. Does the reference framework help in understanding the instruments and to respond?	4	3	4	4	3	1
3. Is the structure coherent?	4	3	4	2	4	0,8
4. Is the language clear and objective?	4	4	3	3	4	1
5. Is communication simple and the words used understood?	4	4	4	3	4	1
6. Is the order in which the questions were formulated adequate?	4	4	4	2	3	0,8
7. Is the content free of discrimination or prejudice?	4	4	4	4	4	1
8. Is the theme current?	4	4	4	4	4	1
9. Does it provide a reflection on the matter?	4	3	4	4	4	1
10. Does it clear doubts on the matter addressed?	4	3	4	3	3	1
11. Does it stimulate you to learn more about the matter?	4	3	4	3	2	0,8
12. Is it relevant to the performance of duties/activities?	4	2	4	4	4	0,8
13. Does it stimulate the understanding of the matter addressed?	4	2	4	3	2	0,6
14. Was it easy to answer?	4	2	3	1	4	0,6

The development of the research complied with the standards of ethics in research involving human beings, established through Resolutions 466/2012 and 510/2016. The research was approved by the Research Ethics Committee of

Universidade Federal do Paraná, on July 4, 2002 – decision number 5387599 and CAAE: 57499822100000102. The workers who participated were informed about the purpose and characteristics of the investigation. Upon agreeing to participate, they signed the Informed Consent Form.

Results

The questionnaire was structured in six modules comprising open and closed questions, beginning with the presentation of concepts, sociodemographic characteristics, identification of the place of work. After the items of characterization of the population, the approach to essential topics was started to characterize the presence or absences of workloads in the work environment. Each module highlights different aspects of workloads, providing a comprehensive and detailed approach, as demonstrated in Table 2, below.

Table 2 – Summary of the Workload Assessment Instrument. Curitiba-PR, Brazil, 2023

I – Presentation of workload concepts and examples used in the script of the interview: Workloads are elements present in the work process. These are classified as: Physical, chemical, biological, mechanical, physiological and psychic
II – Sociodemographic characteristics: Name (initials) / Date of birth – age/ Gender/ Race/ Civil Status/ Position/ Function/ Education/ Length of Service in the Institution/ Salary range/ How to get to work/ Total weekly working hours/ Do you have any other employment relationship.
III – Identification of the Course/Department/Sector of work
Identification of workloads
IV – Identification of workloads present in the work activities/environment: When thinking about the workloads presented, which ones do you recognize in your work routine (mark which workload is recognized).
Let us now analyze in further detail these conditions in relation to your work:
Physical loads Presence of a noisy environment, excessively cold, excessively hot, radiations. Is there any negative repercussion of the Physical load to your physical integrity? If affirmative, describe what you consider as negative.

Chemical loads Use of chemical products in the work activities. If affirmative, which and how frequently. Do you receive individual protection equipment? If affirmative, do you use it. Is there any negative repercussion of the Chemical Load to your physical integrity? If affirmative, describe what you consider as negative.
Biological loads In the activities you carry out, is there the presence of micro-organisms which cause diseases? If affirmative, describe the activity/frequency of exposure/ receive individual protection equipment – use of individual protection equipment Is there any negative repercussion of the Biological Load to your physical integrity? If affirmative, describe what you consider as negative.
Mechanical loads Use of stairs to access the work place / Presence of slippery surfaces / have you ever fallen down in your work environment / electric wires or cables in areas of circulation / danger of explosion or fire in the work environment – if affirmative, how do you perceive the risk. Is there any negative repercussion of the Mechanical Load to your physical integrity? If affirmative, describe what you consider as negative.
Physiological load Work day/ work hours / overtime/ accelerated work rhythm / excessive workload / pauses to rest. Is there any negative repercussion of the Physiological Load to your physical and mental integrity? If affirmative, describe what you consider as negative.
Psychic load Autonomy to develop activities / Training and development / Performance evaluation / Distribution of work activities considering the following variables: age, gender, health,, person with disabilities, level of education / Health issues arising from the activities performed / Basic psychological processes that are involved in the demands of the work / Planning / Ways of dealing with workloads within and outside the work environment / Characteristics of the work that can contribute to increase workloads and characteristics that can contribute to decrease workloads / Motivation / Positive and negative issues of the work / Does the work cause any discomfort / Remuneration / interpersonal relationship / Recognition and appreciation / Balance between professional and personal life. Is there any negative repercussion of the Psychic Load to your physical and mental integrity? If affirmative, describe what you consider as negative. Do repercussions of the Psychic load interfere in other systems apart from the Psychic one? What are the positive and/or negative consequences produced by your work activities on you?
V – To assess ergonomic issue, evaluate and answer: Weight – Height / Questions in relation to the work station: do you share it with other colleagues/ Do you remain seated for long period of time/ Type of IT tool used and is it positioned correctly / assessment of the desk and chair, is the furniture adequate/ Acoustic, thermal and visual comfort / In the activities: presence of monotony, repetitiveness, exhaustion, creativity / Physical posture adopted / Number of employees for the performance of the activities (satisfactory or unsatisfactory) / Presence of osteomuscular pain or discomfort (specify region of the body) / How much mental effort is required at work / How much physical effort is required at work / Practice of physical activities
VI – Other Would you like to add anything else that could contribute towards this research?

With the positive result of the validation of the questionnaire, the research was carried out in order to apply the questionnaire to the population determined for the research, proposed with twelve validated questions out of a total of fourteen, reaching an adequate score with an CVI average of 0.87 – which enabled the positive validation of the research instrument and consequently its application.

Discussion

The instrument was considered valid for use in the process of identifying workloads of technical-administrative professionals of public institutions of higher education. The expert evaluators of the instrument demonstrated knowledge and expertise on the matter, having experience in the area of occupational health, making the instrument compatible with the scenario it proposes, achieving a general average of CVI > 0.87.

There is a peremptory need to use reliable and validated instruments to assess workloads, due to the relevance of this conceptual construct for both workers and managers. The validation process is essential to assure that results accurately represent the complexities of workloads, thus ensuring safe applicability in researches and practices adopted in the area of occupational health.[15]

We opted for the framework of workloads outlined,[1] consonant with the authors who meticulously explore the various facets of workloads, encompassing physical, chemical, biological, mechanical, physiological and psychic aspects, detailing the characteristics. The scope is to highlight loads inherent to the work processes, understanding that these requirements have the potential of affecting not only the physical, but also the emotional realm of the professionals involved.[1]

The theoretical and conceptual framework used to develop the questionnaire is crucial for validity. The inclusion of referential theories in the area of occupational health can strengthen the relationship between the questions in the questionnaire and the underlying theories. This provides an understanding of the dimensions explored in the instrument and the repercussions on the health of workers. Emphasis is given to the fact that the conception of the questionnaire was guided by the perspective of the participants, focusing on the search for the perspective of the respondent.[16]

From the results obtained with the questionnaire and its analysis, it becomes favorable and feasible to formulate strategies that provide for the reduction or abolishment of workloads present in the work environments, to guarantee the quality of life of those who keep the institutions working.

The use of the instrument in researches becomes useful to increase evidence, in addition to providing relevant information for the development of interventions in the researched population and, with this identification of workloads, to guide the actions of managers in order to promote the wellbeing of workers and prevent occupational or work-related diseases.[17]

Given the current context of changes in labor relations and labor processes, it is important to pay attention to the issue of workloads, especially psychic ones, which can negatively interfere, not only in the working life, but also in the personal life of workers.

Permanent changes are currently observed in labor characteristics, resulting from globalization and transformations in the socioeconomic scenario, increasingly demanding high performance from workers and, consequently, bringing with it an increase in the volume of work.[18]

The new morphology of labor, characterized by various factors, such as the advent of Industry 4.0, outsourcing, urbanization and the outbreak of the Covid-19 pandemic, prompted the uncertainty of labor, generating a vulnerability of workers and, consequently, producing increased risk of this population falling ill.[19]

Upon analysis of this condition of permanent changes, affecting directly the health of workers, it is important to increase research focused on workloads, not only physical, but mainly psychic loads, as these new work modalities require greater mental and emotional demands from workers.

The findings of the research are relevant, once a validated questionnaire makes its application safe and reliable, and is essential for collecting accurate data on workloads, enabling the sequential analysis of the impacts of such workloads. Moreover, the results of the questionnaire can be used to formulate strategies aimed at reducing or eliminating workloads in work environments, in order to promote quality of life for workers. This focus is especially important in the context of changes in labor relations and labor processes, where workloads, including psychic ones, can have negative consequences on the lives of workers.

Accordingly, the product of this research is essential to analyze the workloads of technical-administrative staff of federal public universities, in order to identify workloads and propose measures that ensure the health of these professional, to intensify the positive visibility of labor conditions, once the demands to deliver results are ever-expanding in all segments of the labor society, which can lead to illness among workers.

In addition, this research will contribute to the practice of researchers and health professionals in assessing workloads present in the labor working environment which, once identified, make it possible to propose measures to improve occupational health and safety.

And, as contributions to the nursing area, the validation of an instrument, focused on the health of workers, may contribute to improve the performance of professionals in this field, and the promotion of better health conditions in the work environment, and, in this research, especially of technical-administrative professionals in public institutions of higher education. Based on the knowledge of nurses in relation to the health-disease process to which workers are submitted, they can propose measures to reduce workloads and consequently improve the work environment and quality of life of those involved.

As a limitation of the research, there were difficulties in finding a reference that specifically dealt with instruments for assessing workloads present in the work environment.

Conclusion

The research has shown that it was possible to design and validate the instrument to identify in a qualitative manner the workloads of technical-administrative professionals of public institutions of higher education.

The tool to analyze workloads of technical-administrative professionals of federal public universities presented an acceptable validation, with a CVI of 0.87, when following methodological phases, demonstrating reliability for application, with a clear, objective and well-defined structure for identifying the workloads of technical-administrative professionals of public institutions of higher education.

This device can offer a precise diagnosis of the health of these professionals and raise reflections on daily issues that are often neglected, in order to diagnose labor aspects. And, based on the investigation and identification of the workloads, it is possible to propose measures to prevent diseases and promote the health of these workers.

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