Validity and reproducibility of the Work-related Habits Questionnaire (HQW) to SAMU 192 workers*

Validade e reprodutibilidade do Questionário de Hábitos relacionados ao Trabalho (QHT) para trabalhadores do SAMU 192

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ABSTRACT: The aim of this study was to develop a questionnaire about work-related habits (WHQ) and to verify its validity and reproducibility. The WHQ steps were: field observation and theoretical review about work-related habits of health workers; description and content; content validity, and reproducibility. Descriptive statistics (content validity), percent agreement (%C), and the measure agreement Kappa (reproducibility) were used for data analysis. Six experts assessed most part of the instrument as excellent, considering its content valid. Kappa values showed moderate to excellent concordance among the answers (%C>80%) indicating the reproducibility of the WHQ. Despite the limitations of the WHQ, such as absence of questions about alcoholism and imbalance between labor demand and availability of human resources, the practical range of the instrument is in the facility in obtaining information on the profile and on some important aspects of the work routine of health workers, which is useful to evaluate the Occupational Therapy field.

KEYWORDS: Surveys and questionnaires; Rreproducibility of results; Lifestyle; Habits; Occupational health.

RESUMO: O estudo teve objetivo de desenvolver um questionário sobre hábitos relacionados ao trabalho (QHT) e verificar sua validade e reprodutibilidade. As etapas do QHT foram: observação de campo e revisão teórica sobre hábitos relacionados ao trabalho de profissionais da área da saúde; descrição e conteúdo; validade de conteúdo e reprodutibilidade. Para análise dos dados foi utilizado estatística descritiva (validade de conteúdo) e percentual de concordância (%C) e a medida de concordância Kappa (reprodutibilidade). Seis especialistas avaliaram a maior parte do instrumento como excelente, considerando-o válido em seu conteúdo. Os valores de Kappa mostraram concordância moderadas a excelentes entre as respostas (%C>80%), indicando ser o QHT um instrumento reprodutível. Apesar das limitações do QHT tais como ausência de questões sobre etilismo e desequilíbrio entre demanda de trabalho e disponibilidade de recursos humanos, o alcance prático do instrumento está na sua facilidade em obtenção de informações para conhecer o perfil e alguns importantes aspectos de rotina de trabalho dos trabalhadores da saúde, útil para avaliação na área da Terapia Ocupacional.

DESCRITORES: Inquéritos e questionários; Reprodutibilidade dos testes; Estilo de vida; Hábitos; Saúde do trabalhador.

INTRODUCTION

The world of work has been changing over the years due to the increasing narrowing or overlap of the working life in the personal life, in which employees committed to their institution strive to respond to the demands[1]. In addition, changes occurred in the organization of the work in public and private institutions, causing risk of illness due to the increase in hours worked, the high degree of simultaneity of activities and demands, the excess of work goals, the decision-making process, and the excessive pressure[1].

Health workers are at risk for the development of Work-related Musculoskeletal Disorders (WMSDs) and of Cardiovascular Diseases (CVD)[2]. Furthermore, the high prevalence of low back pain has been associated with the ergonomic hazard, such as inadequate postures, excess of physical effort, mechanical and static musculoskeletal load, invariability of task.

These conditions, associated with organizational, cognitive, and psychosocial aspects related to work are predisposing factors to the appearance of WMSDs[3,4]. Health workers have high prevalence of arterial hypertension (AH) and are at risk for the development of CVD, such as: obesity, dyslipidemia, stress, and sedentariness[5,6].

In this context, the transformations of work, not only generate new organizational settings, but also different impacts on the workers' health[7] and the consequent need for standardization of protective measures to the safety and health of workers. Regarding the health workers, the Occupational Safety and Health Act nº. 32 of 2005 (NR 32) of the Ministry of Labor and Employment - MLE was incorporated, establishing guidelines for the protection of the workers' health and of those engaged in activities of promotion and healthcare in general, and also establishing biological, chemical, physical, among other hazards to which those workers are exposed. It ensures that the rules for the preparation and implementation of the Environmental Risks Prevention Program (PPRA - NR 9 – of 1978 and updated in 1994) are applied in the health services.

The National Health Policy of Workers no. 1,823, 2012, aims to define the principles, guidelines, and strategies for the development of the workers' health integral attention. It also aims to promote and protect their health, as well as to reduce the morbidity and mortality caused by the development models and production processes.

The health condition, as well as the risk of illness, can be analyzed using assessment instruments. Some of them identify style and quality of life, others map the occupational hazards and work-related accidents, and others only detect the factors or situations of specific risks for illness, e.g., the appearance of psychological disorders, such as post-traumatic stress and Burnout Syndrome[8,9,10].

Considering the need for instruments to map the risk factors for WMSDs and CVD, the Work-related Habits Questionnaire (WHQ) was developed. The WHQ investigates work regarding the following aspects: working hours, occupational hazards, stress in the workplace, and the emergence of CVD and WMSDs, it also can be used both in research and in clinical practice to promote the worker's health. Thus, the objectives of this article are: (1) to show the development of the WHQ, (2) show the result of the validation process of the instrument's content, and (3) assess the reproducibility of the instrument.

METHODOLOGICAL PROCEDURES

The development of the WHQ was carried out in four steps: field observation and theoretical review about work life habits related to health workers (Step 1); content description of the WHQ (Step 2); content validity of the WHQ (Step 3), and reproducibility assessment of the WHQ (Step 4). This study was conducted between 2013 and 2014, within the ethical standards required by the National Research Ethics Commission/National Health Council/Ministry of Health (CONEP/NHC/MH) and approved by the Research Ethics Committee (REC) at the Federal University of Rio Grande do Sul under no. opinion 384,874.

Field Observation and Theoretical Review (Step 1)

The field observation was developed between April and May in 2013, in the administrative headquarter of the Mobile Emergency Care Service (SAMU 192) Porto Alegre/RS. It consisted in daily coexistence with workers who belong to Basic Life Support (BLS) and Advanced Life Support (ALS) staffs: doctors, nurses, nurse technicians, and ambulance drivers, and also with workers who belong to the center of medical regulation - auxiliary telephonists of medical regulation (TARM) and administrative sector. We also participated in the technical training offered periodically by the Education Center in Emergencies, which is a space for education and training that qualifies the worker for emergencies cases.

During the field observation, we analyzed the environment, the organization, work relations, and working hours in all sectors that compose the SAMU 192. During this period, we heard informally several statements

of workers, suggesting that musculoskeletal pain, AH, and high cholesterol are symptoms of the impairment of their health; and that stress, smoking, and sedentariness are some risk factors to their health. These statements were noted, compiled, and added to the content of the questionnaire.

The next step was the preparation of the WHQ items. A theoretical review on the topic was conducted in the databases PubMed, EBSCO, Embase, and Science Direct, in April 2013, with the use of the following keywords: Emergency Medical Technicians [OR] Paramedics, Emergency [AND] Occupational Disease [AND] Risk Factors [AND] Cardiovascular Diseases [AND] Musculoskeletal, Diseases. The articles found should meet the inclusion criteria: to address risk factors for CVD and WMSDs and to involve workers of the prehospital emergency care. We excluded articles that: assessed some kind of treatment for these workers; addressed unique events, e.g., disasters; were not written in the English language, and of qualitative character.

In this search, we found some studies using instruments to map only life habits, health, quality of life, absenteeism, environment, and occupational accidents of health workers[9,11-13]. Among the findings, we observed: the stress in the workplace (often relating the posttraumatic stress disorder as a possible source for the illness); musculoskeletal pain; work accidents (especially the ones involving vehicles and sharp materials); and sleep disorders.

Based on field observation and literature review, we developed the initial questions of the WHQ, which encompass the occupational universe of the health worker, including workplace, working hours, and work-related stress, as well as occupational diseases and risks inherent to the profession.

Content description of the WHQ (Step 2)

The WHQ is a data collection instrument that was developed by the authors based on Step 1, initially with 30 questions that were divided into seven sections (Box 1). After the elaboration of the WHQ, the instrument moved on to the next step.

Chart 1 – Section Composition of the WHQ, number and type of questions and their content

Section	No. of Questions	Type of Questions	Content
Demographic	05	Open and closed-ended questions of multiple choice	Personal data: color, sex, education, height, and weight.
Occupational (working hours)	08	Open and closed-ended questions of multiple choice	Occupation, workload, shifts, overtime, etc.
Occupational (Physical, Chemical, Biological, and Ergonomic Hazards)	02	Closed-ended questions of multiple choice	Contact/exposure to sharp materials, blood, fluids, heat, cold, noise, etc. Demands of the profession: physical effort, concentration, computer use, etc.
Occupational (Stress and Workplace)	03	Closed-ended questions of multiple choice	Stress in the workplace, teamwork, leader's support, sleep restriction, mental health problems.
Occupational (Work-related accidents and Diseases)	04	Open and closed-ended questions of multiple choice	Fluid contamination, automobile accidents, physical assaults, absenteeism, etc.
Cardiovascular	05	Open and closed-ended questions of multiple choice	Modifiable and nonmodifiable risk factors and cardiovascular diseases.
Musculoskeletal	03	Open and closed-ended questions of multiple choice	Diagnosis of musculoskeletal disease, frequency and intensity of the pain, and use of painkillers.

Content validity of the WHQ (Step 3)

Content validity consists in the assessment and judgement of the questionnaire's content by experts with great professional experience and/or research on the theme[14]. Six experts were invited: two cardiologists with emphasis on nutrition and physiotherapy, one master in epidemiology, one master in cardiology with emphasis on ER, one doctor in public health, and one expert in ER physiotherapy.

The experts were invited via telephone or contacted by e-mail, and everyone agreed to participate in the study, through the signature of the informed consent form, being, then, nominated assessors of the WHQ. The assessors participated in both phases of the Step 3: (a) the first assessment round and (b) the second assessment round. Each assessor received a letter explaining the purpose of the study, a copy of the WHQ, and the instrument to be assessed. The assessors were requested to judge each question of the WHQ on: (1) Clarity: indicates if there is room in the question for more than one interpretation; (2) Applicability: indicates whether the questions apply to the purpose of the section; (3) Objectivity: indicates if the question is straightforward, including only one aspect assessed; (4) Content: indicates whether each question covers the appropriate content and if it is in accordance with the corresponding section. All aspects should be judged by the assessors as excellent, good or insufficient.

The instrument had space for assessors to add suggestions or remarks for each question of the WHQ, or indicate the addition or removal of items. Based on the opinion of the assessors, the WHQ was redesigned and sent again to them for reassessing, following the same aspects of the first round. When the assessors stopped mentioning the need to redesign, the WHQ was considered valid regarding its content, moving on to the next step. Appendix 1 shows the final version of the WHQ.

Reproducibility of the WHQ (Step 4)

The stage of reproducibility was held in the months between June and September 2013, by the test-retest method, which demonstrates the ability of a measure to assess similar results in different applications, as long as there is no change in the variables studied[15]. Thus, the final version of the WHQ was applied in two separate days by the same assessor, with a seven-day interval[15]. The interval was not long enough to learn something or change habits.

The sample size for the reproducibility step was estimated based on the prevalence (25%) of risk factors for CVD and WMSDs in the Brazilian population[16], with 10% error and a significance level of 0.05. Therefore, 43 workers of SAMU 192 Porto Alegre/RS participated in this step.

Statistical Analysis

For closed questions, every possible answer was numbered, and the responses were tabulated. For open questions, data were compiled in thematic units, which were also numbered and tabulated for statistical analysis.

For the statistical analysis we used the SPSS software version 17.0. For the data analysis of the validity content we used descriptive statistics through tables of frequency and percentage, and for the reproducibility data we used the percent agreement (%C) and the measure agreement Cohen's Kappa (k). The classification for concordance among the answers can be: slight ($k \leq 0.2$), fair ($0.2 < k \leq 0.4$), moderate ($0.4 < k \leq 0.6$), substantial ($0.6 < k \leq 0.8$) or almost perfect ($k < 0.8$)[17]. Only the k values superior to 0.4 and %C superior to 80% were accepted[18].

RESULTS

Table 1 shows the results of the first and second assessment round of the WHQ validity. The frequencies that were insufficient in the first round were changed, following the recommendations of the assessors. The demographic and occupational sections suffered the greatest changes in the first version of the WHQ. In the second round most assessors considered the WHQ excellent in its aspects (Table 1).

The main changes proposed by the assessors in the first assessment round were: changing the name of three sections, modifications on some questions, and the insertion of three questions in demographic, occupational/working hours and occupational/stress sections, totaling 33 questions. Table 2 shows the changes of the WHQ.

For the reproducibility data, 43 workers who compose the staff of SAMU 192 Porto Alegre participated. Table 3 shows the sociodemographic characteristics of the participants, divided by occupation. Table 4 shows the results of the WHQ reproducibility. We can see that the k values for the questions tested were superior to 0.4 and that %C were superior to 80% with the exception of the question 18, in the working hours item, which was 76.7%. The rest of the questions of the WHQ obtained k value of 1.0 and 100% agreement, not requiring the modification of any question at this stage of the study.

Table 1 – Frequencies of the assessments from each section of the WHQ among experts/assessors in the first and second assessment round

Section (questions)	Assessors (n=6)	Aspects	n*	1st Assessment Round			2nd Assessment Round	
				Excellent n (%)	Good n (%)	Insufficient n (%)	Excellent n (%)	Good n (%)
Identification (1 to 5)	6	Clarity, Applicability, Objectivity, and Content	30	25 (83.3)	3 (10)	2 (6.7)	28 (93.3)	2 (6.7)
Occupational – Working Hours (6 to 13)	6	Clarity	48	35 (72.9)	11(22.9)	2 (4.2)	46 (95.8)	2 (4.2)
		Applicability	48	38 (79.2)	10 (20.8)		48 (100)	
		Objectivity	48	35 (72.9)	12 (25)	1 (2.1)		1 (2.1)
		Content	48	35 (72.9)	12 (25)	1 (2.1)		1 (2.1)
Occupational – Physical, chemical, biological, and ergonomic hazards (14 and 15)	6	Clarity	12	6 (50)	5 (41.7)	1 (8.3)	12 (100)	
		Applicability	12	9 (75)	2 (16.7)	1 (8.3)	12 (100)	
		Objectivity	12	7 (58.3)	4 (33.3)	1 (8.3)	12 (100)	
		Content	12	9 (75)	2 (16.7)	1 (8.3)	12 (100)	
Occupational – Stress and workplace (16 to 18)	6	Clarity, Applicability, Objectivity, and Content	18	11 (61.1)	6 (33.3)	1 (5.6)	17 (94.4)	1 (5.6)
Occupational – Work-related accidents and Diseases (19 to 22)	6	Clarity	24	19 (72.9)	5 (20.8)		24 (100)	
		Applicability	24	24 (100)	-		24 (100)	
		Objectivity	24	22 (91.7)	2 (8.3)		24 (100)	
		Content	24	22 (91.7)	2 (8.3)		24 (100)	
Cardiovascular (23 to 27)	6	Clarity	30	22 (73.3)	7 (23.3)	1 (3.3)		1 (3.3)
		Applicability	30	22 (73.3)	8 (26.7)		30 (100)	
		Objectivity	30	20 (66.7)	9 (30)	1 (3.3)	30 (100)	
		Content	30	22 (73.3)	8 (26.7)		30 (100)	
Musculoskeletal (28 to 30)	6	Clarity, Applicability, Objectivity, and Content	18	13 (72.2)	5 (27.8)		18 (100)	

*Values regarding the number of assessors X number of questions from each section

Table 2 – Modifications on the WHQ proposed by experts/assessors

Modifications	1st Version	2nd Version = Final Version
Name of the section	DEMOGRAPHIC	IDENTIFICATION
	OCCUPATIONAL Working hours	OCCUPATIONAL Labor History and Working Hours
	OCCUPATIONAL Stress and Workplace	OCCUPATIONAL Stress, Organization, and Work Relations
Questions	What color are you?	What is your color? ( ) white ( ) black ( ) *pardo* ( ) yellow/indigene
	What is your education level? ( ) early childhood education ( ) some early childhood education ( ) primary education ( ) some primary education ( ) secondary education ( ) some secondary education ( ) higher education ( ) some higher education	What is your education level? ( ) Elementary or Middle School ( ) Some Elementary or Middle School ( ) High School ( ) Some High School ( ) College Degree ( ) Some College ( ) Graduate Education ( ) Graduate Education in progress
	What is your occupation?	What is your current job role?
	How long have you been at your job?	How long have you been working in this occupation?
	How long have you been working in healthcare?	How long have you been working in this area?
	What is your monthly workload?	What is your monthly workload (including all your employment relationships)?
	Do you usually work overtime? ( ) No ( ) Yes ( ) How many hours?	Have you worked overtime in the last month? ( ) No ( ) Yes ( ) How many hours?
	Last year you had a diagnosis of: ( ) Depression ( ) Panic Disorder ( ) Anxiety Disorder ( ) Bipolar Disorder ( ) None of the above ( ) Other, which one?	Have you had any mental health problem in the last year? Which one?
	Have you had any diagnosis of musculoskeletal disease in the last year? ( ) Spinal Disc Herniation ( ) Osteoarthritis ( ) Arthritis ( ) Bursitis ( ) Tendinitis ( ) Synovitis ( ) Tenosynovitis ( ) Epicondylitis ( ) Other, which one?	Have you had any work-related musculoskeletal disorder in the last year? ( ) no ( ) yes If yes, select which one of the disorders listed below you had in the last year: ( ) Spinal Disc Herniation ( ) Osteoarthritis ( ) Arthritis ( ) Bursitis ( ) Tendinitis ( ) Synovitis ( ) Tenosynovitis ( ) Epicondylitis ( ) Other, which one?

Continues...

Table 2 – Modifications on the WHQ proposed by experts/assessors

Modifications	1st Version	2nd Version = Final Version
Questions added		Did your weight variate since the beginning of the job until this day? ( ) it did not ( ) it increased, how many Kg? ( ) it decreased, how many Kg? Do you have another employment relationship? ( ) no ( ) yes Do you pause/rest during your job? ( ) Never ( ) Sometimes ( ) Always

Table 3 – Sociodemographic characteristics of participants of the reproducibility step

	Occupation				
	Ambulance drivers (n=14)	Nurse technicians (n=13)	Nurses (n=4)	Doctors (n=6)	Telephonists (n=6)
Sex					
Male % (n)	100 (14)	53.8 (7)		50 (3)	16.7 (1)
Female % (n)		46.2 (6)	100 (4)	50 (3)	83.3 (5)
Age (years) $\bar{x}$ (±SD)	48.5 (8.0)	39.2 (7.98)	32.2 (6.18)	37.1 (4.79)	1.1 (14.2)
Height (m) $\bar{x}$ (±SD)	1.71 (7.78)	1.55 (41.8)	1.63 (8.9)	1.71 (8.3)	1.64 (4.6)
Weight (kg) $\bar{x}$ (±SD)	83 (16.4)	80 (17.7)	71.7 (13)	74.4 (9.7)	78 (15.2)
Education % (n)					
Elementary or Middle School	28.6 (4)				
Some Elementary or Middle School	14.3 (2)				
High School	28.6 (4)	61.5 (8)			50 (3)
Some High School	14.3 (2)				
College Degree	7.1 (1)	7.7 (1)	25 (1)		33.3 (2)
Some College	7.1 (1)	30.8 (4)			16.7 (1)
Graduate Education			75 (3)	83.3 (5)	
Graduate Education in progress				16.7 (1)	

Table 4 – Reproducibility values of the WHQ (n=43)

Section	Questions	%C	k
Identification	5. Did your weight variate since the beginning of the job until this day?	95.3	0.89 (0.709-1.000)
Occupational LHWH – Labor History and Working Hours	11. What is your work shift?	95.3	0.88 (0.739-1.000)
	12. Have you worked overtime in the last month?	97.6	0.919 (0.697-1.000)
	12. How much overtime have you worked in the last month?	82.1	0.792 (0.618-0.955)
	13. What are your usual work shifts in this job?	83.7	0.790 (0.673-0.913)
	14. Do you have another employment relationship?	97.6	0.941 (0.790-1.000)
	15. What is your monthly workload (including all your employment relationships)?	82.1	0.792 (0.615-0.919)

Continues...

Table 4 – Reproducibility values of the WHQ (n=43)

Section	Questions	%C	k
Occupational PCBEH – (Physical, Chemical, Biological, and Ergonomic Hazards)	16. Mark with an X how often you are exposed to the following elements during your job:		
	Excessive Cold/Heat	88.3	0.748 (0.519-0.945)
	Noise	86.0	0.501 (0.096-0.801)
	Vibrations	90.4	0.808 (0.589-0.955)
	Blood	83.7	0.705 (0.472-0.890)
	Secretions	83.7	0.719 (0.525-0.886)
	Sharp materials	86.0	0.748 (0.520-0.916)
Occupational PCBEH – (Physical, Chemical, Biological, and Ergonomic Hazards)	17. Mark with an X how often your occupation requires:		
	Repetitive movements	83.7	0.620 (0.351-0.849)
	Agility	95.3	0.645 (0.365-0.876)
	Physical Effort	88.3	0.801 (0.626-0.958)
	Sitting	88.3	0.775 (0.531-0.922)
	Standing	81.3	0.674 (0.445-0.849)
	Focus	93.0	0.696 (0.261-1.000)
	Computer use	88.3	0.823 (0.648-0.930)
	Working in different spaces	88.3	0.765 (0.548-0.945)
Occupational SOER – Stress, Organization, and Work Relations	18. Mark with an X how often you feel stressed regarding:		
	Decision-making	95.3	0.856 (0.642-1.000)
	Time and speed during work	83.7	0.701 (0.476-0.906)
	Teamwork	81.4	0.729
	Relationship with the leader	95.3	0.921 (0.797-1.000)
	Remuneration	83.7	0.733 (0.530-0.889)
	Working hours	76.7	0.627 (0.400-0.815)
	Pressure for productivity	81.4	0.675 (0.463-0.853)
	Sleep restriction	88.3	0.810 (0.635-0.961)
	19. Do you pause/rest during your job?	93.0	0.860 (0.664-1.000)
Occupational WAD – Work-related Accidents and Diseases	24. Have you ever suffered a work-related accident?	86.0	0.853 (0.723-0.943)
Cardiovascular	28. Do you have first-degree male relatives under the age of 55 years or female with less than 65 years who had heart disease or cerebrovascular accident?	93.0	0.860 (0.676-1.000)
	30. Do you exercise?	97.6	0.948 (0.823-1.000)
Musculoskeletal	31. Have you had any work-related musculoskeletal disorder in the last year?	93	0.861 (0.682-1.000)
	32. Have you had pain in any part of your body in the last three months? With which intensity?	81.4	0.762 (0.519-0.948)
	32. Have you had pain in any part of your body in the last three months? How often do you feel this pain?	86.0	0.780 (0.491-1.000)
	33. Do you take medicine for this pain or discomfort?	93.0	0.860 (0.677-1.000)

DISCUSSION

Only to identify the profile of the sample assessed, the results of prevalence and risk factors of the sample studied, using the WHQ, showed that: (1) the prevalence of AH was 55.8%; (2) the prevalence of musculoskeletal pain was 92.9%; (3) AH and obesity were considered risk factors for CVD; and (4) the physical effort, not resting during work, and working 12 hours were considered risk factors for WMSDs.

To achieve the purposes of the study, the WHQ had to go through the steps described in the literature: literature

review on the subject, field observation, content validity, and reproducibility of the instrument. The instruments must be developed based on the literature review on the subject or even based on the results of qualitative research, in which representatives of the population studied provide data about the experience[19]. In Step 1, we tried to comprehend both the theoretical review on the subject, as well as the field observation, awakening us to the phenomena of interest[20].

The content validity of Step 3 consisted in verifying if the items proposed by the WHQ constituted a representative sample of what needs to be measured, i.e., to what extent the instrument items serve to measure the construction of the whole[20]. Thus, experts on the subject assessed the WHQ quantitatively or qualitatively[21,22]. For this assessment, the literature is controversial, and may vary from five to 10 assessors[21] or between six and 20 experts[23]. The solidity of the validation process can be influenced by the experience and know-how of the experts on the instrument[19]. Criteria to invite experts are suggested, such as the publications in indexed magazines and the clinical experience[19]. Considering that six experts who had experience in magazines and publications on the subject participated in this study, we find them responsible for the solidity of the validation process of the WHQ content.

The literature discusses the subjectivity to assess the content validity. The lack of objective measures indicates that there is no consensus on the extension that determines that measure/item/question has reached its content validity[20]. To solve this problem, it has been suggested for the assessment of measure/item/question to be performed using a Likert-type scale, which provides quantitative measures of content as the experts agree on its relevance[24]. The criteria established for the judges to assess the instrument are important in the phase of content validation. Among these criteria are the representativeness, which consists in the ability of an item to represent the domain of content; clarity, which demonstrates how clear the item is formulated; the structure of the instrument, and the content scope of the items[20].

For the assessment of the WHQ content these criteria were evaluated using a Likert scale (excellent, good, and fair) and quantitatively analyzed through descriptive statistics using frequency tables. After the first assessment round, the WHQ went through changes proposed by the assessors and highlighted through the frequencies. In the second assessment round, the items were evaluated mostly as excellent, considering the WHQ as valid content.

In Step 4, the agreement among the answers given by the health workers in two days was tested, through %C and k value, showing agreements considered good and very good. It is noteworthy that even in question 18, in which the worker must indicate the frequency of his stress regarding the organization, the environment, and work relations, the correlation was considered good. This type of question depends on the respondent's perception in the days of the instrument's application, which can be changed by the high demand of work in that period or by any personal reason, which could have adversely affected the reproducibility[25].

The relevance of this study lies in the presentation of an instrument validated in its content, which includes the assessment of risk factors (musculoskeletal and cardiovascular) for the illness of health workers, which can be widely used for the conduction of periodic assessments, as well as for the mapping of the behavior of risk factors over time. This information allows the adoption of transforming practices of conditions and work situations by institutions. Also, as advantage of the WHQ, we cited the facility in obtaining the information, which were collected in a single instrument. Thus, its use is attractive in the scientific research field (aiming to, e.g., expose which aspects of the job can compromise the health of the workers) and in the institutional practice (aiming to, e.g., improve the work conditions). The use of a single instrument also facilitates the reproduction and comparison of studies developed in different contexts. Until now, studies that aimed to evaluate the work habits of health workers needed to use a combination of several instruments.

For example, in a previous study[25], whose purpose was to evaluate the mental health and emotional well-being of Scottish workers in mobile prehospital care, the General Health Questionaire-28 was used, which identifies psychiatric disorders, associated with the Impact of Event Scale, which determines the frequency of post-traumatic symptoms in comparison with specific critical events. In another study[12] the mental and physical health of the workers of SAMU 192 of João Pessoa/PB was assessed with a demographic questionnaire associated with the Work Ability index, adapted and validated for Brazil. In another example, Patterson et al.[11] assessed sleep quality related to fatigue among doctors and paramedics of the emergency service in Pennsylvania, with the Pittsburgh Sleep Quality Index and the Chalder Fatigue Questionnaire, respectively. These examples inspired us to develop the WHQ, an instrument that identifies work-related habits, including demographic and occupational aspects, and musculoskeletal and cardiovascular health, specially developed for healthcare workers.

As "limitations of the instrument" we cited: (1) the non-inclusion of alcoholism as a risk factor; (2) the non-inclusion of specific questions about the work demand regarding human resources, to contemplate the specificity of each professional and to identify the existence or not of the imbalance in the professional relationship and work demand; (3) the non-inclusion of specific questions about the quality and availability of structural, technical, and human resources for the development of work activities; and (4) the lack of open questions in the occupational section, which would allow the understanding of the real conditions and work situations in all its complexity. As "limitations of the study" we may include: (1) the demands of the service at the time of the WHQ application, since during data collection some workers needed to stop filling the questionnaire to attend emergencies; (2) the non-inclusion of the degree of agreement among experts as to the items to be kept or removed from the instrument; (3) the lack of an expert on the worker's health area in the process of content validation; and (4) the lack of information on the applicability and scope of the instrument itself.

Thus, we identified the need for future studies to overcome these limitations of the WHQ and to extend the validity of the instrument, as well as to register its application in observational research or intervention in the health area. We believe that the practical range of the WHQ lies in its facility in obtaining information on the profile and on some important routine aspects of the health workers' job, useful for assessing their health, as well as for Occupational Therapy professionals. Nevertheless, we recommend the use of the WHQ with interviews and/or focus groups to ensure the quality and effectiveness of research and intervention in the early stage.

CONCLUSION

Considering that all the steps necessary for the development of an assessment instrument were followed, we conclude that the WHQ is suitable for health workers, because it shows content validity and reproducibility. Thus, the WHQ can be used in studies designed to evaluate work-related habits and risk factors associated with the onset of CVD and WMSDs. Also, it is noteworthy that the use of the WHQ is not restricted only to research, but can also be used in clinical practice to promote the health of the worker.

APPENDIX 1 - WORK-RELATED HABITS QUESTIONNAIRE (WHQ)

IDENTIFICATION SECTION – Q1 TO Q6

Sex:
( ) Male   ( ) Female

1. How old are you? _____

2. What is your color?
( ) white   ( ) black
( ) *pardo*   ( ) yellow/indigene

3. What is your height (m)? _____

4. How much do you weight (Kg)? _____

5. Did your weight variate since the beginning of the job until this day?
( ) it did not   ( ) it increased, how many Kg? _____
( ) it decreased, how many Kg? _____

6. What is your education level?
( ) Elementary or Middle School
( ) Some Elementary or Middle School
( ) High School   ( ) Some High School
( ) College Degree   ( ) Some College
( ) Graduate Education
( ) Graduate Education in progress

OCCUPATIONAL SECTION LHWH – Labor History and Working Hours – Q7 TO Q15

7. What is your profession? _____

8. What is your current job role? _____

9. How long have you been working in this occupation? _____

10. How long have you been working in this area? _____

11. What is your work shift?
( ) 6 hours per day   ( ) 8 hours per day
( ) 12 hour-shifts   ( ) 24 hour-shifts
( ) Other, which one? _____

12. Have you worked overtime in the last month?
( ) No   ( ) Yes   ( ) How many hours? _____

13. What are your usual work shifts in this job?
( ) Morning   ( ) Afternoon
( ) Night   ( ) Switched/merged, how? _____

14. Do you have another employment relationship?
( ) no   ( ) yes

15. What is your monthly workload (including all your employment relationships)? _____

OCCUPATIONAL SECTION PCBEH – (Physical, Chemical, Biological, and Ergonomic Hazards)

16. Mark with an **X** how often you are exposed to the following elements during your job:

Contact/Exposure	Never	Sometimes	Always
Excessive heat			
Excessive cold			
Noise			
Vibrations			
Blood			
Secretions			
Sharp materials			
Other?			

17. Mark with an **X** how often your occupation **demands**:

Demands of the Occupation	Never	Sometimes	Always
Repetitive movements			
Agility			
Physical Effort			
Sitting			
Standing			
Concentration/Focus			
Computer use			
Working in different physical spaces during your job			
Other?			

OCCUPATIONAL SECTION SOER – Stress, Organization, and Work Relations – Q18 TO Q21

18. Mark with an **X** how often you feel stressed regarding:

Organization and Work Relations	Never	Sometimes	Always
Decision-making			
Time and speed during work			
Teamwork			
Relationship with the leader			
Remuneration			
Working hours			
Pressure for productivity			
Sleep Restriction			

19. Do you pause/rest during your job?
( ) Never ( ) Sometimes ( ) Always

20. Have you had any mental health problem in the last year? Which one? _____

21. Do you take medicine for this problem? ( ) no ( ) yes, which medicines? _____

OCCUPATIONAL SECTION WAD – Work-related Accidents and Diseases – Q22 TO Q25

22. Have you ever been removed from work due to illness?
( ) No ( ) Yes, which one? _____

23. For how long (days), in the last year, were you removed from work due to illness? _____

24. Have you ever suffered:
( ) Work-related accidents with sharp materials?
( ) Moral Aggression?
( ) Chemical contamination?
( ) Physical Aggression?
( ) Biological contamination?
( ) Car accident?
( ) None of the above
( ) Other, which one? _____

25. In the last year, how many times have you suffered any of these accidents? _____

CARDIOVASCULAR SECTION – Q26 TO Q30

26. Mark with an **X** the cardiovascular diseases and symptoms listed below:

Symptoms and Cardiovascular Diseases	You have had	You had and Still have	You have
Stable Angina			
Unstable Angina			
Cardiac failure			
Aneurysm			
Heart attack			
Cardiac arrhythmia			
CVA			
High Cholesterol			
Diabetes			
Systemic Hypertension			
Other?			

27. Do you take drugs to treat any of these diseases mentioned above?
( ) no
( ) Yes, what medicines do you take? _____

28. Do you have first-degree male relatives under the age of 55 years or female with less than 65 years who had heart disease or cerebrovascular accident?
( ) no   ( ) yes

29. Do you smoke?
( ) no   ( ) yes, how long have you been smoking? _____

How many cigarettes per day? _____

( ) quit smoking, how long has it been since you quit? _____

30. Do you exercise?
( ) no   ( ) yes, which one? _____

How long have you been exercising?

If yes, how often do you exercise?
( ) 1 time/week   ( ) 2 times/week
( ) 3 times/week   ( ) 4 times/week
( ) 5 times/week   ( ) every day of the week

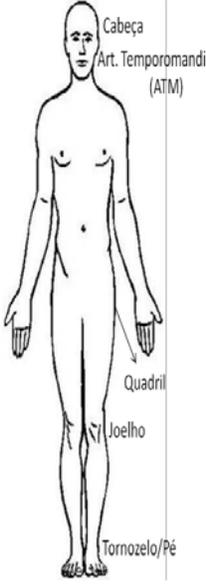**MUSCULOSKELETAL SECTION – Q31 TO Q33**
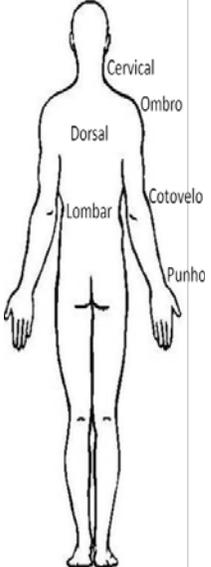
31. Have you had any work-related musculoskeletal disorder in the last year?
( ) no   ( ) yes

If yes, select which one of the disorders listed below you had in the last year
( ) Spinal Disc Herniation   ( ) Arthrosis
( ) Bursitis   ( ) Tendonitis
( ) Synovitis   ( ) Tenosynovitis
( ) Epicondylitis   ( ) Other, which one?

32. Have you had pain in any part of your body in the last three months? What is the intensity and frequency of this pain? Mark with an X in the Table below:

Region	Frequency			Intensity		
	Always	**Sometimes**	**Rarely**	**Weak**	**Moderate**	**Strong**
Head						
TMD						
Cervical						
Dorsal						
Shoulder						
Lumbar spine						
Elbow						
Fist						
Hip						
Knee						
Ankle/ Foot						

33. Do you take medicine for this pain or discomfort?
( ) no   ( ) yes, which one? _____

What is the frequency of use and dosage (mg, orally, intramuscularly, etc)? _____

Thank you for participating!

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