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ORIGINAL RESEARCH

Self-Estimated Functional Inability because of Pain questionnaire for Brazilian workers with musculoskeletal pain: face and content validity

Questionário Self-Estimated Functional Inability because of Pain *para trabalhadores brasileiros com dor musculoesquelética: validade de face e de conteúdo*

El cuestionario Self-Estimated Functional Inability because of Pain *destinado a trabajadores brasileños con dolor musculoesquelético: validez aparente y de contenido*

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ABSTRACT | Our study aimed to perform the face and content validity of Self-Estimated Functional Inability because of Pain (SEFIP) for workers, here called the SEFIP-work questionnaire. This is a questionnaire validity study. Our group previously translated and adapted the original version of the SEFIP, which was developed to investigate musculoskeletal pain and dysfunction to be applied to dancers (SEFIP-dance). However, due to the broad scope of the SEFIP-dance, we made changes and adaptations in the Brazilian Portuguese version of the SEFIP-dance to allow its use in workers. Therefore, face and content validity were performed for the development of the SEFIP-work based on opinions of committee of occupational disease and rehabilitation experts. After face and content validity, this SEFIP-work version was applied to 30 working individuals with musculoskeletal pain. The participants were native Brazilian Portuguese speakers aged 18 years and older. Thus, three changes were made to the questionnaire. All participants understood the SEFIP-work items and alternatives. The average total SEFIP-work score was 6.59 (SD=3.66), with the item "*parte inferior das costas*" (lower back) being the most marked (n=28; 93.33%), with an average score of 1.18 (SD=0.73). In conclusion, the Brazilian Portuguese version of SEFIP-work presents an acceptable level of understanding by workers in the investigation of musculoskeletal pain or discomfort.

Keywords | Pain; Reproducibility of Results; Surveys and Questionnaires.

RESUMO | Este estudo teve como objetivo verificar a validade de face e conteúdo do questionário *Self-Estimated Functional Inability because of Pain* (SEFIP) para trabalhadores, aqui chamado de questionário SEFIP-work. Este é um estudo de validade do questionário. Nosso grupo já traduziu e adaptou a versão original do SEFIP, que foi desenvolvido para investigar a dor musculoesquelética e disfunção a ser aplicada a dançarinos (SEFIP-dance). No entanto, devido ao amplo escopo da SEFIP-dance, fizemos mudanças e adaptações na versão traduzida e adaptada ao português brasileiro para permitir o seu uso com trabalhadores. Assim, a validade de face e conteúdo foram realizadas para o desenvolvimento do SEFIP-work baseadas em pareceres de especialistas em doenças ocupacionais e reabilitação. Após a validade de face e de conteúdo, esta versão da SEFIP-work foi aplicada a 30 indivíduos que trabalham com dor músculoesquelética. Os participantes eram falantes nativos de português brasileiro com idade igual ou superior a 18 anos. Assim, foram introduzidas três alterações no questionário. Todos os participantes entenderam os itens e alternativas da SEFIP-work. O escore total médio da SEFIP-work foi de 6,59

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(DP=3,66), com o item "*parte inferior das costas*" sendo o mais marcado (n=28; 93,33%), pontuação média de 1,18 (SD=0,73). Em conclusão, a versão brasileira adaptada da SEFIP-work apresenta um nível aceitável de compreensão por parte dos trabalhadores na investigação da dor ou desconforto músculoesqueléticos.
Descritores | Dor; Reprodutibilidade dos Testes; Inquéritos e Questionários.

RESUMEN | Este estudio objetivó verificar la validez aparente y de contenido del cuestionario *Self-Estimated Functional Inability because of Pain* (SEFIP) destinado a trabajadores, aquí llamado cuestionario SEFIP-work. Este es un estudio sobre la validez del cuestionario. Nuestro grupo ya ha traducido y adaptado la versión original de SEFIP, que fue desarrollada para investigar el dolor musculoesquelético y su disfunción destinada a la aplicación a bailarines (SEFIP-dance). Debido al amplio alcance de SEFIP-dance, se realizó cambios y adaptaciones en la versión traducida y adaptada al portugués brasileño para permitir su aplicación a los trabajadores. Así se realizó la validez aparente y de contenido para desarrollar el SEFIP-work con base en dictámenes de expertos en enfermedades profesionales y en rehabilitación. Después de la validez aparente y de contenido, la versión de SEFIP-work se aplicó a 30 personas que trabajan con dolor musculoesquelético. Los participantes son hablantes nativos de portugués brasileño con edad igual o superior a 18 años. Se agregaron tres cambios al cuestionario. Todos los participantes entendieron los ítems y las alternativas de SEFIP-work. El promedio de la puntuación total de SEFIP-work fue de 6,59 (DE=3,66), con el ítem "*parte inferior de la espalda*" como el más marcado (n=28; 93,33%) y puntuación promedio de 1,18 (DE=0,73). Se concluye que la versión brasileña adaptada de SEFIP-work presenta un nivel aceptable de comprensión por parte de los trabajadores en la investigación del dolor o malestar musculoesquelético.
Palabras clave | Dolor; Reproducibilidad de los Resultados; Encuestas y Cuestionarios.

INTRODUCTION

Researchers and occupational health professionals have used different occupational health assessment instruments to implement preventive, ergonomic, and/or rehabilitation measures[1-4]. Most of these instruments are questionnaires and, due to their basic characteristics, are based on the measurement of variables related to the worker's own report, as in the case of pain investigation[5,6].

In general, we can divide occupational health evaluation into ergonomic assessment and worker's health assessment. Within the context of ergonomics and its relationship to biomechanical risks during the execution of work tasks, the instruments commonly used for this evaluation are: Rapid Upper Limb Assessment[1], Rapid Entire Body Assessment[4], Quick Exposure Check[3], and Rapid Office Strain Assessment[2].

Regarding occupational health, several variables can be measured by questionnaires. The Need for Recovery Scale is a questionnaire that measures worker's fatigue[7]; the Strain Index measures risk of upper limb dysfunction[1]; the Maastricht Upper Extremity Questionnaire investigates arm, cervical, and shoulder involvement[8]. In addition to these specific instruments, there are questionnaires to measure various dimensions of pain, including the Numerical Rating Scale[5] and Örebro Musculoskeletal Pain Questionnaire[6].

Despite the wide variety of questionnaires for workers' health, the Nordic Musculoskeletal Questionnaire (NMQ) is still the most used instrument. This instrument was developed approximately three decades ago and allows for regionalized measurement of musculoskeletal pain, i.e., considering separate body parts. Musculoskeletal pain in the NMQ is investigated at two different times: the previous 12 months and last 7 days[9,10]. However, the NMQ lacks a severity or disability score.

In addition to and based on the NMQ, researchers developed a questionnaire to assess musculoskeletal pain in dancers entitled the Self-Estimated Functional Inability because of Pain (SEFIP-dance). The SEFIP-dance also contains a disability score that ranges from 0 to 4 points, a feature that allows for a total score[11]. Given this context and considering the broad and generic construction of this questionnaire, our study aimed to perform the face and content validity of SEFIP for workers, here called the SEFIP-work questionnaire. Our hypothesis is that the adapted SEFIP-work questionnaire is adequately understood by the target population of our study.

METHODOLOGY

Study design

This questionnaire validity study was conducted based on the Guidelines for the Process of Cross-cultural Adaptation of Self-Report Measures[12] and Consensus-based Standards for the Selection of Health Measurement Instruments[13].

Our study was conducted at the Department of Physical Education of the Universidade Federal do Maranhão (São Luís, MA, Brazil). All participants included in the study signed an informed consent form. The study participants were recruited from communities around the university by verbal invitations, posters, and social media.

Adaptation of the SEFIP-work questionnaire

Our group previously translated and adapted the original version of the SEFIP, which was developed to investigate musculoskeletal pain and dysfunction in dancers (SEFIP-dance)[14]. However, due to the SEFIP-dance broad scope, we made changes and adaptations in the Brazilian Portuguese version to allow its use in workers (SEFIP-work). Therefore, face and content were validated in two stages for the development of the SEFIP-work[15]. A committee of occupational disease and rehabilitation experts was consulted to adjust or change the SEFIP-dance. This consultation provided features for the SEFIP-work to enable its application to workers.

In the first stage, four physical therapists that work in occupational disease rehabilitation were instructed to perform technical judgment, alterations, inclusion, or exclusion of items. Moreover, these four physical therapists were asked to give their opinion on the ability of the SEFIP-work to measure musculoskeletal-pain-related disability.

In the second stage, four healthcare professionals were consulted to verify possible difficulties in reading the questionnaire, clarity of response alternatives, presence of typographical errors, font size, level of understanding of items, length, application time, and overall evaluation.

We have adopted the following inclusion criteria for physical therapists: working with occupational health for at least 24 months; be native and fluent in Brazilian Portuguese; be available for meetings and consultations to clarify the opinion issued. For healthcare professionals (two physical therapists and two physical education professionals), we adopted the following inclusion criteria: prior experience using questionnaires in patient assessment; be Brazilian and speak Brazilian Portuguese as mother tongue; be available for meetings and consultations to clarify the opinion issued.

After face and content validation, with 100% of agreement of the experts, the pre-final SEFIP-work version was established and applied to 30 workers with musculoskeletal pain. The participants were aged 18 years and older with Brazilian Portuguese as their mother tongue. Participants answered the questionnaire and established their understanding of the pre-final version of the SEFIP-work by ticking "yes" or "no" for each item. An item understood by less than 20% of the participants would be changed and retested in a new sample of 30 participants until the achievement of the desired understanding level[12,13]. This procedure established the final version of the SEFIP-work in the Brazilian Portuguese.

SEFIP-work score

The questionnaire consists of 14 items, each item related to a body part. There are five answers for each item, with scores that range from 0 to 4. Thus, the total score varies between 0 and 56 points; the higher the score, the higher disability[11]. In addition to this total score, we suggest estimating a separate score for each body region to produce a score from 0 (no disability) to 4 (maximum disability). This regionalized score avoids errors in interpreting the magnitude of disability that can be generated by pure analysis of the total score.

Statistical analysis

Descriptive analysis was performed; qualitative variables are presented as absolute numbers (percentage) and quantitative variables as means (standard deviation[SD]). Data processing was performed using SPSS software version 17.0 (Chicago, IL, USA).

RESULTS

After face and content validation, three changes were made to the questionnaire: the answer associated with score 4 was changed from "*Não consigo dançar por causa da dor*" (I cannot dance because of the pain) to "*Não consigo trabalhar por causa da dor*" (I cannot work because of the pain); item 13 was changed from "*Tornozelos/pés*" (ankles/feet) to "*Tornozelos*" (ankles), item 14 was changed from "*Dedos dos pés*" (toes) to "*Pés*" (feet).

Therefore, this version subjected to the face and content validity was considered the pre-final SEFIP-work version. Thirty workers that spoke Brazilian Portuguese as mother tongue answered the questionnaire. The average age of participants was 34.76 years (SD=6.84); 20 (66.66%) participants were men. Table 1 shows other personal and worker characteristics.

Table 1. Personal and occupational characteristics of study participants

Variables	n (%) or mean (standard deviation)
Age (years)	34.76 (6.84)
Gender (male)	20 (66.66%)
Height (kg)	65.44 (9.94)
Weight (m)	1.69 (0.07)
Body mass index (kg/m^2)	22.84 (2.45)
Marital status	
Single	10 (33.33%)
Married	13 (43.33)
Divorced	7 (23.34%)
Schooling	
Middle school	5 (16.67%)
High school	17 (56.66%)
Higher education	8 (26.67%)
Physical activity (yes)	25 (83.33%)
Occupation	
Teacher	4 (13.33%)
Cleaner	15 (50%)
Engineer	2 (6.67%)
Administrator	2 (6.67%)
Driver	4 (13.33%)
Others	3 (10%)
Time in the same job (months)	58.27 (81.32)
Weekly working (hours)	38.09 (7.36)
Posture at work	
Standing	8 (26.67%)
Sitting	6 (20%)
Standing/sitting	16 (53.33%)
Professional gesture type	
Manual	22 (73.33%)
Manual/non-manual	8 (26.67%)

All participants understood the SEFIP-work items and alternatives, and thus no changes in the pre-final phase were necessary. The average total SEFIP-work score was 6.59 (SD=3.66), with the item "*parte inferior das costas*" (lower back) being the most marked (n=28; 93.33%), with an average score of 1.18 (SD=0.73). Table 2 shows further details on the results of functional disability and pain measured by SEFIP-work. Figures 1 and 2 show the final version of the SEFIP-work questionnaire in Brazilian Portuguese and English, respectively.

Table 2. Total score and body region score of Self-Estimated Functional Inability because of Pain (SEFIP-work) in study participants

SEFIP-work item		Mean (standard deviation)
Portuguese	English	
Pescoço	Neck	0.77 (0.68)
Ombros	Shoulders	0.54 (0.59)
Cotovelos	Elbows	0.13 (0.35)
Punhos/mãos	Wrists/hands	0.68 (0.56)
Parte superior das costas	Upper back	0.87 (0.73)
Parte inferior das costas	Lower back	1.18 (0.73)
Quadris	Hips	0.13 (0.46)
Coxas (frente)	Thighs (front)	0 (0)
Coxas (atrás)	Thighs (back)	0.18 (0.39)
Joelhos	Knees	0.36 (0.58)
Pernas (frente)	Legs (front)	0 (0)
Panturrilhas	Calves	0.27 (0.55)
Tornozelos	Ankles	0.63 (0.72)
Pés	Feet	0.86 (0.83)
Escore total	Total score	6.59 (3.66)

Self-Estimated Functional Inability because of Pain (Trabalho)

Nome: _____ Data: _____

Você está sentindo qualquer dor ou desconforto muscular agora? Se sim, indique abaixo até que ponto isso afeta sua atividade profissional.
Por favor, marque um quadrado para cada região do corpo.

	Sem dor	Alguma dor, mas sem muitos problemas	Bastante dor, mas eu consigo suportar	Muita dor, eu evito certos movimentos	Não consigo trabalhar por causa da dor
	(0)	(1)	(2)	(3)	(4)
Pescoço	□	□	□	□	□
Ombros	□	□	□	□	□
Cotovelos	□	□	□	□	□
Punhos/mãos	□	□	□	□	□
Parte superior das costas	□	□	□	□	□
Parte inferior das costas	□	□	□	□	□
Quadris	□	□	□	□	□
Coxas (frente)	□	□	□	□	□
Coxas (atrás)	□	□	□	□	□
Joelhos	□	□	□	□	□
Pernas (frente)	□	□	□	□	□
Panturrilhas	□	□	□	□	□
Tornozelos	□	□	□	□	□
Pés	□	□	□	□	□

Figure 1. Brazilian Portuguese version of Self-Estimated Functional Inability because of Pain for workers (SEFIP-work)

Self-Estimated Functional Inability because of Pain (Work)

Name: _____ Date: _____

Are you feeling any muscle pain or discomfort now? If so, indicate below how much it affects your professional activity.
Please check one box for each body region.

	No pain	Some pain, but without many problems	Quite a bit of pain, but I can handle it	A lot of pain, I avoid certain moves	I cannot work because of the pain
	(0)	(1)	(2)	(3)	(4)
Neck	□	□	□	□	□
Shoulders	□	□	□	□	□
Elbows	□	□	□	□	□
Wrists/hands	□	□	□	□	□
Upper back	□	□	□	□	□
Lower back	□	□	□	□	□
Hips	□	□	□	□	□
Thighs (front)	□	□	□	□	□
Thighs (back)	□	□	□	□	□
Knees	□	□	□	□	□
Legs (front)	□	□	□	□	□
Calves	□	□	□	□	□
Ankles	□	□	□	□	□
Feet	□	□	□	□	□

Figure 2. English version (free translation) of Self-Estimated Functional Inability because of Pain for workers (SEFIP-work)

DISCUSSION

We performed the face and content validity of the SEFIP-work questionnaire for Brazilian workers. This process is the first step in the validation process of this questionnaire, and it will allow its future use to investigate musculoskeletal injuries in this population.

The process of initial validity is usually published as the basis for future studies that focus on the analysis of psychometric properties. In this sense, the methods and objectives of our study are similar to the investigations conducted by Kamonseki, Fonseca and Calixtre[16], Donat et al.[17], and De Bortoli et al.[18]. Our study and these investigations[16-18] were mainly based on the classics publications of Beaton et al.[12] and Prinsen et al.[13].

According to a previous study[19], the understanding of a questionnaire by 80% of the sample included in the pre-final testing phase is acceptable. In our study, 100% of the sample comprehended all SEFIP-work items, statements, and instructions. This result was expected for the questionnaire due to the simple presentation, straight forward structure, and absence of long and interpretive sentences.

"Lower back", followed by "upper back", were the regions with the highest prevalence of musculoskeletal pain. Our sample consisted of workers from various professional fields. Using NMQ, other studies also investigated pain distribution in workers and found similar results: Akodu and Ashalejo[20] identified a greater presence of lower back pain in hospital nurses, López-González, González and González-Menéndez[21] found the highest presence of pain in the neck region of laboratory technicians, and Özdinç et al.[22] observed higher prevalence of pain in the neck and lumbar region of scholars.

Our study has some limitations. Although face and content validity is the first step in the validation process, it alone does not support research or occupational use. Thus, future studies should measure the psychometric properties of the SEFIP-work in Brazilian Portuguese. Moreover, we recommend the translation the SEFIP-work questionnaire and its adaptation to other languages. We present in our article an English version of the SEFIP-work (Figure 2); however, it has been freely translated. Thus, textual revisions and cross-cultural adaptations must be performed by researchers that speak English as mother tongue. Finally, we include workers from different professional categories, which makes the sample heterogeneous. This fact must be considered when interpreting the results presented here.

CONCLUSION

The Brazilian Portuguese version adapted of SEFIP-work presents an acceptable level of understanding by workers in the investigation of musculoskeletal pain or discomfort.

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