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ORIGINAL ARTICLE

MULTICENTRE CROSS-SECTIONAL STUDY ASSESSING CONTENT VALIDITY OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH CORE SET FOR POST-ACUTE MUSCULOSKELETAL CONDITIONS IN PRIMARY CARE PHYSIOTHERAPY SERVICES

Héctor HERNÁNDEZ-LÁZARO, PhD[1,2], Sandra JIMÉNEZ-DEL BARRIO, PhD[2,3], Luis CEBALLOS-LAITA, PhD[2,3], Silvia LAHUERTA-MARTÍN, PT[2], Ricardo MEDRANO-DE-LA-FUENTE, PhD[2,3], Ignacio HERNANDO-GARIJO, PhD[2,3] and María Teresa MINGO-GÓMEZ,PhD[2,3]

From the [1]Ólvega Primary Care Physiotherapy Unit, Soria Health Care Management, Castilla y León Regional Health Administration (SACYL), Ólvega (Soria), [2]Faculty of Health Sciences, University of Valladolid and [3]Clinical Research in Health Sciences Group, University of Valladolid, Soria, Spain

Objective: **To assess content validity of the comprehensive International Classification of Functioning, Disability and Health (ICF) Core Set for post-acute musculoskeletal conditions in primary care physiotherapy services.**

Design: **Multicentre cross-sectional study.**

Subjects: **Patients with musculoskeletal disorders referred to primary care physiotherapy services.**

Methods: **Structured interviews were conducted using categories from the ICF Core Set, and their relevance was assessed using a visual analogue scale. An ICF category had to represent a problem for at least 5% of the sample in order to be validated.**

Results: **The study sample comprised 274 patients. All categories in the ICF Core Set were confirmed. Body functions related to pain and movement were the most commonly impaired, with ICF categories "b280 Sensation of pain" and "b710 Mobility of joint functions" having the highest prevalence (87.2% and 84.7%, respectively). Activity limitations and participation restrictions were concentrated in chapters "d4 Mobility" (63.5% for "d430 Lifting and carrying objects") and "d2 General tasks and demands" (59.5% for "d240 Handling stress and other psychological demands"). The most relevant environmental factors were "e225 Climate" (55.8%) and "e580 Health services, systems and policies" (39.4%).**

Conclusion: **The ICF Core Set for post-acute musculoskeletal conditions shows appropriate content validity for primary care physiotherapy services.**

Key words: International Classification of Functioning, Disability and Health; multicentre study; musculoskeletal diseases; physical therapy modalities; primary healthcare.

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Correspondence address: Luis Ceballos-Laita, Faculty of Health Sciences, University of Valladolid, C/Universidad S/N, Soria, ES-42002, Spain. E-mail: luis.ceballos@uva.es

LAY ABSTRACT

The International Classification of Functioning, Disability and Health (ICF) is an internationally recognized tool for systematically describing functioning using a wide range of categories. The comprehensive ICF Core Set for post-acute musculoskeletal conditions includes key ICF categories for assessing musculoskeletal disorders in a multidisciplinary rehabilitation setting. A validation study was needed to confirm its usefulness in primary care physiotherapy services. In this study, patients with musculoskeletal disorders referred for physiotherapy by general practitioners were asked to rate the relevance of the above ICF categories. The results confirm the importance of the functional aspects assessed by the ICF Core Set analysed from the patient's perspective in a real-life clinical context. This finding highlights the clinical utility of this ICF-based tool for the assessment of patients with musculoskeletal problems in primary care physiotherapy services.

Musculoskeletal conditions have been estimated to affect more than 1.7 billion people worldwide and account for 17% of years lived with disability (1). The International Classification of Diseases includes more than 150 diagnoses for these disorders. The most common symptoms are pain and functional limitations that have a significant impact on the patient's personal, occupational and social life (2). Musculoskeletal problems are also linked to the development of chronic pain (3).

A variety of patient-reported outcome measures (PROMs) are used in physiotherapy clinical practice to assess patient's health status and implement person-centred care (4–6). According to the Consensus-based Standards for the Selection of Health Measurements Instruments (COSMIN), PROMs should be selected on the basis of their measurement properties and, in particular, adequate content validity (7). Brockow et al. (8) showed that the International Classification of Functioning, Disability and Health (ICF) is an appropriate framework for identifying the concepts included in outcome measures for musculoskeletal conditions.

The ICF was proposed by the World Health Organization (WHO) to describe the functioning-disability

binomial (9). Disability is seen as the result of the interaction between health conditions and contextual factors (10). The ICF articulates the biopsychosocial model by linking these aspects through a comprehensive system of categories and qualifiers (11).

ICF Core Sets have been developed for the purpose of improving the clinical applicability of the ICF (12). An ICF Core Set is a selection of categories to describe the functioning in specific conditions or clinical settings. There are 2 ICF Core Sets for musculoskeletal conditions, covering the acute and post-acute phases (13, 14). The acute Core Set is aimed at health professionals in the acute hospital setting, while the post-acute Core Set is oriented to multidisciplinary teams involved in early post-acute rehabilitation interventions (15). However, there is no specific Core Set to describe functional problems related to musculoskeletal conditions in community-based rehabilitation, where people are integrated in the later stages of their recovery or where less disabling disorders are managed. The ICF Core Set for post-acute musculoskeletal conditions has been shown to be the most representative of the primary care physiotherapist's perspective (16), but information on the patient's perspective remains unknown. As some authors have pointed out, there is a large deficit of validation studies of existing ICF Core Sets, which hinders their evidence-based clinical application (17).

The validation of an ICF Core Set allows it not only to be adopted as a framework for assessing functioning, but also to be used as a reference standard for selecting the most appropriate PROMs for a given clinical setting. As noted by Cieza et al. (18), the ICF Core Sets are provisional until they are validated from the various perspectives involved in patient care. Although criteria for validating comprehensive ICF Core Sets have been established by Grill & Stucki (19), methodological variability has been observed in similar studies (20–24).

The aim of this study was to assess the content validity of the comprehensive ICF Core Set for post-acute musculoskeletal conditions in primary care physiotherapy services.

METHODS

Design and setting

A multicentre cross-sectional study was conducted between May 2022 and January 2023 in primary care physiotherapy services of the Public Health Service of "Castilla y León" (SACYL), Spain. These services provide community-based physiotherapy care with a focus on musculoskeletal problems to a total population of 2,308,174 inhabitants.

The study was published according to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement (available at: https://www.strobe-statement.org).

Participants and sample size

Participants were recruited from 32 primary care physiotherapy services in SACYL through 34 physiotherapists who collaborated in the study. Participants in the study were selected from patients with musculoskeletal problems referred for physiotherapy by general practitioners. Inclusion criteria were: patients over 18 years of age; diagnosis of a musculoskeletal condition by a general practitioner; and sufficient knowledge of the Spanish language. Exclusion criteria were: referral for a non-musculoskeletal problem (e.g. neurological disorders); and referral from hospital services.

The sample size was set at 273 patients taking into account a confidence level of 90%, a standard deviation (SD) of 0.5 and a margin of error of ±5%. Patients were recruited consecutively after being informed of the characteristics and objectives of the study. Those who agreed to participate signed an informed consent form. The difference in characteristics between urban and rural populations was considered a potential source of bias. To ensure that both urban and rural perspectives were represented, patients from both settings were included so that they were proportionally represented in the sample.

Sociodemographic data and condition-related clinical data (age, sex, educational level, occupation and diagnosis) were collected to characterize the sample. A validated Spanish version of the Short Musculoskeletal Functional Assessment Questionnaire (SMFA) (25, 26) and a modified version of the Self-administered Comorbidity Questionnaire (SCQ) (27) were also used.

The SMFA (25, 26) is a 46-item PROM used to assess the patient's functional status. The first 34 questions are designed to assess the physical function of the patients (dysfunction index), while the remaining 12 questions focus on patient's level of discomfort (bother index). Items are scored on a 5 point-Likert scale ranging from 1 (no problem) to 5 (unable to do a task/symptoms all the time/being greatly bothered). The questionnaire score ranges from 0 to 100 points (higher scores indicate poorer function).

As for the modified version of the SCQ (27), it collects information on 13 comorbidities and was used to assess the health status of the sample. The presence of a comorbidity scores 1 point, and if the patient is receiving treatment for that reason, another point is scored. Therefore, the score on this questionnaire ranges from 0 (no comorbidity) to 26 points (a total of 13 comorbidities in treatment).

Outcome measures

The comprehensive ICF Core Set for post-acute musculoskeletal conditions includes a total of 70 categories. Twenty-three of these categories belong to the component "Body functions" (b130–b810) and are included in the chapters "b1 Mental functions", "b2 Sensory functions and pain", "b4 Functions of the cardiovascular, haematological, immunological and respiratory systems", "b5 Functions of the digestive, metabolic and endocrine systems", "b6 Genitourinary and reproductive functions", "b7 Neuromusculoskeletal and movement-related functions" and "b8 Functions of the skin and related structures". The 7 ICF categories from the component "Body structures" (s710–s810) belong to chapters "s7 Structures related to movement" and "s8 Skin and related structures". Regarding the component "activities and participation" (d155–d760), a total of 22 ICF categories are included in chapters "d1 Learning and applying knowledge", "d2 General tasks and demands", "d3 Communication", "d4 Mobility", "d5 Self-care", and "d7 Interpersonal interactions and relationships". Finally, 18 ICF categories from the component "environmental factors" (e110–e580) are distributed across the chapters "e1 Products and technology", "e2 Natural environment and human-made changes to environment", "e3 Support and relationships", "e4 Attitudes", and "e5 Services, systems and policies. The full list of ICF categories, classified according to the component to which they belong, is shown in Tables I–IV.

The relevance of the ICF categories was measured using a visual analogue scale (VAS), ranging from

Table I. Comprehensive International Classification of Functioning, Disability and Health (ICF) Core Set for post-acute musculoskeletal conditions: prevalence (ICF qualifiers 1–4) of impairments in body functions

Body functions			
ICF code	ICF category	Chapter	Prevalence (%)
b130	Energy and drive functions	Mental functions	72.3
b134	Sleep functions (B)		78.5
b152	Emotional functions		71.5
b260	Proprioceptive function (B)	Sensory functions and pain	48.9
b270	Sensory functions related to temperature and other stimuli		38.0
b280	Sensation of pain (B)		87.2
b415	Blood vessel functions	Functions of the cardiovascular, haematological, immunological and respiratory systems	40.9
b435	Immunological system functions (B)		36.1
b440	Respiration functions		36.1
b455	Exercise tolerance functions		75.9
b525	Defecation functions	Functions of the digestive, metabolic and endocrine systems	31.4
b530	Weight maintenance functions (B)		55.8
b620	Urination functions (B)	Genitourinary and reproductive functions	27.0
b710	Mobility of joint functions	Neuromusculoskeletal and movement-related functions	84.7
b715	Stability of joint functions		65.3
b730	Muscle power functions (B)		79.2
b735	Muscle tone functions		68.6
b740	Muscle endurance functions (B)		75.6
b755	Involuntary movement reaction functions (B)		40.9
b760	Control of voluntary movement functions		39.1
b770	Gait pattern functions		56.2
b780	Sensations related to muscles and movement functions (B)		74.5
b810	Protective functions of the skin	Functions of the skin and related structures	28.1

(B): ICF category that also belongs to the Brief version.

Table II. Comprehensive International Classification of Functioning, Disability and Health (ICF) Core Set for post-acute musculoskeletal conditions: prevalence of impairments (ICF qualifiers 1–4) in body structures

Body structures			
ICF code	ICF category	Chapter	Prevalence (%)
s710	Structure of head and neck region	Structures related to movement	62.4
s720	Structure of shoulder region		61.0
s730	Structure of upper extremity		57.7
s740	Structure of pelvic region		48.5
s750	Structure of lower extremity		64.6
s760	Structure of trunk		57.7
s810	Structure of areas of skin	Skin and related structures	21.9

(B): ICF category that also belongs to the Brief version.

Table III. Comprehensive International Classification of Functioning, Disability and Health (ICF) Core Set for post-acute musculoskeletal conditions: prevalence of limitations in activities or restrictions in participation (ICF qualifiers 1–4)

Activities and participation			
ICF code	ICF category	Chapter	Prevalence (%)
d155	Acquiring skills (B)	Learning and applying knowledge	42.3
d177	Making decisions (B)		40.2
d230	Carrying out daily routine (B)	General tasks and demands	57.7
d240	Handling stress and other psychological demands (B)		59.5
d310	Communicating with – receiving – spoken messages	Communication	23.0
d410	Changing basic body position (B)	Mobility	61.7
d415	Maintaining a body position (B)		58.4
d420	Transferring oneself		42.7
d430	Lifting and carrying objects (B)		63.5
d440	Fine hand use		29.9
d445	Hand and arm use (B)		44.5
d450	Walking (B)		52.6
d460	Moving around in different locations		45.3
d465	Moving around using equipment (B)		38.7
d510	Washing oneself (B)	Self-care	24.1
d520	Caring for body parts (B)		28.8
d530	Toileting (B)		17.9
d540	Dressing (B)		34.7
d550	Eating (B)		12.4
d560	Drinking		12.8
d570	Looking after one's health		23.7
d760	Family relationships	Interpersonal interactions and relationships	23.4

(B): ICF category that also belongs to the Brief version.

Table IV. Comprehensive International Classification of Functioning, Disability and Health (ICF) Core Set for post-acute musculoskeletal conditions: prevalence of barriers or facilitators (ICF qualifiers 1–4) due to environmental factors

Environmental factors			
ICF code	ICF category	Chapter	Prevalence (%)
e110	Products or substances for personal consumption (B)	Products and technology	34.7
e115	Products and technology for personal use in daily living (B)		37.6
e120	Products and technology for personal indoor and outdoor mobility and transportation (B)		29.9
e125	Products and technology for communication		32.1
e150	Design, construction and building products and technology of buildings for public use		31.0
e225	Climate (B)	Natural environment and human-made changes to environment	55.8
e310	Immediate family	Support and relationships	32.8
e320	Friends		30.3
e340	Personal care providers and personal assistants		17.2
e355	Health professionals (B)		30.3
e410	Individual attitudes of immediate family members	Attitudes	31.4
e420	Individual attitudes of friends		28.8
e430	Individual attitudes of people in positions of authority		30.3
e440	Individual attitudes of personal care providers and personal assistants		19.3
e450	Individual attitudes of health professionals (B)		26.6
e555	Associations and organizational services, systems and policies	Services, systems and policies	25.9
e575	General social support services, systems and policies		26.6
e580	Health services, systems and policies		39.4

(B): ICF category that also belongs to the Brief version.

0 (no problem) to 100 mm (total problem). Scores were converted into ICF qualifiers, with qualifier 0 defined as "no problem" (values in mm within the interval [0, 5] on the VAS) and qualifiers 1–4 defined as "problem" (values in mm within the interval [5, 100] on the VAS). Qualifiers 8 (not specified) and 9 (not applicable) were recoded as 0, as it was assumed that a category that could not be sufficiently defined or was considered "not applicable" also did not represent a significant problem for the patient. The same criteria were applied with respect to ICF categories belonging to the ICF component "environmental factors", but patients were informed that the qualifier could describe a positive (facilitator) or a negative (barrier) impact on functioning.

A standardized form based on the ICF-based Documentation Tool was used to record the data (available at: https://www.icf-core-sets.org; accessed on 12 May 2022). This form presented the ICF categories included in the Core Set, along with their definitions. It also included a VAS to rate each category considered.

Data collection

Structured interviews were conducted by physiotherapists as part of the functional assessment of patients referred for musculoskeletal problems. During the interview, the collaborating physiotherapists presented the patients with the 70 ICF categories from the Core Set. The role of the physiotherapist was to explain the definitions of the ICF categories to ensure that the patients understood the concepts included in each category. The patients were then asked to rate the relevance of each ICF category using the VAS included in the standardiszed data collection form. The physiotherapists monitored the patients' assessment of each ICF category and answered their questions during the data collection process. After completing the form, the collaborating physiotherapists converted the VAS scores into the corresponding ICF qualifiers. To ensure that this process was carried out correctly, they had previously attended a workshop on the basics of the ICF and the aims and methodology of the study.

Sociodemographic and disease-related clinical data were also collected, and the 2 self-administered questionnaires described above (SMFA and SCQ) were given to patients to complete within 1 week.

Table V. Characteristics of the sample

Features	
Age, years, mean (SD)	55.4 (12.3)
Sex, *n* (%)	
Female	193 (70.4)
Male	81 (29.6)
Educational level, *n* (%)	
Low (no formal education or primary education)	114 (41.6)
Medium (secondary education or vocational training)	83 (30.3)
High (bachelor's degree, master's degree or PhD)	77 (28.1)
Occupation, *n* (%)	
Employed/self-employed	146 (53.3)
Unemployed/student	54 (19.7)
Retired	74 (27.0)
Condition for which referred to physical therapy, *n* (%)	
Low back pain	66 (24.1)
Neck pain	45 (16.4)
Upper limb tendinopathies	37 (13.5)
Non-specific shoulder pain	30 (10.9)
Osteoarthritis of the lower limb	29 (10.6)
Lower limb tendinopathies	26 (9.5)
Osteoarthritis of the upper limb	11 (4.0)
Sprained ankle	10 (3.6)
Other (e.g. myalgia)	20 (7.3)
Functional status, mean score (SD)	
SMFA	21.8 (14.7)
Dysfunction index	18.3 (13.4)
Bother index	31.8 (21.4)
Health status, mean (SD)	
SCQ	3.1 (2.8)

SD: standard deviation; SMFA: Short Musculoskeletal Functional Assessment questionnaire, scored from 0 to 100 points, with higher scores indicating poorer function; SCQ: Self-administered Comorbidity Questionnaire, scored from 0 (no comorbidity) to 26 points (a total of 13 comorbidities in treatment).

Statistical methods

The prevalence of functioning-related problems experienced by the patients were analysed using descriptive statistics. The prevalence of the ICF categories was defined dichotomously as "problem" (ICF qualifiers 0, 8 and 9) or "no problem" (ICF qualifiers 1–4). Content validity was considered confirmed if an ICF category was impaired or restricted in at least 5% of the sample. The same threshold was used if a category of the "environmental factors" component was experienced by the patients as a facilitator or a barrier.

Regarding missing data, collaborators were instructed to only send forms that included both the data collected in the structured interviews and the self-administered questionnaires. Therefore, patients who did not return the self-administered questionnaires were excluded from the analysis.

Ethical consideration

The study was designed and conducted in accordance with the tenets of the Declaration of Helsinki 1996 (modified in 2013 at the 64th Assembly of the World Medical Association in Fortaleza, Brazil). This study was also approved by the Ethics Committees for Clinical Research of the Spanish health areas of Burgos-Soria, León-Bierzo, Palencia, Salamanca, Segovia and Valladolid (reference code for the Burgos-Soria area CEIm 2690) and was registered on clinicaltrials.gov with the identifier NCT04135976.

RESULTS

A total of 274 patients with musculoskeletal conditions participated in the study. The characteristics of the sample are shown in Table V. The mean age of the participants was 55.4 years (range 18–89 years) and 70.4% were women. The most common conditions were low back pain (24.1%), neck pain (16.4%) and upper limb tendinopathies (13.5%). The assessment of the functional status of the sample scored 21.8 points on the SMFA, indicating mild disability. When analysing the subscales of the SMFA, there is a moderate impairment on the "bother index" (31.8 points) compared with a milder impairment on the "dysfunction index" (18.3 points). This means that patients have a greater impact on broad areas of functioning, such as leisure, work or family, than would be expected given their level of dysfunction. In terms of the health status of the sample, the mean score on the SCQ was 3.1 points, which implies that the typical patient had at least 2 comorbidities (1 of which was under treatment). As no incomplete forms were submitted, no information on missing data is available.

With regard to the content validity of the comprehensive ICF Core Set for post-acute musculoskeletal conditions, all categories exceeded the 5% prevalence threshold and were confirmed (see Tables I–IV).

Prevalence of impairments in Body functions

The prevalence of ICF categories in the Core Set related to body functions ranged from 27% for "b620 Urination functions" to 87.2% for "b280 Sensation of pain". Overall, the categories from Body Functions represented the most common problems for the patients. Six of these categories had a prevalence of more than 75% and were included in ICF chapters "b1 Mental functions", "b2 Sensory functions and pain", "b4 Functions of the cardiovascular, haematological, immunological and respiratory systems" and "b7 Neuromusculoskeletal and movement-related functions". The most frequent categories in each chapter were, respectively, "b134 Sleep functions" (78.5%), "b280 Sensation of pain" (87.2%), "b455 Exercise tolerance functions" (75.9%) and "b710 Mobility of joint functions" (84.7%). The frequencies for the remaining categories of this component are shown in Table I.

Prevalence of impairments in Body Structures

The ICF categories in the component "Body structures" showed a prevalence ranging from 21.9% for "s810 Structure of areas of skin" to 64.6% for "s750 Structure of lower extremity". The categories belonging to "s7 Structures related to movement" showed similar frequencies, directly related to the musculoskeletal condition of the patient. In contrast, the category "s810 Structures of areas of skin" from the chapter "s8 Skin and related structures" showed a significantly lower prevalence (21.9%). The complete list of frequencies for the categories of this component is given in Table II.

Prevalence of limitations in activities or restrictions in participation

For this component, the prevalence ranged from 12.4% for "d550 Eating" to 63.5% for "d430 Lifting and carrying objects". The most prevalent categories belonged to chapter "d4 Mobility", being "d430 Lifting and carrying objects" (63.5%) and "d410 Changing basic body position" (61.7%) the most representative. Some ICF categories in chapter "d2 General tasks and demands" were found to be among the most prevalent, such as "d240 Handling stress and other psychological demands" (59.5%) and "d230 Carrying out daily routine" (57.7%). Finally, the ICF categories "d560 Drinking" (12.9%) and "d550 Eating" (12.4%) in chapter "d5 Self-care", although validated, were found

to be the least significant of the whole ICF Core Set for patients. Table III shows a complete list of frequencies for these categories.

Prevalence of barriers or facilitators due to environmental factors

The ICF categories in the component "environmental factors" had the lowest mean frequency (31.1%), ranging from 55.8% for "e225 Climate" to 17.2% for "e340 Personal care providers and personal assistants". Overall, the ICF categories in the chapter "e1 Products and technology" were the most significant facilitators/barriers, ranging from 29.9% ("e120 Products and technology for personal indoor and outdoor mobility and transportation") to 37.6% ("e115 Products and technology for personal use in daily living"). However, the most relevant ICF categories in this component were "e225 Climate" (55.8%) and "e580 Health services, systems and policies" (39.4%). Frequencies for the remaining categories are shown in Table IV.

DISCUSSION

The results of this study have provided insight into the clinical relevance of the categories in the comprehensive ICF Core Set for post-acute musculoskeletal conditions when applied in primary care physiotherapy services. All categories in this ICF Core Set exceeded the 5% threshold and were confirmed, demonstrating adequate content validity for this clinical context.

Body functions and structures

Categories from the ICF components "Body functions" and "Body structures" were found to be the most relevant to patients. In particular, the importance attached to the sensation of pain (b280) is consistent with the increase in disability due to chronic musculoskeletal pain that has been observed worldwide in recent decades (28). The high prevalence of sleep disturbance (b134) also supports this relationship, as it has been shown to be a risk factor for the development of chronic pain (29). In addition, a significant prevalence was observed for categories related to skin structure and function (b810 and s810). This is a curious finding, as conditions treated in primary care would not be expected to be associated with lesions affecting skin integrity. Chronic pain can condition sensory perceptions and lead to alterations such as allodynia and hyperalgesia, which may explain this fact (30). It also highlights the importance of pain assessment and management in a primary care physiotherapy setting (31).

Movement assessment showed to be key to the physiotherapeutic approach to musculoskeletal problems, with the movement-related ICF categories being the most prevalent as a whole. Movement is a complex entity that includes structural and functional aspects, not only in the neuromusculoskeletal system (e.g. motor control or proprioception), but also at the mental level (e.g. insight, motivation or emotions). The ICF categories belonging to chapter "s7 Structures related to movement" are used to describe the structural dimension and all were confirmed in the current study. The high number of ICF categories related to body regions observed in the current study may be due to the different disorders experienced by the participants. Given the non-specific nature of this musculoskeletal ICF Core Set, it would be more appropriate to consider tissue-focused ICF categories (e.g. "s770 Additional musculoskeletal structures related to movement") rather than those focused on body regions, as suggested in a recent scoping review of outcome measures in musculoskeletal conditions (32).

The description of the movement from a functional point of view is done with the ICF categories belonging to chapter "b7 Neuromusculoskeletal and movement-related functions". Mobility of joint functions (b710) and muscle power functions (b730) were the aspects considered most relevant by patients. Indirectly linked to the concept of movement was the assessment of exercise tolerance functions (b455), which may be linked to one of the core physiotherapy interventions in the management of musculoskeletal problems. Finally, the importance attached to energy and drive functions (b130) and the emotional functions (b152) seems to be related to the mental functions involved in movement.

Activities and participation

The activity limitations and participation restrictions found in the current study were centred on mobility, which is consistent with the impairments described above. The ICF chapter "d4 mobility" includes tasks such as lifting and carrying objects (d430), changing basic body function (d410), maintaining a body position (d415) or walking (d450). In addition, the relatively high prevalence of aspects such as handling stress and other psychological demands (d240), carrying out daily routine (d230), acquiring skills (d155) and making decisions (d177) may be related to the influence of psychosocial factors on musculoskeletal disorders (33).

Environmental factors

Climate (e225) and the health services, systems and policies (e580) were the most relevant environmental factors for the patients who participated in this study. The climate of "Castilla y León" (Spain) is characterized

by cold winters and hot summers with short spring and autumn periods. In 2021, the mean temperature was 12.4ºC, with variations between –11.9ºC and 40.2ºC (data available at: https://conocecastillayleon.jcyl.es/web/es/geografia-poblacion/clima.html; accessed 10 March 2023), although its influence on musculoskeletal disorders is unknown. In terms of the healthcare system, in a survey conducted in 2017, patients rated the care they received at 8.46 out of 10 (data available at: https://www.saludcastillayleon.es/transparencia/es/transparencia/sanidad-cifras/informes-estadisticos/ordenacion-tematica/encuestas-opinion/encuestas-satisfaccion-sacyl/encuesta-satisfaccion-usuarios; accessed February 9, 2023).

Study limitations

Limitations of this study were related to the design and criteria for considering an ICF category as validated. Regarding the study design, only content validity was assessed because the ICF Core Set analysed was intended for use by multidisciplinary teams in rehabilitation centres (15), thus it was unclear whether it could describe functioning in a primary care setting. The ICF categories describing environmental factors were defined as dichotomous variables to simplify the validation process, so no information was obtained on whether patients considered these factors to be facilitators, barriers or both. Finally, the criterion for considering the content of an ICF category to be validated was arbitrarily set at 5%. This decision was based on the contribution of Grill & Stucki (19), and on a validation study conducted by Weigl & Wild (23) in a population and clinical context similar to those of the current study (European population and musculoskeletal problems due to osteoarthritis, which are usually treated in primary care), but there is a lack of consensus in the scientific literature (21, 22, 34, 35). In the current study, with only 5 ICF categories having a prevalence of less than 20% ("d550 Eating" (12.4%), "d560 Drinking" (12.8%), "e340 Personal care providers and personal assistants" (17.2%), "d530 Toileting" (17.9%) and "e440 Individual attitudes of personal care providers and personal assistants" (19.3%)), the decision to use a more restrictive threshold would not have changed the results significantly. Finally, although Grill & Stucki (19) suggested an initial and a final measurement in validation studies, we performed a single baseline measurement because we did not consider the ability to detect significant clinical changes to be a criterion for content validation.

Implications for clinical practice

The results of this study have shown that the ICF Core Set for post-acute musculoskeletal conditions has good content validity for a primary care physiotherapy setting, thus also contributing to the implementation of ICF in clinical practice. However, some studies suggest that the Core Set of ICF analysed may not adequately cover some areas of functioning relevant to this clinical context (16, 32). The description of functioning in primary care may have specific needs, particularly for chronic musculoskeletal problems (36), raising the question of whether the use of a tailored ICF Core Set would be more appropriate. The scores obtained by our sample in the SMFA and SCQ questionnaires seem to support this idea. The generalized presence of comorbidities confirms the complexity of patients seen in primary care and the need to optimize interventions to improve their health. On the other hand, the greater relevance ascribed by the SMFA scores to major life areas, such as family, work or leisure, highlights the main shortcoming of this ICF Core Set for describing functioning in primary care settings.

The biopsychosocial model articulated by the ICF has been expanding worldwide, and ICF Core Sets have proven useful in the transition from the biomedical model (37). However, there is a lack of validation studies for existing ICF Core Sets, suggesting that there are still barriers to extending the model from the theoretical to the practical level (17). The clinical perspective is the least explored, despite its potential to confirm or rule out the usefulness of these ICF-based tools in practice.

Musculoskeletal conditions as a group are very heterogeneous, so musculoskeletal ICF Core Sets have been developed to group together the essential categories that allow the common aspects of functioning affected by these conditions to be described. Thus, the availability of a validated ICF Core Set for a care setting has profound implications, as it can be used as a reference standard in the selection of PROMs (38). According to the COSMIN guidelines (6), all items in a PROM should be relevant and cover all salient concepts for the patient. This not only improves the measurement properties of such tools, but also avoids biased responses or patient frustration if irrelevant questions are asked or important issues are omitted. An even more robust approach may be the development of ICF-based assessment tools, which have the advantage of being supported by an evidence-based scientific process similar to that used in the development of ICF Core Sets (39, 40).

Conclusions

This study validates the content of the ICF Core Set for post-acute musculoskeletal conditions in a primary care physiotherapy setting. As the sample size is relatively large compared with similar studies, these

results have good potential for generalization. However, caution should be exercised, given that healthcare services vary around the world and that cultural and socioeconomic backgrounds may affect different populations. Future studies could aim to develop and validate a tailored ICF Core Set for musculoskeletal problems at community level, as well as ICF-based tools to promote person-centred care and improved quality of care in primary care physiotherapy services.

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