

## IDENTIFICATION OF RELEVANT ICF CATEGORIES IN PATIENTS WITH CHRONIC HEALTH CONDITIONS: A DELPHI EXERCISE

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**Objectives:** To identify the most typical and relevant categories of the International Classification of Functioning, Disability and Health (ICF) for patients with low back pain, osteoporosis, rheumatoid arthritis, osteoarthritis, chronic generalized pain, stroke, depression, obesity, chronic ischaemic heart disease, obstructive pulmonary disease, diabetes mellitus, and breast cancer.

**Methods:** An international expert survey using the Delphi technique was conducted. Data were collected in 3 rounds. Answers were linked to the ICF and analysed for the degree of consensus.

**Results:** Between 21 (osteoporosis, chronic ischaemic heart disease, and obstructive pulmonary disease) and 43 (stroke) experts responded in each of the conditions. In all conditions, with the exception of depression, there were categories in all ICF components that were considered typical and/or relevant by at least 80% of the responders. While all conditions had a distinct typical spectrum of relevant ICF categories, there were also some common relevant categories throughout the majority of conditions.

**Conclusion:** Lists of ICF categories that are considered relevant and typical for specific conditions by international experts could be created. This is an important step towards identifying ICF Core Sets for chronic conditions.

**Key words:** outcome assessment, quality of life, rehabilitation, activities of daily living, Delphi technique, ICF.

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### INTRODUCTION

Chronic internal, neurological, mental-health, and musculoskeletal conditions are among the leading causes of disability and their contribution to disability will increase in the future. Ischaemic heart disease, depression, cerebrovascular disease, and obstructive lung disease are expected to be among the top 5 leading causes of disability worldwide in 2020, and

musculoskeletal conditions are expected to be among the leading causes of disability in developed countries (1). It is well known that diabetes mellitus and obesity are important risk factors for other disabling conditions such as ischaemic heart disease and cerebrovascular disease, but they are also major causes for disability on their own (1–3).

Each chronic condition has a typical spectrum of abilities that may be limited. Accordingly, condition-specific health status measures have been developed that cover important aspects of the ability limitations that are typically limited for a specific condition. However, since most of these measures have been designed to measure the effects of interventions, they focus on domains that are sensitive to change and that are relevant for specific questions of research. Therefore, the existing health-status measures accent different aspects of the health experience associated with a specific condition (4).

With the new International Classification of Functioning, Disability and Health (ICF) (5), which was endorsed by the World Health Assembly in May 2001, and provides a common language for functioning and health, it is now possible systematically to define the prototypical spectrum of functioning and health domains for specific conditions. This is important when defining what should be measured in an assessment of a patient. Indeed, the inclusion of this prototypical spectrum of domains diminishes the risk of missing any important aspects of functioning and health of a patient with a specific health condition.

A possible approach to develop a set of domains that describe the prototypical spectrum of functioning and health of a specific health condition is the Delphi technique. The objective of this study was to identify the most typical and relevant ICF categories for patients with chronic musculoskeletal, neurological, mental-health, and internal medical conditions by an international survey of medical experts using the Delphi technique.

### METHODS

#### *Study design*

A consensus-building, 3-round, e-mail survey with medical experts using the Delphi technique was conducted. The Delphi technique, or Delphi exercise, is a structured communication process with 4 key characteristics: anonymity, iteration with controlled feedback, statistical group response, and expert input (6–8). Figure 1 displays the course of the Delphi exercise.

Twelve most burdensome chronic conditions were selected: low back pain (LBP), osteoporosis (OP), rheumatoid arthritis (RA), osteoarthritis

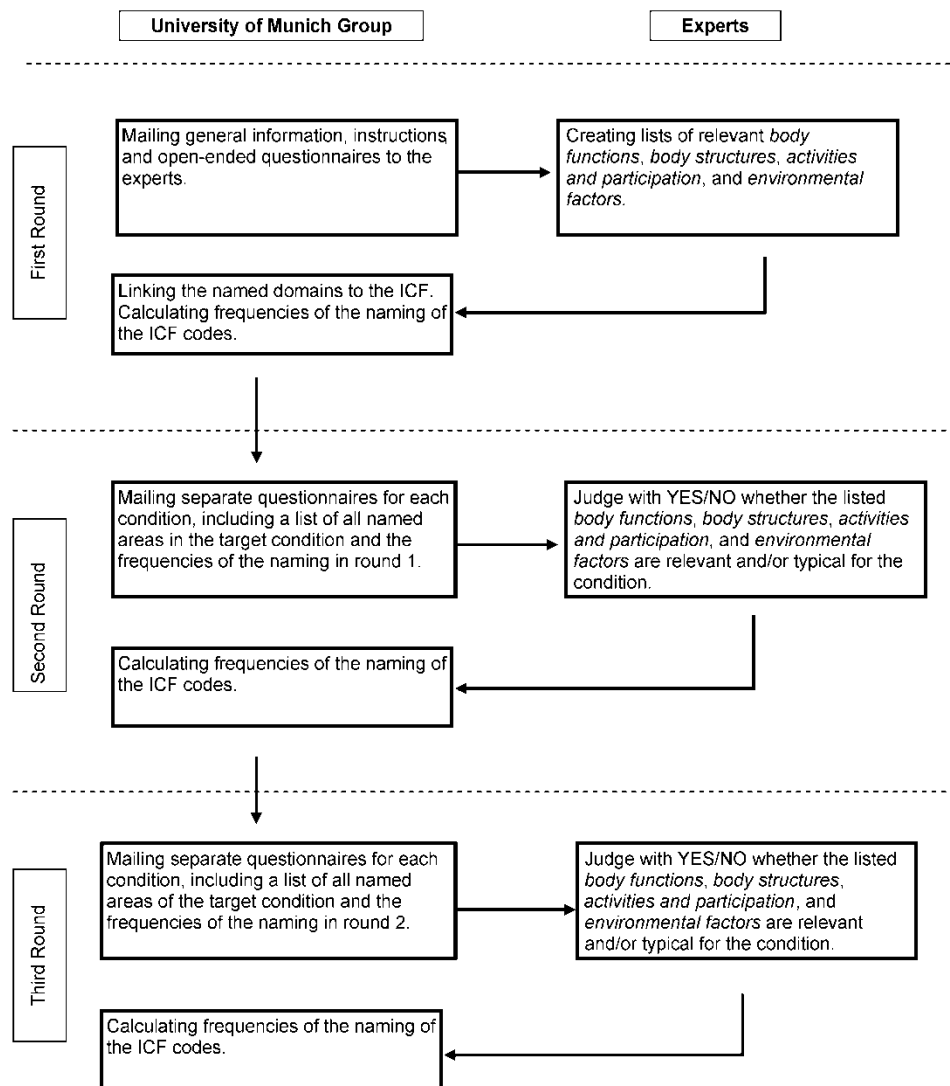


Fig. 1. The course of the Delphi exercise.

(OA), chronic generalized pain (Pain), stroke, depression, obesity, chronic ischaemic heart disease (chronic IHD), obstructive pulmonary disease (OPD), diabetes mellitus (DM) and breast cancer (BrCa). "Chronic generalized pain", which can be considered as a symptom rather than as a defined disease, was selected because of its high burden independent of the underlying pathology.

#### Recruitment of participants

Since the ICF was developed to facilitate communication between different groups of people and to be used globally, the aim was to include experts from all over the world, from different health professions and physicians with different specializations. In a first step, international societies in the fields of LBP, OP, RA, OA, pain, stroke, depression, obesity, chronic IHD, OPD, DM and breast cancer were identified. In a second step, representatives from the identified organizations, as well as from partner organizations in this project (German Society for Rehabilitation Sciences (DGRW); German, Swiss and Austrian Societies of Physical Medicine and Rehabilitation; International Society of Physical Medicine and Rehabilitation (ISPRM); Swiss Association of Physiotherapy; World Health Organization), were contacted and asked to name experts for each health condition.

#### Data collection and measures

In the first round of the Delphi exercise open-ended, self-developed condition specific questionnaires and information letters were sent by e-mail to all identified experts. The questionnaires request lists of relevant and or typical areas in the ICF components *body functions, body structures, activities and participation, and environmental factors*. To illustrate the procedure, a fraction of the questionnaire "Delphi Round 1" for experts in stroke is shown in Fig. 2. The letter included background information, a description of the objective of the project, the WHO definitions of *body functions, body structures, activities and participation, and environmental factors* and instructions for the participants with a detailed time line. The letters were adapted for each condition. To clarify which kind of information was requested, an example containing a list of relevant and/or typical *body functions, body structures, activities and participation, and environmental factors* for patients with Parkinson's disease was provided. The participants had 3 weeks to respond and reminders were sent out approximately 2 days before the deadline. The experts were not aware of the other participants in the Delphi exercise.

In the second round of the Delphi exercise the self-developed, closed-ended questionnaire "Delphi Round 2" was sent together with corresponding instructions. For each condition, the questionnaire "Delphi Round 2" included: (i) the summary lists with all *body functions, body*



Table I. Experts who answered in at least 1 of the 3 Delphi rounds and response rate

	LBP	OP	RA	OA	Pain	Dep	Ob	Stroke	CIHD	OPD	DM	BrCa
Addressed experts (n)	51	51	53	67	98	85	91	108	225	133	414	211
Responders (n)	37	21	22	29	35	22	24	43	21	21	25	22
Experience (median in years)	19	18	19	20	20	20	19	20	20	15	13	21
Response rate (%)	73	41	42	43	36	26	26	40	9	16	6	10
Origin												
West Europe	54	71	64	66	71	50	67	79	67	100	56	73
East Europe	3	5	9	3	11	9	8	5	10	0	4	9
North America	16	5	5	10	6	14	4	5	5	0	12	14
South America	0	5	0	3	0	9	4	0	0	0	4	0
Asia	11	10	14	7	6	9	13	5	10	0	24	0
Africa	5	0	5	3	3	9	0	0	5	0	0	0
Australia	11	5	5	7	3	0	4	7	5	0	0	5
Profession (%)												
Physicians	81	77	87	66	60	60	67	64	81	43	64	50
PMR	30	19	23	28	26	5	4	16	33	10	12	9
Neurology	0	0	0	0	3	0	0	44	0	0	0	0
Orthopaedic surgeon	5	10	0	17	0	0	0	0	0	0	0	5
Rheumatology	24	24	55	17	0	0	0	0	0	0	0	0
Pneumology	0	0	0	0	0	0	0	0	0	19	0	0
Internal medicine	0	0	0	0	3	0	46	0	43*	0	36†	36‡
Psychiatry	0	0	0	0	9	55	4	0	0	0	0	0
Anaesthesiology	0	0	0	0	14	0	0	0	0	0	0	0
General practitioner, other physicians	22	24	9	4	6	0	13	2	5	14	16	5
Psychologists	0	0	0	0	9	18	4	2	0	0	4	14
PT or OT	19	24	5	24	29	9	17	23	14	43	20	23
Nurses	0	0	0	0	0	9	0	2	0	10	0	0
Others**	0	0	0	10	3	5	13	9	5	5	12	14

LBP = low back pain; OP = osteoporosis; RA = rheumatoid arthritis; OA = osteoarthritis; Pain = chronic generalized pain; Dep = depression; Ob = obesity; CIHD = chronic ischaemic heart disease; OPD = obstructive pulmonary disease; DM = diabetes mellitus; BrCa = breast cancer; PMR = physical medicine and rehabilitation; PT = physiotherapist; OT = occupational therapist.

\* 8 of 9 internal specialists in the CIHD group were specialized in cardiology.

† 6 of 9 internal specialists in the DM group were specialized in endocrinology or diabetology.

‡ 7 of 8 internal specialists in the BrCa group were specialized in oncology.

\*\* "Others" included social workers, specialists in public health, and 1 epidemiologist.

*Participants and response rates*

Experts from 46 countries participated. Table I shows the regions of origin of participants, their professions and their median years of clinical experience. The numbers of experts that responded in at least 1 Delphi round and the corresponding response rates are also presented in Table I. Since a few experts did not participate in all 3 Delphi rounds, the number of responders in each round is slightly smaller.

**RESULTS**

*Relevant and/or typical ICF categories*

*Consensus process.* The consensus process throughout the Delphi rounds is summarized in Table II. In round 1 of the Delphi exercise, the participants named between 137 (OP) and 300 (stroke) different ICF categories. Only a few ICF categories had a consensus greater than 80%.

In round 2 there was over 80% agreement for relevant ICF categories in all health conditions. Depression had the lowest number of relevant ICF categories in round 2 (11 ICF categories with a consensus >80%), and RA had the highest number (55 ICF categories).

In round 3, the number of ICF categories with a consensus >80% continued to increase. Stroke (74 ICF categories) and RA

(61 ICF categories) had the highest numbers of relevant ICF categories, and obesity (27 ICF categories) and chronic IHD (29 ICF categories) had the lowest numbers. In the summary of the ICF categories on the second level of the ICF, the highest numbers of relevant ICF categories were 72 in stroke and 49 in RA, and the lowest numbers were 23 in chronic IHD and 27 in obesity.

*Results of the third round of the Delphi exercise.* The ICF categories in the 4 components considered relevant by at least 80% of the participants in 1 of the health conditions are shown in the Tables III–VI. The categories are presented in the order of the ICF.

In the component *body functions*, 43 different ICF categories reached a consensus of 80% in at least 1 of the health conditions. No body function reached a consensus of 80% in all health conditions. The body functions b130 *energy and drive functions*, b152 *emotional functions*, b280 *sensation of pain*, and b640 *sexual functions* reached a consensus of at least 80% in 8 or more health conditions.

In the component *body structures*, 19 different ICF categories reached a consensus of 80% in at least 1 of the health conditions. No body structure had a consensus of 80% in 8 or more health conditions.

Table II. The consensus process from the first to third Delphi round

	Condition											
	LBP	OP	RA	OA	Pain	Dep	Ob	Stroke	CIHD	OPD	DM	BrCa
Round 1												
ICF categories with a consensus >80% (n)	3	4	6	5	0	2	0	3	0	0	0	3
Round 2												
ICF categories with a consensus >80% (n)	51	27	55	41	32	11	23	47	22	23	32	28
Round 3												
ICF categories with a consensus >80% (n)	60	43	61	54	48	42	27	74	29	34	57	31
Final consensus >80% for relevant ICF categories at the second level of the ICF per component												
Components combined (n)	42	36	49	45	41	39	27	72	23	28	42	28
Body functions (n)	13	7	10	12	9	8	10	23	8	9	15	5
Body structures (n)	4	4	7	5	5	0	3	2	1	2	9	4
Activities and participation (n)	13	11	18	17	17	22	6	33	10	9	7	10
Environmental factors (n)	12	14	14	11	10	9	8	14	4	8	11	9

LBP = low back pain; OP = osteoporosis; RA = rheumatoid arthritis; OA = osteoarthritis; Pain = chronic generalized pain; Dep = depression; Ob = obesity; CIHD = chronic ischaemic heart disease; OPD = obstructive pulmonary disease; DM = diabetes mellitus; BrCa = breast cancer.

In the component *activities and participation*, 44 different ICF categories reached a consensus of 80% in at least 1 of the health conditions. The ICF category d920 *recreation and leisure* had a consensus of 80% in all 12 health conditions. In addition, the activities and participation d430 *lifting and carrying objects*, d450 *walking*, d540 *dressing*, d640 *doing housework*, d770 *intimate relationships* and d850 *remunerative employment* reached a consensus of at least 80% in 8 or more health conditions.

In the component *environmental factors*, 27 different ICF categories reached a consensus of 80% in at least one of the health conditions. The ICF categories e110 *products or substances for personal consumption* (inclusion: drugs, food), e310 *immediate family*, and e355 *health professionals* had a consensus of 80% in all 12 health conditions. In addition, the environmental factors e410 *individual attitudes of immediate family members*, e450 *individual attitudes of health professionals*, and e580 *health services, systems and policies* reached a consensus of at least 80% in 8 or more health conditions.

## DISCUSSION

In this Delphi exercise, there was a high consensus among experts about the most relevant and typical *body functions*, *body structures*, *activities and participation* and *environmental factors* in patients with chronic musculoskeletal, neurological, mental-health, and internal-medicine disorders. The finding that, with the exception of depression, in all conditions ICF categories from each component had consensus levels greater than 80% underscores the need to address *body functions* and *body structures*, *activities and participation*, as well as *environmental factors* when assessing functioning and health in patients with chronic conditions.

The large differences between the relevant and typical ICF

categories across all health conditions demonstrate the need for a condition-oriented approach when defining ICF-based tools for clinical practice, e.g. the development of ICF Core Sets for chronic conditions (10, 11). However, some ICF categories in the components *body functions*, *activities and participation*, and *environmental factors* are relevant in the majority of the selected health conditions. Therefore it may be possible to define a Generic Set of ICF categories for all chronic conditions. Indeed, the *environmental factors* e310 *immediate family* or the *activities and participation-category* d920 *recreation and leisure* may be considered essential for the well-being of any human being.

As expected, the greatest diversity between the health conditions exists in *body structures*. Most structures with a consensus above 80% are only relevant for 1 or 2 of the selected chronic health conditions. The pattern of the consensus in the relevance of *body structures* reflects the similarities of musculoskeletal conditions with the common important body structures s750 *structure of lower extremity*, s760 *structure of trunk*, s770 *additional musculoskeletal structures related to movement* (inclusion: bones, joints, muscles) and of the internal-medicine conditions CIHD, OPD, and DM with the common relevant *body structure* s410 *structure of cardiovascular system*.

In our tables we summarized the results on the second level of the ICF to present all categories with the same degree of precision. The method of summarizing the results on the second level of the ICF follows the structure of the ICF that arranges the categories so that a lower-level category shares the attributes of the higher-level categories of which it is a member. The use of a lower-level category automatically implies that the higher-level category is applicable. Thus, this method does not artificially increase the consensus in the corresponding second-level categories.

The validity of this Delphi exercise is strengthened by the fact

Table III. International Classification of Functioning, Disability and Health (ICF) categories in the component body functions considered as relevant by ≥80% of the participants in at least 1 condition

ICF categories	Condition												
	LBP	OP	RA	OA	Pain	Dep	Ob	Stroke	CIHD	OPD	DM	BrCa	
b110 Consciousness functions	-	-	-	-	-	-	-	89	-	-	-	-	
b114 Orientation functions	-	-	-	-	-	-	-	96	-	-	-	-	
b130 Energy and drive functions	93	-	94	91	-	100	94	93	-	-	100	89	
b134 Sleep functions	100	-	94	87	100	100	88	-	-	89	-	-	
b140 Attention functions	-	-	-	-	-	94	-	96	-	-	-	-	
b144 Memory functions	-	-	-	-	-	88	-	100	-	-	-	-	
b147 Psychomotor functions	-	-	-	-	-	94	-	-	-	-	-	-	
b152 Emotional functions	100	100	88	91	100	100	88	100	88	-	-	100	
b156 Perceptual functions	-	-	-	-	-	-	-	100	-	-	-	-	
b167 Mental functions of language	-	-	-	-	-	-	-	96	-	-	-	-	
b180 Experience of self and time functions	-	-	82	-	-	-	88	-	-	-	-	95	
b210 Seeing functions	-	-	-	-	-	-	-	96	-	-	100	-	
b235 Vestibular functions	-	100	-	-	-	-	-	-	-	-	-	-	
b260 Proprioceptive function	100	82	-	-	80	-	-	93	-	-	100	-	
b265 Touch function	-	-	-	-	-	-	-	96	-	-	89	-	
b270 Sensory functions related to temperature and other stimuli	-	-	-	-	-	-	-	-	-	-	95	-	
b280 Sensation of pain	100	100	100	96	100	94	88	96	94	-	89	95	
b310 Voice functions	-	-	-	-	-	-	-	-	-	89	-	-	
b320 Articulation functions	-	-	-	-	-	-	-	89	-	-	-	-	
b410 Heart functions	-	-	-	-	-	-	88	86	94	94	-	-	
b415 Blood vessel functions	-	-	-	-	-	-	-	-	94	-	95	-	
b420 Blood pressure functions	-	-	-	-	-	-	100	89	94	-	89	-	
b435 Immunological system functions	-	-	-	-	-	-	-	-	-	-	89	-	
b440 Respiration functions	-	-	-	-	-	-	-	-	-	100	-	-	
b445 Respiratory muscle functions	-	-	-	-	-	-	-	-	-	83	-	-	
b450 Additional respiratory functions*	-	-	-	-	-	-	-	-	-	100	-	-	
b455 Exercise tolerance functions	-	-	-	-	100	-	-	-	100	100	89	-	
b460 Sensations associated with cardiovascular and respiratory functions†	-	-	-	-	-	-	-	-	100	89	-	-	
b510 Ingestion functions	-	-	-	-	-	-	-	96	-	-	-	-	
b530 Weight maintenance functions	83	-	-	-	-	-	-	-	-	-	89	-	
b540 General metabolic functions	-	-	-	-	-	-	94	-	-	-	100	-	
b610 Urinary excretory functions	-	-	-	-	-	-	-	-	-	-	89	-	
b620 Urination functions	-	-	-	-	-	-	-	96	-	-	-	-	
b640 Sexual functions	93	-	94	87	96	100	81	86	88	-	94	100	
b710 Mobility of joint functions	100	82	100	96	96	-	81	93	-	-	-	-	
b715 Stability of joint functions	-	-	94	96	-	-	-	-	-	-	-	-	
b730 Muscle power functions	100	94	100	96	100	-	-	100	-	83	-	-	
b735 Muscle tone functions	97	-	-	-	84	-	-	100	-	-	-	-	
b740 Muscle endurance functions	97	-	-	87	-	-	-	-	-	-	-	-	
b760 Control of voluntary movement functions	-	100	-	87	-	-	-	96	-	-	-	-	
b770 Gait pattern functions	86	-	-	91	-	-	-	89	-	-	-	-	
b780 Sensations related to muscles and movement functions (including muscle stiffness)	100	-	100	91	-	-	-	-	-	-	-	-	
b840 Sensation related to the skin‡	-	-	-	-	-	-	-	-	-	-	89	-	

“-” = consensus <80% or no participant named that domain in the corresponding health condition.

\* b450 *additional respiratory functions* are defined as functions related to breathing, such as coughing, sneezing and yawning.

† b460 *sensations associated with cardiovascular and respiratory functions* are defined as sensations such as missing a heart beat, palpitation and shortness of breath.

‡ b840 *sensations related to the skin* are defined as sensations such as itching, burning sensation and tingling.

LBP = low back pain; OP = osteoporosis; RA = rheumatoid arthritis; OA = osteoarthritis; Pain = chronic generalized pain; Dep = depression; Ob = obesity; CIHD = chronic ischaemic heart disease; OPD = obstructive pulmonary disease; DM = diabetes mellitus; BrCa = breast cancer.

that different numbers of relevant ICF categories in the components reflect different burdens of the conditions. The largest sets of ICF categories for stroke and RA reflect the high level of burden of these conditions. The relevant ICF categories

for stroke cover all but 1 ICF chapter of the component *body Functions* and all chapters of the component *activities and participation*. This demonstrates that stroke affects nearly all facets of functioning and health. In contrast, 6 of the 8 most

Table IV. *International Classification of Functioning, Disability and Health (ICF) categories in the component body structures considered as relevant by  $\geq 80\%$  of the participants in at least 1 condition*

ICF categories	Condition											
	LBP	OP	RA	OA	Pain	Dep	Ob	Stroke	CIHD	OPD	DM	BrCa
s110 Structure of brain	–	–	–	–	88	–	–	100	–	–	–	–
s120 Spinal cord and related structures	100	–	–	–	–	–	–	–	–	–	–	–
s140 Structure of sympathetic nervous system	–	–	–	–	80	–	–	–	–	–	89	–
s150 Structure of parasympathetic nervous system	–	–	–	–	–	–	–	–	–	–	89	–
s220 Structure of eyeball	–	–	–	–	–	–	–	–	–	–	94	–
s410 Structure of cardiovascular system	–	–	82	–	–	–	81	89	100	100	100	–
s420 Structure of immune system	–	–	94	–	–	–	–	–	–	–	–	95
s430 Structure of respiratory system	–	–	–	–	–	–	–	–	–	100	–	–
s550 Structure of pancreas	–	–	–	–	–	–	–	–	–	–	94	–
s610 Structure of urinary system	–	–	–	–	–	–	–	–	–	–	89	–
s630 Structure of reproductive system	–	–	–	–	–	–	–	–	–	–	–	100
s710 Structure of head and neck region	–	–	–	83	92	–	–	–	–	–	–	–
s720 Structure of shoulder region	–	–	94	–	–	–	–	–	–	–	–	84
s730 Structure of upper extremity	–	89	100	96	–	–	–	–	–	–	–	89
s750 Structure of lower extremity	93	89	100	100	–	–	88	–	–	–	83	–
s760 Structure of trunk	100	100	100	100	84	–	–	–	–	–	–	–
s770 Additional musculoskeletal structures related to movement*	100	95	100	100	88	–	94	–	–	–	–	–
s810 Structure of areas of skin	–	–	–	–	–	–	–	–	–	–	88	–
s830 Structure of nails	–	–	–	–	–	–	–	–	–	–	94	–

LBP = low back pain; OP = osteoporosis; RA = rheumatoid arthritis; OA = osteoarthritis; Pain = chronic generalized pain; Dep = depression; Ob = obesity; CIHD = chronic ischaemic heart disease; OPD = obstructive pulmonary disease; DM = diabetes mellitus; BrCa = breast cancer.  
\* s770 additional musculoskeletal structures related to movement include e.g. joints, bones, muscles.

relevant *body functions* for patients with depression are classified in the ICF chapter *mental functions*. Despite this narrow field of affected *body functions*, the participants considered ICF categories of all chapters in *activities and participation*, with the exception of the *mobility* chapter, as relevant and/or typical for patients with depression. This reflects the high contribution to disability of depression (1). As expected, DM and RA, health conditions that affect many organ systems, had the largest set of relevant *body structures*. It is also not surprising that LBP and chronic generalized pain shared most of the relevant and typical *body functions* and *activities and participation*.

The participants named between 7 (OPD) and 39 (Obesity) different personal factors, although we did not explicitly ask for them. Frequently named personal factors were related to education status, profession, co-morbidities, life style, fitness, and coping style. After the third Delphi round there was a consensus of over 80% for some personal factors such as “smoking” in obesity and chronic IHD, “sedentary life-style” in CIHD, “personal attitudes about illness” in Dep, or “job satisfaction” in Pain. The information regarding personal factors gathered in the Delphi exercise can be helpful when including personal factors in future revisions of the ICF coding.

The generalizability of this Delphi exercise is limited due to the number and selection of experts. The amount of time that was necessary to answer round one, especially if a person did not know the concepts of the ICF before may have kept many experts away from participating in this survey. As expected, we

had higher response rates in the musculoskeletal conditions compared with the other conditions, because our partner organizations were most active in the musculoskeletal fields. Most contacted experts in internal medicine conditions had no previous connections with our institution. In addition, it can be assumed that experts in internal medicine conditions are less familiar with the ICF than experts in musculoskeletal conditions (12). The small numbers of experts in the internal medicine conditions might have decreased the chance of detecting all relevant ICF categories.

Although much care was taken in the selection of experts and a wide range of medical disciplines and health professions was achieved, no psychologist participated in the LBP exercise, no orthopaedic surgeon participated in the RA exercise and only one physiotherapist participated in the RA exercise. A relatively high percentage of physiotherapists were present in the OP and in the OPD group, however. The selection of categories, as well as the importance accorded to some of them as reflected by the percentage of agreement, can be underestimated or overestimated.

Although we tried to recruit experts from different continents and cultures, the majority of responding experts came from Western Europe. This may reduce the generalizability of our results to other cultures. For example, all 4 Asian participants in DM who answered in the second and third Delphi rounds (2 from Thailand, 1 from Malaysia, and 1 from Kuwait) considered the ICF categories e320 *friends*, e420 *individual attitudes of friends*, and e555 *associations and organizational services, systems and*

Table V. International Classification of Functioning, Disability and Health (ICF) categories in the component activities and participation considered as relevant by  $\geq 80\%$  of the participants in at least 1 condition

ICF categories	Condition											
	LBP	OP	RA	OA	Pain	Dep	Ob	Stroke	CIHD	OPD	DM	BrCa
d163 Thinking	-	-	-	-	-	100	-	-	-	-	-	-
d166 Reading	-	-	-	-	-	-	-	100	-	-	-	-
d170 Writing	-	-	100	-	-	-	-	96	-	-	-	-
d175 Solving problems	-	-	-	-	-	100	-	85	-	-	-	-
d177 Making decisions	-	-	-	-	-	100	-	-	-	-	-	-
d210 Undertaking a single task	-	-	-	-	-	-	-	85	-	-	-	-
d230 Carrying out daily routine	-	-	-	-	-	94	-	96	94	-	-	89
d240 Handling stress and other psychological demands	83	-	-	-	92	83	-	-	82	-	-	-
d310 Communicating with – receiving – spoken messages	-	-	-	-	-	-	-	100	-	-	-	-
d315 Communicating with – receiving – non-verbal messages	-	-	-	-	-	-	-	89	-	-	-	-
d330 Speaking	-	-	-	-	-	89	-	100	-	-	-	-
d335 Producing non-verbal messages	-	-	-	-	-	83	-	96	-	-	-	-
d350 Conversation	-	-	-	-	-	94	-	93	-	-	-	-
d410 Changing basic body position	100	-	-	100	84	-	-	96	-	-	-	-
d415 Maintaining a body position	100	100	-	91	80	-	-	-	-	-	-	-
d420 Transferring oneself	-	-	-	-	-	-	-	93	-	-	-	-
d430 Lifting and carrying objects	100	100	100	96	96	-	-	96	82	-	-	89
d440 Fine hand use	-	-	100	91	-	-	-	100	-	-	-	-
d445 Hand and arm use	-	-	100	-	-	-	-	93	-	-	-	100
d450 Walking	93	100	100	96	90	-	88	100	94	100	83	-
d455 Moving around (including climbing)	100	83	94	100	-	-	-	-	100	100	-	-
d460 Moving around in different locations	-	-	-	-	-	-	-	93	-	-	-	-
d470 Using transportation	90	83	100	96	84	-	81	100	-	-	-	-
d475 Driving	-	-	100	96	80	-	-	85	-	-	-	-
d510 Washing oneself	93	94	94	96	-	83	-	100	-	94	-	-
d520 Caring for body parts	-	-	-	-	-	83	-	89	-	-	89	-
d530 Toileting	-	-	100	91	-	-	-	100	-	-	-	-
d540 Dressing	93	89	100	100	88	94	81	100	-	100	-	84
d550 Eating	-	-	100	-	-	100	88	96	-	-	82	-
d560 Drinking	-	-	-	-	-	89	-	100	-	-	-	-
d570 Looking after one's health	-	-	-	-	88	100	94	-	88	-	100	-
d620 Acquisition of goods and services	-	94	100	96	88	-	-	82	-	89	-	-
d630 Preparing meals	-	-	100	-	-	94	-	93	-	-	94	-
d640 Doing housework	97	100	100	96	92	94	-	-	88	100	-	95
d660 Assisting others	-	-	-	-	-	-	-	-	-	-	-	84
d710 Basic interpersonal interactions	-	-	-	-	-	83	-	85	-	-	-	-
d760 Family relationships	-	-	-	-	88	89	-	93	-	-	-	95
d770 Intimate relationships	87	-	94	-	92	100	-	-	100	94	81	95
d845 Acquiring, keeping and terminating a job	-	-	-	-	84	-	-	-	-	-	-	-
d850 Remunerative employment	100	-	100	96	92	89	-	89	82	94	-	89
d860 Basic economic transactions	-	-	-	-	-	-	-	85	-	-	-	-
d870 Economic self-sufficiency	-	-	-	87	-	-	-	-	-	-	-	-
d910 Community life	-	89	-	87	96	100	-	93	-	-	-	-
d920 Recreation and leisure	97	100	100	96	100	100	94	93	88	100	100	95

LBP = low back pain; OP = osteoporosis; RA = rheumatoid arthritis; OA = osteoarthritis; Pain = chronic generalized pain; Dep = depression; Ob = obesity; CIHD = chronic ischaemic heart disease; OPD = obstructive pulmonary disease; DM = diabetes mellitus; BrCa = breast cancer.

policies as important, but the consensus level of West-European participants for the relevance of each of these three categories was only 64%. The ICF category e430 *individual attitudes of people in positions of authority* was judged as typical and/or relevant by 75% of Asian participants in DM vs only 9% of European participants. These results underscore the importance of including different parts of the world and different cultures in the development of ICF-based practical tools.

This study is an important step towards identifying Core Sets

of ICF categories that can be used across chronic health conditions. Since the results of any consensus process may differ with different group of experts, further studies to improve the reliability and generalizability of these results are in progress. Nonetheless, the involvement of the opinions of international experts from different health professions in the ICF Core Sets development process is likely to increase the face validity and the acceptance among health professionals of future ICF Core Sets.



Table VI. *International Classification of Functioning, Disability and Health (ICF) categories in the component environmental factors considered as relevant by  $\geq 80\%$  of the participants in at least 1 condition*

ICF categories	Condition												
	LBP	OP	RA	OA	Pain	Dep	Ob	Stroke	CIHD	OPD	DM	BrCa	
e110 Products and substances for personal consumption (inclusion: drugs, food)	83	100	100	100	92	94	94	89	88	100	100	95	
e115 Products and technology for personal use in daily living	93	94	100	100	–	–	–	96	–	83	89	–	
e120 Products and technology for personal indoor and outdoor mobility and transportation	–	100	–	87	–	–	–	100	–	–	–	–	
e135 Products and technology for employment	100	–	100	–	–	–	–	–	–	–	–	–	
e140 Products and technology for culture, recreation and sport	–	83	–	–	–	–	–	–	–	–	–	–	
e150 Design, construction and building products and technology of buildings for public use	–	–	100	96	–	–	–	86	–	–	–	–	
e155 Design, construction and building products and technology of buildings for private use	–	89	94	–	–	–	–	89	–	–	–	–	
e225 Climate	–	–	–	–	–	–	–	–	–	100	–	–	
e260 Air quality	–	–	–	–	–	–	–	–	–	100	–	–	
e310 Immediate family	100	100	100	96	100	100	88	100	100	100	100	95	
e320 Friends	–	83	–	–	88	–	–	82	100	–	–	89	
e325 Acquaintances, peers, colleagues, neighbours and community members	–	89	–	–	–	–	–	–	–	–	–	–	
e340 Personal care providers and personal assistants	–	83	88	91	–	–	–	96	–	–	95	–	
e355 Health professionals	100	100	100	96	96	94	88	96	100	94	100	100	
e410 Individual attitudes of immediate family members	100	89	94	96	96	100	94	100	–	89	95	100	
e420 Individual attitudes of friends	–	–	94	–	92	88	88	–	–	–	84	100	
e425 Individual attitudes of acquaintances, peers, colleagues, neighbours and community members	97	–	100	–	–	88	–	–	–	–	–	84	
e430 Individual attitudes of people in positions of authority	–	–	–	–	80	–	–	–	–	–	–	–	
e450 Individual attitudes of health professionals	100	89	100	96	84	82	81	89	–	–	95	100	
e460 Societal attitudes	–	–	–	–	–	88	81	–	–	–	–	–	
e465 Social norms, practices and ideologies	90	–	–	–	–	–	–	–	–	–	–	–	
e540 Transportation services, systems and policies	–	–	94	96	–	–	–	89	–	–	–	–	
e570 Social security services, systems and policies	93	–	–	87	80	–	–	86	–	–	89	–	
e575 General social support services, systems and policies	–	100	–	–	–	–	–	–	–	–	–	–	
e580 Health services, systems and policies	100	100	100	96	100	88	94	96	–	100	100	89	
e585 Education and training services, systems and policies	–	–	–	–	–	–	–	–	–	–	94	–	
e590 Labour and employment services, systems and policies	93	–	–	–	–	–	–	–	–	–	–	–	

LBP = low back pain; OP = osteoporosis; RA = rheumatoid arthritis; OA = osteoarthritis; Pain = chronic generalized pain; Dep = depression; Ob = obesity; CIHD = chronic ischaemic heart disease; OPD = obstructive pulmonary disease; DM = diabetes mellitus; BrCa = breast cancer.

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