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Laying the Foundation for Developing an Item Bank Measuring Presby-function Based on the International Classification of Functioning, Disability and Health

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Objectives. The aim of this study is to identify a generic ICF item bank to capture health-related functioning for normal community-dwelling older individuals, thereby facilitating primary care and multidisciplinary medical management.
Methods. Initially, the relevant ICF Core Sets pertaining to five fundamental functioning abilities (vision, hearing, speech-language, walking and movement, and cognition) were identified and matched with corresponding functional properties. Subsequently, the ICF categories were extracted from the existing geriatric ICF Core Sets. These categories were then combined to form a candidate item bank. Finally, a consensus meeting was conducted to determine the final categories of the ICF item bank for the older population.
Results. The development of the senior-specific ICF item bank involved integrating evidence gathered from preliminary studies and expert opinions through a consensus process. The resulting item bank comprises 161 categories (58 on body functions, 15 on body structures, 60 on activities or participation, and 28 on environmental factors).
Conclusions. This senior-specific item bank provides a comprehensive description of presby-functioning within a community-based or home-based setting.

Key words: International classification of functioning, disability and health, ICF, rehabilitation, geriatrics, primary care

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INTRODUCTION

Human longevity has been remarkably expanded with the development of medicine and technology, while advanced age is the primary contributor to a broad spectrum of disability and chronic conditions. Recent studies indicate that over 50% of older adults suffer from multimorbidity associated with a lower quality of life [1,2]. Recognizing the importance of addressing

this issue, the World Health Organization (WHO) has designated "Healthy ageing" as a central focus of ageing work between 2015 and 2030. Meanwhile, in response to the unprecedented population aging, China, the world's most populous country, has embraced the Healthy China 2030 Action Plan to ensure access to healthcare for its aging population [3]. A key aspect of this plan is its emphasis on health promotion and disease prevention, signifying a strategic shift from treatment to prevention.

Early recognition of health-related functioning changes is crucial at the primary care level. For a standardized approach to the understanding of the compromised function and unmet needs in older individuals, the International Classification of Functioning, Disability and Health (ICF) as a comprehensive framework of functioning terminology fulfills this requirement to effectively operationalize the measurement of "Healthy Ageing". It describes the burden of health conditions from a bio-psycho-social perspective and perceives the important role of the environment in people's functioning. Moreover, the ICF enables the collection of comparable data across countries, thus promoting global monitoring and research advancements.

However, the ICF functional category bank comprises nearly 1,500 categories, making it impractical to assess each category in clinical practice. To overcome this challenge, the derivatives of ICF known as the ICF Core Set have been developed to evaluate functioning performance in specific health conditions or healthcare settings [4]. Currently, there are five types of geriatric ICF Core Set, available in six versions (Tab. I).

Following the standardized development process of ICF core sets, the 123-category Geriatric Comprehensive ICF Core Set [5] caters to post-acute facilities, while the 139-category Extended Geriatric ICF Checklist [6] is designed for older adults over 75 years old in primary care settings. To meet the minimal assessment standard of essential functional categories, the Geriatric Brief ICF Core Set is derived from the Geriatric Comprehensive ICF Core Set [7]. These ICF core sets have undergone a standardized development process and verification among the German older persons. It is important to note that the population coverage of these three ICF Core Sets differs. The Geriatric Comprehensive and Brief ICF Core Set include post-acute hospitalized older adults and older patients at the discharge follow-up, which do not involve community-based or home-based older adults. Although the 139-category Extended Geriatric ICF Checklist involves the older persons in the community, the younger older adults are excluded. Meanwhile, their study population only includes the older adults who regularly visit the primary care physicians [6]. Spoorenberg [8] develops an ICF Core Set for non-dementia community-dwelling older adults with frailty or complex care needs, relying solely on the Delphi method and empirical data.

Additionally, researchers have linked the Geriatric Minimum Data Set (GMDS-25) to relevant ICF categories according to the standard and normative operational definitions of ICF, while the 25-item GMDS-25 is based on the minimum data set (MDS) theory and is not directly derived from the ICF framework [9]. Ruaro et al. [10] focus on the physical health of older adults and identify relevant ICF categories through a Delphi process involving 8 out of 20 experts. Their study also suggests that third-level categories, offering more specific information, enable faster and more accurate assessments compared to second level ICF categories. However, these two core sets are not validated by empirical studies. Hence, there is no availability of an ICF core set regarding presby-function among community or home-based normal older adults who do not require clinical care.

Despite a significant decrease in disability prevalence in China over the past two decades [11], it remains an essential need to address the burden of senior disability in the community. The fact that previous Geriatric ICF core sets focus on older adults with a history of hospitalization and care needs reflects a "diagnosis first" approach. The primary goal of presby-functioning measurement in senior community dwellings is to promote and sustain physical and mental functioning from an early stage. It requires examining the function performance in older people from the "prevention first" approach.

Aligned with the goals outlined in "Healthy China 2030" [3], our mission is to develop an ICF item bank that encompasses the health-related functioning of individuals aged 60 and older in China. This "Senior ICF Item Bank" only considers features of normal aging, primarily focusing on assessing five fundamental abilities, including vision, hearing, speech-language, walking and movement, and cognition. By creating this resource, we aim to facilitate a holistic evaluation of functional capabilities among the community-dwelling "healthy older adults" residing in the community, thereby supporting the development of primary care in China.

METHODS

Extraction of candidate categories for the Presby-functioning Item Bank

In accordance with the guideline for identifying functioning properties (FPs) related to health conditions [12], this study undertook the extraction of ICF categories to develop the presby-functioning item bank through a systematic process involving three steps: scope

Table I. Existing geriatric ICF Core Sets.

Author, year, references	Core set name	ICF categories	Scoring principle	Population	Setting	Country	Development process
Book et al., 2020 [6]	Extended Geriatric ICF Checklist	139 first-level and second-level ICF categories	ICF Likert qualifier	65 geriatric patients aged ≥ 75 years old	Primary care	Germany	ICS Standardized Process: A formal decision-making and consensus process integrating evidence gathered from preliminary studies including focus groups of health professionals, a systematic review of the literature and empiric data collection from patients
Grill et al., 2005 [5]	Geriatric Comprehensive ICF core set	123 second-level categories (51 b, 14 s, 30 d, 28 e)	Disability = 1, functioning = 0	150 early post-acute geriatric patients	Inpatient rehabilitation	Germany	
Grill et al., 2011 [7]	Geriatric Brief ICF core set	38 second-level categories (7 b, 7 s, 15 d,9 e)	Body functions and activities and participation (0 = no impairment/ limitation/restriction, 1 = moderate impairment/ limitation/restriction, 2 = severe impairment/ limitation/restriction), body structures and environment (0 = no impairment/no barrier, 1 = impairment/barrier)	209 patients with multi-morbidity and frailty > 65 years old require post-acute rehabilitation	5 geriatric rehabilitation hospital	Germany and Austria,	Multivariable regression models based on the least absolute shrinkage and selection operator and random forest algorithms
Spoorenberg et al., 2015 [8]	Geriatric ICF core set	29 categories (13 s, 10 d, 6 e)	Dichotomized to "no problem" (score 0) and "problem" (scores 1-10)	267 older persons > 75 years old as frail or having complex care needs but without dementia history	Community	Netherlands	Delphi method, content validity with empirical data
Ruaro et al., 2014 [10]	Physical health of older adults	30 categories (14 b, 4 s, 9 d, 3 e)	No empiric data collection from the elderly population				Five rounds of Delphi expert consensus
De Vriendt et al., 2009 [9]	Geriatric Minimum Data Set)	19 categories (6 b, 13 d)	No empiric data collection from the elderly population				Link the functional items to the most relevant ICF category

identification, categories pre-screening, and category consolidation. Two independent investigators (N.L. and C.F.), supervised by geriatric experts, carried out each step.

Scope identification

Based on the Chinese Longitudinal Healthy Longevity Surveys (CLHLS) and national survey of the disabled population in China, the functional status of aging adults in China was determined to cover five key domains: Vision, Hearing, Speech-language, Walking and movement, and Cognition. These domains were considered fundamental elements of functional assessment for the aging population in China.

Category pre-selection

In order to facilitate the joint use of the ICF and the International Classification of Diseases (ICD), the WHO introduced the FPs in the ICD-11 to bridge disease and functioning. FPs are the most relevant ICF categories for depicting health-related functioning in the activity and participation component. Selb et al. [12] match the FPs to 100 health conditions, which describe the impact of a health condition on a person's functioning in an integrated and comprehensive manner for specific health conditions to guide clinical decision-making.

A similar idea was adopted to identify the ICF core set that correlated with five specific abilities, namely vision, hearing, speech-language, walking and movement, and cognition. For each disability, one or two different health conditions are identified.

The matching process followed four progressively applied principles, with each subsequent principle being used when the previous one was not applicable [12]:

- Principle 1: if there is a specific ICF Core Set developed for the health condition, use its brief version or adopt expert opinions;
- Principle 2: if there is no specific ICF Core Set, but there are related ICF Core Sets, use their brief versions;
- Principle 3: use the combination of existing core sets;
- Principle 4: use the ICF Disability Set.

The brief version of the ICF core set is a selection of the most essential functional categories from the Comprehensive ICF Core Set for the same health condition, which is considered the minimal standard for assessing specific health conditions.

The 30-item ICF Disability Set (ICF Generic-30 Set) is initially designed for acute, early post-acute, and geriatric rehabilitation facilities. It is identified as particularly relevant for describing functioning across clinical populations along the continuum of care. The ICF Disability Set is also known as the Rehabilitation Set and has been formulated as a group standard by the Chinese Association of Rehabilitation Medicine [13].

Categories consolidation

Sort out ICF categories from the geriatric ICF brief core set and corresponding ICF core sets regarding five different abilities. The process of combining categories in the development of the presby-functioning item bank involved the following detailed considerations.

(1) Removal of the first-level category "s2 Structure of eye and ear": In the Parkinson's Disease ICF Core Set, the first-level category "s2 Structure of eye and ear" was eliminated due to the availability of more specific descriptions such as "s220 Structure of eyeball", "s240 Structure of external ear", "s250 Structure of middle ear", and "s260 Structure of inner ear". This decision aimed to ensure a more detailed and accurate representation of the condition.

(2) Simplification of the Vertigo brief ICF Core Set: Initially comprising 29 items, the Vertigo brief ICF Core Set posed challenges in unified coding due to the inclusion of the entire block "d840-d859 Work and employment" as a single item. To streamline the evaluation process, the category "d850 Remunerative employment" was chosen to represent "d840-d859 Work and employment", as it was also present in the geriatric core set. The other categories within the block were excluded.

Category verification

In the category verification process, the alternative categories in the candidate item bank were compared with the categories in the Book ICF Core Set, Grill ICF Core Set, Vriendt ICF Core Set, Ruaro ICF Core Set, and Spoorenberg ICF Core Set (Fig. 1).

RESULTS

In alignment with the previous guidelines [12], three experienced physiatrists (Z-LJ, FL, and LZ) and a therapist manager (CF) participated in the selection of ICF categories. Participants engaged in discussions regarding the inclusion of each candidate ICF category, weighing the pros and cons before voting on the suitability of each specific category.

During the pre-screening category phase, the study ultimately identified nine health conditions corresponding to five fundamental abilities, as presented in Table II, to create the initial set of alternative items (Tab. III). It was found that cataracts and retinopathy were the primary causes of low vision and blindness in China [11]. Individuals with diabetes are particularly susceptible to developing diabetic retinopathy [14]. Accordingly, the ICF brief core set for diabetes was determined to represent vision-related impairment. Since there was no ICF core set for cataracts, the Rehabilitation set was utilized to capture functional impairments regarding age-related eye diseases.

Furthermore, presbycusis and tympanites are identified as the primary causes of hearing disabilities in China [11]. A thorough literature review manifested that the ICF brief core set for hearing loss was chosen to synthesize the candidate item bank. Given the stroke and Parkinson's disease as significant contributors to speech-language disabilities, the brief core set for stroke and neurology core set for migraine, myasthenia gravis and Parkinson's disease was selected. Osteoarthritis and balance disorders commonly occur in older adults, which are major causes of walking abnormalities. Corresponding ICF core sets were found to form the senior-specific ICF

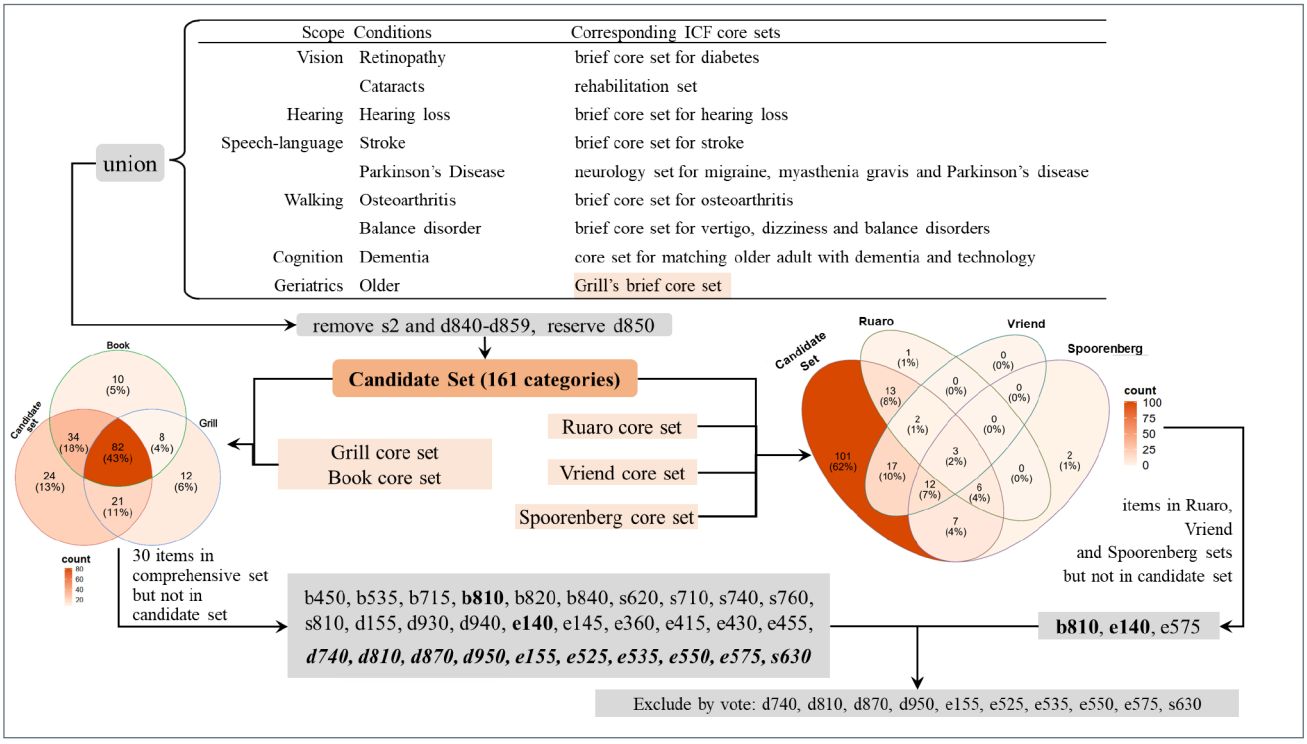

Figure 1. The Venn diagram for candidate categories.

item bank. Advanced age is an important independent risk factor for geriatric dementia [15]. The ICF core set for Matching Older Adult with Dementia and Technology (MOADT) was developed to tackle older adults with dementia in the process of receiving assistive technology for their functioning and well-being. There are fewer body functions and structure codes, but more codes are related to activities and participation, and environmental factors in this core set. MOADT was identified to capture cognition-related functional changes in older adults.

As shown in Figure 1, the next step involved comparing the candidate item set from Table III with the Vriendt ICF Core Set, Ruaro ICF Core Set, and Spoorenberg ICF Core Set to identify items that belong to these ICF Core Sets but were not included in the candidate item bank. Three items, namely "b810 Protective functions of the skin", "e140 Products and technology for culture, recreation and sport", and "e575 General social support services, systems and policies", were identified in this process.

Table II. The ICF core sets for 5 functioning domains, and brief geriatric core set.

Scopes	Condition	ICF core sets for extracting functioning properties	Components				Total	References
			b	s	d	e		
Vision	Retinopathy	brief core set for diabetes	11	5	3	8	27	[16]
Vision	Cataracts	rehabilitation set	9	0	21	0	30	[17]
Hearing	Hearing loss	brief core set for hearing loss	7	4	9	7	27	[18]
Speech-language	Stroke	brief core set for stroke	6	2	7	3	18	[19]
Speech-language	Parkinson's disease	neurology set for migraine, myasthenia gravis and Parkinson's disease	16	1	27	16	60	[20]
Walking	Osteoarthritis	Brief core set for osteoarthritis	3	3	3	4	13	[21]
Walking	Balance disorder	Brief core set for vertigo, dizziness, and balance disorders	9	4	10	6	29	[22]
Cognition	Dementia	Core set for matching older adult with dementia and technology	43	2	44	21	110	[23]
Geriatrics	Older	Grill's brief core set	7	7	15	9	38	[7]

Table III. The overlaps among different core sets.

No.	Code	RS	HEAR	PD	STRK	OA	BALN	DEME	G-BCS	Freq.
1	d450	+		+	+	+	+	+	+	7
2	e310		+	+	+	+	+	+		7
3	e355		+	+	+		+	+	+	7
4	e580		+	+	+	+	+			6
5	b152	+	+	+			+	+		5
6	b210		+	+			+	+		5
7	d410	+		+			+	+	+	5
8	d415	+		+			+	+	+	5
9	d510	+		+	+			+	+	5
10	d520	+		+				+	+	5
11	d540	+		+	+	+		+		5
12	d550	+		+	+			+	+	5
13	e110			+			+	+	+	5
14	s110		+		+		+	+	+	5
15	b130	+		+				+		4
16	b140		+	+	+			+		4
17	b144		+	+	+			+		4
18	b730	+		+	+	+				4
19	d230	+					+	+	+	4
20	d310		+	+	+			+		4
21	d460			+			+	+	+	4
22	d530	+			+			+	+	4
23	d640	+		+			+	+		4
24	b134	+		+					+	3
25	b230		+				+	+		3
26	b240		+				+	+		3
27	b280	+		+		+				3
28	b420			+				+		3
29	b435			+				+	+	3
30	b455	+							+	3
31	b620	+						+	+	3
32	b765			+				+	+	3
33	d240	+	+							3
34	d330			+	+			+		3
35	d360		+					+	+	3
36	d475			+			+	+		3
37	d570	+							+	3
38	d760		+					+	+	3
39	d770	+		+				+		3
40	d850	+	+	+						3
41	d910		+	+				+		3
42	d920	+		+				+		3

▶

Table III. continues.

43	e115					+		+		3
44	e120			+			+	+		3
45	e125		+	+				+		3
46	e240			+			+	+		3
47	e410		+	+				+		3
48	e450			+				+	+	3
49	e460		+					+	+	3
50	e570			+					+	3
51	s410						+	+		3
52	s750					+			+	3
53	b110				+			+		2
54	b114				+			+		2
55	b156						+	+		2
56	b167				+			+		2
57	b215						+	+		2
58	b235						+	+		2
59	b260						+	+		2
60	b410							+		2
61	b415							+		2
62	b525			+				+		2
63	b530			+						2
64	b540							+		2
65	b545							+		2
66	b710	+				+				2
67	b770						+	+		2
68	d175			+				+		2
69	d350		+	+						2
70	d420	+							+	2
71	d440			+				+		2
72	d455	+					+			2
73	d465	+							+	2
74	d470	+		+						2
75	d560			+				+		2
76	d620			+				+		2
77	d630			+				+		2
78	d660	+						+		2
79	d710	+						+		2
80	d750			+				+		2
81	e225			+				+		2
82	e245							+	+	2
83	e250		+	+						2
84	e320			+				+		2
85	e325			+				+		2

▶

Table III. continues.

86	e330							+	+	2
87	e420			+				+		2
88	e425							+	+	2
89	e465								+	2
90	s260		+				+			2
91	s610								+	2
92	s730				+	+				2
93	s770					+			+	2
94	b117							+		1
95	b126		+							1
96	b147							+		1
97	b160							+		1
98	b164							+		1
99	b172							+		1
100	b176							+		1
101	b180							+		1
102	b265							+		1
103	b270									1
104	b310			+						1
105	b320							+		1
106	b330							+		1
107	b430							+		1
108	b440							+		1
109	b460								+	1
110	b510			+						1
111	b515			+						1
112	b555							+		1
113	b610									1
114	b630								+	1
115	b640	+								1
116	b735							+		1
117	b740							+		1
118	b750							+		1
119	b755							+		1
120	b760							+		1
121	b780							+		1
122	d110			+						1
123	d115		+							1
124	d130							+		1
125	d135							+		1
126	d160							+		1
127	d163							+		1
128	d166							+		1

▶

Table III. continues.

129	d170							+		1
130	d172							+		1
131	d177							+		1
132	d210							+		1
133	d220							+		1
134	d315							+		1
135	d325							+		1
136	d335							+		1
137	d345							+		1
138	d355							+		1
139	d430			+						1
140	d445					+				1
141	d469						+			1
142	d650							+		1
143	d720							+		1
144	d730			+						1
145	d820		+							1
146	d860								+	1
147	e150					+				1
148	e165							+		1
149	e315							+		1
150	e340							+		1
151	e440							+		1
152	e540			+						1
153	e585									1
154	s120						+			1
155	s220									1
156	s240		+							1
157	s250		+							1
158	s320								+	1
159	s430								+	1
160	s550									1
161	s720								+	1

Abbreviations: DM: brief core set for diabetes; RS: rehabilitation set; HEAR: brief core set for hearing loss; PD: neurology set for migraine, myasthenia gravis and Parkinson's disease; STRK: brief core set for stroke; OA: brief core set for osteoarthritis; BALN: brief core set for vertigo, dizziness, and balance disorders; DEME: core set for matching older adult with dementia and technology; G-BCS: Grill's brief core set; Freq.: Frequency.

Additionally, the candidate item bank was compared to the Grill's comprehensive core set and Book's ICF core set, revealing 20 extra categories and 18 extra categories, respectively. Due to the inclusion of the Grill brief core set, 20 extra categories in Grill's comprehensive core set were removed. Further identification reveals 10 ICF categories in the Book's ICF core set, including "d740 Formal relationships", "d810 Informal education", "d870 Economic self-sufficiency", "d950 Political life and citizenship", "e155 Design, construction and building products and technology of buildings for private use", "e525 Housing services, systems and policies", "e535 Communication services, systems and policies", "e550 Legal services, systems and policies", "e575 General social support services, systems and policies", and "s630 Structure of reproductive system".

Table IV. The screening process for ICF categories.

NO.	Code	Category
1	b110	Consciousness functions
2	b114	Orientation functions
3	b117	Intellectual functions
4	b126	Temperament and personality functions
5	b130	Energy and drive functions (G)
6	b134	Sleep functions
7	b140	Attention functions
8	b144	Memory functions
9	b147	Psychomotor functions
10	b152	Emotional functions (G)
11	b156	Perceptual functions
12	b160	Thought functions
13	b164	Higher-level cognitive functions
14	b167	Mental functions of language
15	b172	Calculation functions
16	b176	Mental function of sequencing complex movements
17	b180	Experience of self and time functions
18	b210	Seeing functions
19	b215	Functions of structures adjoining the eye
20	b230	Hearing functions
21	b235	Vestibular functions
22	b240	Sensations associated with hearing and vestibular function
23	b260	Proprioceptive function
24	b265	Touch function
25	b270	Sensory functions related to temperature and other stimuli
26	b280	Sensation of pain (G)
27	b310	Voice functions
28	b320	Articulation functions
29	b330	Fluency and rhythm of speech functions
30	b410	Heart functions
31	b415	Blood vessel functions
32	b420	Blood pressure functions
33	b430	Haematological system functions
34	b435	Immunological system functions
35	b440	Respiration functions
36	b455	Exercise tolerance functions
37	b460	Sensations associated with cardiovascular and respiratory functions
38	b510	Ingestion functions
39	b515	Digestive functions
40	b525	Defecation functions
41	b530	Weight maintenance functions
42	b540	General metabolic functions
43	b545	Water, mineral and electrolyte balance functions
44	b555	Endocrine gland functions
45	b610	Urinary excretory functions
46	b620	Urination functions
47	b630	Sensations associated with urinary functions
48	b640	Sexual functions
49	b710	Mobility of joint functions
50	b730	Muscle power functions
51	b735	Muscle tone functions

▶

Table IV. continues.

52	b740	Muscle endurance functions
53	b750	Motor reflex functions
54	b755	Involuntary movement reaction functions
55	b760	Control of voluntary movement functions
56	b765	Involuntary movement functions
57	b770	Gait pattern functions
58	b780	Sensations related to muscles and movement functions
59	d110	Watching
60	d115	Listening
61	d130	Copying
62	d135	Rehearsing
63	d160	Focusing attention
64	d163	Thinking
65	d166	Reading
66	d170	Writing
67	d172	Calculating
68	d175	Solving problems
69	d177	Making decisions
70	d210	Undertaking a single task
71	d220	Undertaking multiple tasks
72	d230	Carrying out daily routine (G)
73	d240	Handling stress and other psychological demands
74	d310	Communicating with - receiving - spoken messages
75	d315	Communicating with - receiving - nonverbal messages
76	d325	Communicating with - receiving - written messages
77	d330	Speaking
78	d335	Producing nonverbal messages
79	d345	Writing messages
80	d350	Conversation
81	d355	Discussion
82	d360	Using communication devices and techniques
83	d410	Changing basic body position
84	d415	Maintaining a body position
85	d420	Transferring oneself
86	d430	Lifting and carrying objects
87	d440	Fine hand use
88	d445	Hand and arm use
89	d450	Walking (G)
90	d455	Moving around (G)
91	d460	Moving around in different locations
92	d465	Moving around using equipment
93	d469	Walking and moving, other specified and unspecified
94	d470	Using transportation
95	d475	Driving
96	d510	Washing oneself
97	d520	Caring for body parts
98	d530	Toileting
99	d540	Dressing
100	d550	Eating
101	d560	Drinking
102	d570	Looking after one's health
103	d620	Acquisition of goods and services

▶

Table IV. continues.

104	d630	Preparing meals
105	d640	Doing housework
106	d650	Caring for household objects
107	d660	Assisting others
108	d710	Basic interpersonal interactions
109	d720	Complex interpersonal interactions
110	d730	Relating with strangers
111	d750	Informal social relationships
112	d760	Family relationships
113	d770	Intimate relationships
114	d820	School education
115	d850	Remunerative employment (G)
116	d860	Basic economic transactions
117	d910	Community life
118	d920	Recreation and leisure
119	e110	Products or substances for personal consumption
120	e115	Products and technology for personal use in daily living
121	e120	Products and technology for personal indoor and outdoor mobility and transportation
122	e125	Products and technology for communication
123	e150	Design, construction and building products and technology of buildings for public use
124	e165	Assets
125	e225	Climate
126	e240	Light
127	e245	Time-related changes
128	e250	Sound
129	e310	Immediate family
130	e315	Extended family
131	e320	Friends
132	e325	Acquaintances, peers, colleagues, neighbours and community members
133	e330	People in positions of authority
134	e340	Personal care providers and personal assistants
135	e355	Health professionals
136	e410	Individual attitudes of immediate family members
137	e420	Individual attitudes of friends
138	e425	Individual attitudes of acquaintances, peers, colleagues, neighbours and community members
139	e440	Individual attitudes of personal care providers and personal assistants
140	e450	Individual attitudes of health professionals
141	e460	Societal attitudes
142	e465	Social norms, practices and ideologies
143	e540	Transportation services, systems and policies
144	e570	Social security services, systems and policies
145	e580	Health services, systems and policies
146	e585	Education and training services, systems and policies
147	s110	Structure of brain
148	s120	Spinal cord and related structures
149	s220	Structure of eyeball
150	s240	Structure of external ear
151	s250	Structure of middle ear
152	s260	Structure of inner ear
153	s320	Structure of mouth
154	s410	Structure of cardiovascular system
155	s430	Structure of respiratory system

▶

Table IV. continues.		
156	s550	Structure of pancreas
157	s610	Structure of urinary system
158	s720	Structure of shoulder region
159	s730	Structure of upper extremity
160	s750	Structure of lower extremity
161	s770	Additional musculoskeletal structures related to movement

These remaining categories underwent a voting process conducted by a four-person panel vote. After careful consideration, it was decided not to include these categories in the candidate item set.

In conclusion, a total of 161 categories were ultimately selected for presby-functioning item banks in Table III, consisting of 58 items in category b, 60 items in category d, 28 items in category e, and 15 items in category s.

DISCUSSION

In this study, a three-step group consensus process integrating evidence from previous studies and expert knowledge resulted in the initial version of the senior-specific ICF item bank, specifically tailored for the normal older population. The aim of this consensus process was to establish a comprehensive item bank focused on capturing five fundamental abilities (vision, hearing, speech-language, walking, cognition) in the domains of body function and structure, activity and participation, and environmental factors.

Modern medicine has undergone a significant paradigm shift, transitioning from a sole emphasis on prolonging lifespan to placing equal importance on enhancing the overall quality of life. This transformation is exemplified by the WHO's adoption of the concept of "Healthy Ageing" in 2016, which aims to foster the well-being of older adults by promoting the development and maintenance of functional abilities crucial for a fulfilling life in later years.

After the implementation of the reform and opening-up policy over the past four decades, China has made progress toward economic prosperity. Meanwhile, China has experienced significant changes in the age structure of the population, which is characterized by increased life expectancy and declining mortality rates that have led to population aging. Alongside the demographic transformation, there has been a notable rise in disability prevalence, contributing to an increase in life expectancy with disability. Additionally, due to social and economic changes, the traditionally supportive role of family members has eroded, leading to the high prevalence of "empty-nest older adults" or "childless older adults". In recognition of these challenges, the Chinese government has called for the establishment of a preventive health service system specifically designed to reduce or delay the occurrence of disability and dementia among the older population.

Geriatric syndrome referring to common health conditions among older adults does not fit into distinct organ-based disease categories and often have multifactorial causes, which has a major impact on quality of life. Early screening for functional impairment in the older population is of great importance. As part of the Healthy China 2030 Action Plan, the implementation of multidisciplinary and comprehensive geriatric management becomes crucial for promoting healthy aging. Currently, existing assessment tools primarily concentrate on single aspect, such as cognitive, mood, and physical activity assessments. These tools fall short of adequately evaluating individuals from a holistic perspective, thus necessitating the development of more comprehensive assessment approaches. However, functional status determines the ability to perform activities necessary or desirable in daily life particularly influenced by the context of an elder's environment and social support network.

The ICF provides a comprehensive and detailed framework for gaining an individual's experience of disability, encompassing both their functional abilities and the environmental factors that influence them. ICF tool could be testified as statistical, research, clinical, and social policy purposes in previous applications. Comprehensive utilization of clinical measures and functional analysis can be accomplished under the lens of the biopsychosocial model of the ICF classification. While the ICF serves as a valuable conceptual framework for assessing health-related functioning, it should not be considered the exclusive tool for clinical assessment. For instance, researchers seeking a more in-depth understanding of gait patterns and the underlying causes of deviations from normal cognition can utilize specific categories within the ICF that along with their criteria and research objectives. This additional level of detail can prove advantageous in meeting the specific requirements and goals of studies. Furthermore, the ICF's widespread adoption

as a common international taxonomy for describing disability along the continuum promotes consistency in clinical studies, clinical encounters, and multidisciplinary comprehensive assessments, ultimately contributing to improved patient outcomes.

To our best knowledge, this is the first older person specific ICF item bank that is focused on the vision, hearing, speech, walking, and mental ability of the older population. Beyond the vision, hearing, speech, walking, and mental pathological changes (body structure and body functions), the ICF framework offers activity and participation as well as environmental factors related to certain health conditions. Moreover, the psychometric characteristics of the full set of 161 categories have explored (under review).

CONCLUSIONS

Based on a thorough literature search and expert consensus process, this study focuses on the primary care for five basic functions (vision, hearing, speech-language, walking and movement, and cognition) among older community-dwelling people who are still active. Further testing on psychometric properties such as validity, reliability, and item difficulties need to be undertaken to confirm friendly and valid older person specific ICF-based functioning outcome measures for the community-dwelling senior population worldwide.

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Conflict of interest statement

The authors declare no conflict of interest.

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Author contributions

FL, Z-Li J: contributed to the research concept, supervised the entire study, performed the analysis, and generated the images; NL, CF: conducted literature search; L-JZ, JG: involved in sorting out ICF items; CF, LZ, L-JZ, JG, NL: wrote the manuscript. All authors contributed to the article and approved the submitted version.

Ethical consideration

This study was approved by the Institutional Ethics Committee of Sir Run Run Hospital, Nanjing Medical University (protocol number IRB# 2018-SR-017).

The research was conducted ethically, with all study procedures being performed in accordance with the requirements of the World Medical Association's Declaration of Helsinki.

Written informed consent was obtained from each participant/patient for study participation and data publication.

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