International Journal of Gerontology 20 (2026) 67–72
https://doi.org/10.6890/IJGE.202601_20(1).0011

International Journal of Gerontology

journal homepage: http://www.sgecm.org.tw/ijge/

Original Article

Screening for Geriatric Conditions: Comparison of FIND-NEEDS, ICOPE-TW, and Comprehensive Geriatric Assessment

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ARTICLE INFO

Accepted 30 June 2025

Keywords:
geriatric assessment,
screening,
frail elderly,
time pressure,
social interaction

SUMMARY

Study Objectives: This study compares the Integrated Care for Older People Screening Tool - Taiwanese version (ICOPE-TW) and the FIND-NEEDS screening tools with the Comprehensive Geriatric Assessment (CGA) in geriatric outpatients to identify geriatric problems.
Methods: Data were collected from older adults aged 65 and above on their first visit to geriatric clinics. Participants were assessed using FIND-NEEDS, ICOPE-TW, and CGA. Correlation analysis with the Phi coefficient (ϕ) examined relationships between binary scores of relevant domains.
Results: A total of 159 older adults, with a mean age of 78.9 ± 7.6 years, completed FIND-NEEDS, ICOPE-TW, and CGA. Functional impairment (FI), cognitive impairment, and inappropriate polypharmacy were the most prevalent conditions (> 60%). FIND-NEEDS strongly correlated with CGA (φ = 0.81–0.97, p < 0.001) for FI, urinary incontinence, malnutrition, visual impairment (VI), hearing impairment (HI), and social interaction. ICOPE-TW significantly correlated with CGA for VI and HI (φ = 0.82, 0.70, respectively, p < 0.001).
Conclusions: FIND-NEEDS is a reliable and user-friendly screening tool for identifying geriatric needs. The findings support the use of FIND-NEEDS as an efficient screening tool in geriatric outpatient settings, assisting in early detection and intervention.

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1. Introduction

A comprehensive geriatric assessment (CGA) is a multidimensional evaluation that identifies complex healthcare needs and guides interventions in frail older adults. In-hospital CGA within a geriatric unit has been shown to improve performance in activities of daily living (ADL) one year after discharge.[1] A systematic review also demonstrated that CGA reduces adverse health outcomes, including the risk of nursing home admission, falls, and pressure injuries in hospital settings, the risk of delirium following hip fractures, and the risk of physical frailty among community-dwelling older adults.[2] However, CGA's numerous domains and multidisciplinary nature make it time-constrained and labor-intensive,[3] potentially precluding its feasibility in busy clinics or for healthcare workers with heavy workloads. Furthermore, inadequate systematic knowledge and training may limit the application of CGA.[4] Therefore, several screening tools have been proposed to complement CGA, aiming to reduce inconvenience and facilitate the identification of geriatric syndromes in diverse settings. Examples include the Rapid Geriatric Assessment,[5] DEEP-IN,[6] Vulnerable Elders Survey,[7] Kihon Checklist,[8] Brief Risk Identification of Geriatric Health Tool,[9] Targeted Geriatric Assessment,[10] Edmonton Frail Scale,[11] Geriatric 8,[12] ICEBERG,[13] Acutely Presenting Older Patient tool,[14] Identification of Seniors At Risk tool,[15] or Short Emergency Geriatric Assessment.[16] Nevertheless, the clinical properties and impact of these screening instruments on health outcomes have not been thoroughly examined,[3] and some may have only modest predictive accuracy and reliability for adverse outcomes,[17] which is likely due to their limited breadth compared to CGA.[13]

The Integrated Care for Older People (ICOPE) screening tool was developed by the World Health Organization (WHO) as part of its initiative to promote healthy aging.[18] The ICOPE framework helps healthcare providers assess and manage declines in intrinsic capacity (IC). The two-step evaluation tool focuses on six key domains: cognition, locomotion, vitality, vision, hearing, and psychological health, with the primary aim of facilitating early detection of declines in these domains to enable timely interventions to improve function in older adults. The Taiwanese government has adapted the WHO's ICOPE framework, ICOPE-TW, to implement a nationwide community-based geriatric assessment program since 2020. ICOPE-TW integrates medication usage and life goals to enhance clinicians' ability to assess the physical conditions of older adults.[19] ICOPE-TW is also a two-stage measure, with the first stage similar to the Chinese version of ICOPE, featuring minor revisions in the vision domain. Medication usage and Social care and support are assessed when at least one domain of impairment is identified in the first stage.[19] Although

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numerous studies have examined the effectiveness and predictability of ICOPE in assessing frailty, sarcopenia, and limitations in activities of daily living (ADL) or instrumental activities of daily living (IADL) in various settings,[20–25] the rollout of the ICOPE-TW program in Taiwan relies on trained assessors to execute assessments and make referrals, which may increase the administrative burden.[26] Moreover, the clinical impact or corresponding ICOPE to CGA has seldom been presented in the literature.[27]

A screening instrument with the mnemonic "FIND-NEEDS" was developed for use by non-geriatric health workers, trained volunteers, or self-evaluation with minimal assistance on a few items.[28] Based on expert opinions with modifications and amendments, FIND-NEEDS comprises 11 domains: function, falls, frailty, incontinence, nutrition, dementia, number of medications, eyes, ears, depression, and social interaction (Supplement Table S1). A previous study demonstrated that FIND-NEEDS has good item-level and scale-level content validity.[29] A further study in geriatric outpatient clinics revealed that most domains exhibit moderate correlations with CGA and demonstrate excellent sensitivity, specificity, and receiver operating characteristic curves in predicting CGA scores.[28] Additionally, FIND-NEEDS takes less time than CGA, allowing older adults or their caregivers to complete most questions quickly.

A feasible screening tool needs to address practical issues such as time constraints, limited spectrums of dimensions affecting older adults' health, subjective ratings requiring additional training, or complexity (e.g., multiple steps). To further confirm that FIND-NEEDS is a practical and relatively comprehensive screening tool for busy hospital settings and potentially for community use, we conducted a prospective study in geriatric clinics to compare FIND-NEEDS and ICOPE-TW to CGA in terms of domain correlations and comprehensiveness.

2. Methods

2.1. Study design and participants

The study was conducted at the geriatric clinics of a tertiary referral center from January to August 2022. It enrolled first-visit older adults aged 65 and above who could answer the questionnaire with or without the assistance of a caregiver. Those who were Institutionalized, unable to mobilize or communicate, or with conditions preventing participation (e.g., older adults with urgent conditions that needed emergent treatment) were excluded. Those deemed eligible were invited to participate by trained geriatric healthcare practitioners (GHPs). Written informed consent was obtained from participants or their legal guardians when participants had severe cognitive impairment. Ethics approval for the study was obtained from the study hospital (B-ER-110-198).

2.1.1. FIND-NEEDS Screening Tool

Table S1 lists FIND-NEEDS questions and domains, categorized into functional impairment (FI), urine incontinence (UI), malnutrition (MN), cognitive impairment (CI), inappropriate polypharmacy (IP), visual impairment (VI), hearing impairment (HI), depressive condition (D), and social interaction (SI). Unique aspects of FIND-NEEDS include grouping the first three domains — function, falls, and frailty — as the function-related dimension, aligning with locomotion in IC. The frailty assessment consists of the Clinical Frailty Scale (CFS) and the Study of Osteoporotic Fractures (SOF). The SOF includes questions about weight loss, inability to rise from a chair five times without using arms, and energy loss. The cut-off values for issues were ≥ 2 for SOF and ≥ 4 for CFS. Question answers were dichotomous (yes/no), with "1" indicating a problem or inability and "0" for all other responses. A binary score was used for each domain, where any question within a domain coded as "1" indicated impairment in that domain. The binary score of FIND-NEEDS domains, rather than total scores, was used to identify potential issues for further CGA assessment and intervention.

2.1.2. Integrated Care for Older People Screening Tool - Taiwanese version (ICOPE-TW)

ICOPE-TW is a two-stage assessment. The first stage includes questions similar to those in the WHO Chinese version, with minor modifications. The Chair Rise Test uses a cutoff of 12 seconds, where as the WHO uses 14 seconds. The visual capacity assessment comprises a two-step question: the first inquires about eye problems affecting vision, and the second inquires about eye examinations conducted within the past year, if issues are reported in the first question (Table S1). Further tests occur in the second stage if eye problems are detected without recent examinations. Question answers were dichotomous (yes/no), with "1" indicating an issue or inability and "0" for all other responses. A binary score was used for each domain, where any question within a domain coded as "1" indicated impairment in that domain. Abnormal domains trigger second-stage evaluation using the Mini-Mental State Examination (MMSE), Brain Health Test (BHT), or Eight-item Informant Interview to Differentiate Aging and Dementia (AD8) for cognitive, Short Physical Performance Battery (SPPB) for locomotor, Mini-Nutritional Assessment Short Form (MNA-SF) for vitality, WHO simple eye chart, or Snellen test for vision, referral for further testing, device support, or hearing care for hearing, and the Geriatric Depression Scale-15 (GDS-15) for psychological capacities. While there was more than one domain with impairment, medication and social goals were assessed further. If there were more than two domains with impairment, social care and support were evaluated. The binary score, rather than total scores, was used to identify potential issues, and the first-stage data were used for comparison.

2.1.3. Comprehensive Geriatric Assessment (CGA)

The CGA includes 24 metrics, such as the confusion assessment method, Katz Index of ADL, IADL, CFS, falls, VI and HI, incontinence, sleep, pain, pressure injuries, vaccinations, polypharmacy, iatrogenesis, healthcare utilization, care issues, socioeconomic factors, MNA-SF, Short Portable Mental State Questionnaire (SPMSQ), Geriatric Depression Scale (GDS), advanced care planning, hand grip, Time Up and Go test and SPPB. Additional information includes a family tree, living situations, and acute medical issues. The relevant metrics were categorized into nine domains for comparison with ICOPE and FIND-NEEDS (Table S1). The binary scoring system was consistent with FIND-NEEDS and ICOPE-TW.

2.2. Data collection

Data collection involved three instruments. Participants and caregivers completed the FIND-NEEDS questionnaire, except for three questions (CFS, SOF, and memory testing). GHPs completed the CFS, SOF, and memory testing during the visit and interviewed the participants and caregivers for ICOPE-TW and CGA. Basic demographic data were also collected for analysis.

2.3. Statistical analyses

Statistical analyses were conducted using JASP (Version 0.18.3; JASP Team, 2024; https://jaspstats.org). Descriptive analysis in-

cluded means ± standard deviations (M ± SD) or frequencies (%). Binary scores of each FIND-NEEDS, ICOPE, and CGA domain were used in correlation analysis. Chi-squared tests and Phi coefficients (φ) were calculated to assess correlations between comparable domains of FIND-NEEDS and CGA, ICOPE-TW and CGA, and FIND-NEEDS and ICOPE-TW. Phi coefficient values were interpreted as follows: ±0.01 to ±0.19, negligible correlation; ±0.20 to ±0.39, low correlation; ±0.40 to ±0.69, moderate correlation; and ±0.70 to ±1.00, strong correlation. Cohen's kappa statistic was also used to measure agreement between two instruments, which were interpreted as follows: 0.01–0.20, none to slight; 0.21–0.40, fair; 0.41–0.60, moderate; 0.61–0.80, substantial; and 0.81–1.00, almost perfect agreement. The study power (post hoc) was analyzed using G*Power (Version 3.1.9.7; G*Power Team, 2020; https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower). Statistical significance was set at $p < 0.05$.

3. Results

3.1. Participants characteristics

A total of 159 older adults were enrolled (Table 1). The participants' mean age was 78.9 ± 7.6 years (range, 65.2–97.1 years). Among them, 92 were females (57.9%). Most were married or cohabiting (52.2%), and slightly more than half had an educational level of primary school or lower (52.2%). Few participants lived alone (14.5%), while most were cared for by others (69.8%).

3.2. Participants' potential issues screened by CGA, FIND-NEEDS, and ICOPE-TW

Table 2 lists the percentages of participants with potential issues in each domain, as identified by CGA, FIND-NEEDS, and ICOPE-TW. The rates of potentially having issues in each domain ranged from 14.7% for SI to 80.5% for FI, as reported by FIND-NEEDS; from 44.0% for VI to 72.3% for FI, as assessed by ICOPE-TW; and from 14.1% for SI to 76.7% for IP, as determined by CGA. FI, CI, and IP were the most prevalent potential issues, with rates exceeding 60% as identified by FIND-NEEDS or CGA. Similarly, ICOPE-TW also identified FI and CI as issues affecting > 60% of participants. CGA and ICOPE-TW showed that slightly over half of the participants had nutrition issues (53.5% and 50.9%, respectively), compared with slightly less than half as identified by FIND-NEEDS (47.2%). FIND-NEEDS identified a somewhat higher proportion of participants with CI than ICOPE-TW and CGA (75.5%, 68.6%, and 65.4%, respectively). In contrast, it identified a slightly lower rate of MN than ICOPE-TW and CGA (47.2%, 50.9%, and 53.5%, respectively). FIND-NEEDS and ICOPE-TW also revealed that more than half of the participants experienced depressive symptoms, which was higher than that identified by CGA (56.6% and 61.6% vs. 48.4%). ICOPE-TW identified HI in more participants (45.3%) than the other tools.

Table 1
Characteristics of participants receiving screening (N = 159).

Variables	N (%) or Mean ± SD
Age	78.9 ± 7.6
Sex	
Male	67 (42.1)
Female	92 (57.9)
Marital status	
Married or cohabiting	83 (52.2)
Unmarried, widowed, divorced, or separated	76 (47.8)
Educational level	
No formal education	21 (13.2)
Primary school or literacy	62 (39.0)
Junior or senior high	59 (37.1)
University (college) or above	17 (10.7)
Living situation	
Living alone	23 (14.5)
Living with others	135 (84.9)
Care situation	
Self-care	47 (29.6)
Cared for by others	111 (69.8)

3.3. Correlations analysis

Intercorrelations between binary scores for FIND-NEEDS and CGA and ICOPE-TW and CGA domains are shown in Tables 3 and 4, respectively. FIND-NEEDS and CGA domains showed moderate correlations for CI, IP, and D, and strong correlations for FI, UI, MN, VI, HI, and SI (φ = 0.81–0.97, $p < 0.001$), with the correlation for SI reaching 0.97 (Table 3). In comparing ICOPE-TW with CGA (Table 4), strong correlations were found for VI and HI (φ = 0.82 and 0.70, respectively, $p < 0.001$), and moderate correlations for FI, MN, CI, and D ($p < 0.001$). The results of Cohen's kappa statistic further confirmed the relationship, with the corresponding agreement on the same items (Table S2). In summary, the binary scores from FIND-NEEDS or ICOPE-TW showed significant correlations or agreement with CGA to varying degrees. FIND-NEEDS appeared to have stronger correlations and agreement with CGA concerning functional decline and nutrition issues. Regarding FIND-NEEDS and ICOPE-TW (Table 5), most domains exhibited moderate correlations ($p < 0.001$), with strong correlations observed for VI and HI (φ = 0.87 and 0.76, $p < 0.001$). The study's power, based on 159 participants and an effect size of 0.3 (medium effect), achieved around 97%.

4. Discussion

This study reveals high rates of functional/cognitive decline and inappropriate polypharmacy in geriatric outpatients. The participants also presented with significant nutrition issues. Moreover, FIND-NEEDS showed strong validity (moderate to strong association with CGA), especially for common geriatric problems such as function, nutrition, sensory impairment, and incontinence. ICOPE-TW's first screening stage also showed acceptable validity when used in the geriatric clinic, particularly for sensory impairment.

A Taiwan community study with ICOPE reported vision impairment in 45.2%, locomotion impairment in 39.8%, cognitive decline in

Table 2
Percentages of participants potentially having problems with domains of CGA, FIND-NEEDS, and ICOPE-TW.

Domains	N	CGA		FIND-NEEDS		ICOPE-TW[a]	
		n	(%)	n	(%)	n	(%)
FI	159	120	(75.5)	128	(80.5)	115	(72.3)
UI	159	54	(34.0)	40	(25.2)	—	—
MN	159	85	(53.5)	75	(47.2)	81	(50.9)
CI	159	104	(65.4)	120	(75.5)	109	(68.6)
IP	159	122	(76.7)	103	(64.8)	—	—
VI	159	74	(46.5)	72	(45.3)	70	(44.0)
HI	159	58	(36.5)	56	(35.2)	72	(45.3)
D	159	77	(48.4)	90	(56.6)	98	(61.6)
SI	158	22	(14.1)	23	(14.7)	—	—

CI: cognitive impairment; D: depressive condition; FI: functional impairment; HI: hearing impairment; IP: inappropriate polypharmacy; MN: malnutrition; SI: social interaction; UI: urinary incontinence; VI: visual impairment.
[a] ICOPE-TW has no UI, IP, or SI domains in the first stage.

Table 3
Intercorrelations of binary scores between domains of FIND-NEEDS and CGA.

FIND-NEEDS	CGA								
	FI	UI	MN	CI	IP	VI	HI	D	SI
FI	0.86*								
UI		0.81*							
MN			0.86*						
CI				0.45*					
IP					0.59*				
VI						0.95*			
HI							0.95*		
D								0.54*	
SI									0.97*

CI: cognitive impairment; D: depressive condition; FI: functional impairment; HI: hearing impairment; IP: inappropriate polypharmacy; MN: malnutrition; SI: social interaction; UI: urinary incontinence; VI: visual impairment.
Chi-Squared Test: * $p < 0.001$.

Table 4
Intercorrelations of binary scores between domains of ICOPE-TW and CGA.

ICOPE-TW	CGA								
	FI	UI	MN	CI	IP	VI	HI	D	SI
FI	0.53*								
UI									
MN			0.52*						
CI				0.45*					
IP									
VI						0.82*			
HI							0.70*		
D								0.56*	
SI									

CI: cognitive impairment; D: depressive condition; FI: functional impairment; HI: hearing impairment; IP: inappropriate polypharmacy; MN: malnutrition; SI: social interaction; UI: urinary incontinence; VI: visual impairment.
Chi-Squared Test: * $p < 0.001$.

Table 5
Intercorrelations of binary scores between domains of FIND-NEEDS and ICOPE-TW.

ICOPE-TW	FIND-NEEDS								
	FI	UI	MN	CI	IP	VI	HI	D	SI
FI	0.48*								
UI									
MN			0.57*						
CI				0.43*					
IP									
VI						0.87*			
HI							0.76*		
D								0.46*	
SI									

CI: cognitive impairment; D: depressive condition; FI: functional impairment; HI: hearing impairment; IP: inappropriate polypharmacy; MN: malnutrition; SI: social interaction; UI: urinary incontinence; VI: visual impairment.
Chi-Squared Test: * $p < 0.001$.

21%, and vitality issues in 7.5% of those > 75 years.[27] A nationwide representative survey of multiple geriatric conditions in community-dwelling older adults aged ≥ 65 years in Taiwan revealed depressive conditions in 21.4%, functional impairment in 13.8%, and cognitive impairment in 11.7%.[30] Studies in other countries reported vision issues from 15.5% to 40.2%, limited mobility from 9.6% to 57.9%, cognitive decline from 16.9% to 54.8%, and malnutrition from 2.7% to 35.0%.[19,31] The higher proportion of impairment in the above dimensions in our study may be because the geriatric clinic population is relatively older and frailer than those in other studies.

Evidence indicates that living alone is associated with adverse health outcomes, such as sarcopenia risk, arthritis, and falls.[32,33] However, one study suggests that living alone may be related to poorer angina-related quality of life a year after myocardial infarction (MI) but is not associated with higher mortality or readmission post-MI.[34] Similarly, Reeves' post-stroke study reported that living alone has no significant association with mortality or readmission, although it is associated with delayed hospital arrival, a lower likelihood of receiving thrombolytic therapy, and of being discharged home.[35] A study of 400 community-dwelling older adults in Japan revealed that a poor social network may play a more critical role in health outcomes than living alone.[36] Additionally, loneliness and social isolation are associated with adverse health outcomes,[37,38] with one study showing that feeling lonely, rather than social isolation, increases mortality significantly in older men.[39] Therefore, living alone may not fully capture the complexity of self-perceptions of social isolation and loneliness.[40] Thus, FIND-NEEDS' SI domain includes questions regarding living alone, feeling lonely, and social activities to explore social and environmental risks explicitly, which may explain its significant validity.

Time constraints are a common concern with CGA. In practice, administering a CGA can take over an hour, depending on the patient's characteristics, and is typically performed by a geriatrician or a trained GHP. Administering the first-stage ICOPE-TW takes approximately 10–15 minutes by a GHP, as does FIND-NEEDS if a GHP completes it. A key advantage of FIND-NEEDS is that patients and their families can complete most questions with minimal assistance, which enhances its appeal in busy settings. Thus, FIND-NEEDS can serve as a pre-visit questionnaire or screening tool before conducting a CGA during hospitalization, or it can be applied in non-geriatric clinics or units.

A consensus on a standard measurement of IC for research or clinical settings is lacking. Researchers have been developing tools, based on the ICOPE framework, to assess IC.[20–22,41] Although our study showed ICOPE-TW has at least an acceptable association with CGA, domains that better assist clinicians in evaluating physical or mental health risk factors, such as polypharmacy and social interaction, are not assessed until the second stage. While FIND-NEEDS considers the assessment of function, falls, and frailty as a whole, the locomotion of ICOPE-TW did not assess frailty and fall risks. Moreover, ICOPE-TW did not include incontinence assessment at any stage. From a comprehensiveness perspective, FIND-NEEDS appears to benefit from its broader dimensions and strong correlation with CGA, making it more effective than ICOPE-TW in identifying complex geriatric needs.

The study provides an overview of the use of FIND-NEEDS and ICOPE-TW in geriatric clinics for screening geriatric conditions. Using a simultaneous domain-to-domain comparison with a CGA, the study demonstrates the promising potential of screening tools for identifying individuals with geriatric care needs. The satisfactory comparison results for FIND-NEEDS can offer healthcare providers an evidence-based practice guide for applying FIND-NEEDS to geriatric clinic patients. Furthermore, with its ease of administration, FIND-NEEDS has potential applications in non-geriatric clinics or units where performing CGA may be challenging.

Regarding limitations, the cross-sectional observational design only informs correlations and does not establish cause-and-effect relationships. Additionally, given the non-randomized and volunteer-based design of the study, selection bias is unavoidable, as reflected in the exclusion criteria. Furthermore, the WHO's ICOPE framework has evolved, with the updated second version integrating critical elements, such as urinary incontinence and social care and support.

There will be more items for us to correlate with CGA or FIND-NEEDS once the ICOPE-TW is updated. Additionally, medical comorbidities were not collected for analysis, and individuals who could not communicate, had conditions preventing participation, or were institutionalized were excluded, potentially introducing bias into the comparative strengths of the three instruments. Lastly, because experienced GHPs conducted the assessments and completed CGA, ICOPE-TW, and a small portion of FIND-NEEDS, the correlation strengths might differ from those assessed by other assessors.

5. Conclusion

FIND-NEEDS is a practical and effective screening tool for identifying geriatric needs, making it suitable for busy clinical and community settings. It provides a viable alternative to CGA when time and resources are limited. Further research is needed to examine its impact on health outcomes.

Acknowledgments

We would like to thank the geriatricians and nurses in the geriatric outpatient clinics at National Chen Kung University Hospital for their assistance with participant recruitment and delivery of the FIND-NEEDS survey. We also sincerely thank the participants and their families for their voluntary participation in this study. The research would not have been possible without their contribution.

Funding statement

This research was partially funded by the Health Promotion Administration, Ministry of Health and Welfare, Taiwan, under Project Number 2022, by the National Health Research Institute, Taiwan, under Grants [NHRI-13A1-CG-CO-04-2225-1 and NHRI-14A1-CG-CO-04-2225-1], and by the hospital, under Grant [NCKUH-11409016]. The content of this article may not represent the opinion of the funding institutions.

Declaration of conflicts of interest

The authors declare no conflict of interest. The sponsors had no role in the design, execution, interpretation, or writing of the study, nor in the decision to publish the results.

Supplementary materials

Supplementary materials for this article can be found at http://www.sgecm.org.tw/ijge/journal/view.asp?id=36.

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