FI-CGA and eFI-CGA in Frailty Care: a Scoping Review

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ABSTRACT

Background

Comprehensive geriatric assessment (CGA) is the reference standard for diagnosing and managing frailty. By evaluating a broad range of health, functional, cognitive, and social problems, the CGA enables the construction of a deficit accumulation Frailty Index (FI-CGA). Recent advances have integrated the electronic CGA (eCGA) into electronic health/medical records and other digital platforms, allowing automated coding and summarization of CGA data to generate an electronic Frailty Index (eFI-CGA).

Methods

We reviewed over two decades of research on the development, validation, and application of the FI-CGA, eCGA, and eFI-CGA in health-care contexts, conducted following the PRISMA-ScR guidelines. A comprehensive search was performed in MEADLINE and CINAHL databases, including English language publications from 2004 to July 1, 2025. The 38 studies that met all criteria are included in the final review. Data were synthesized descriptively and analyzed thematically.

Results

The evidence suggests that the FI-CGA is a robust, adaptable predictor of adverse outcomes including mortality, hospitalization, and functional decline. Digital adaptations improve feasibility, accuracy, and workflow, supporting wider application in acute, long-term, primary, and community care. The transition from manual to eCGA-based frailty measurements marks a significant advance toward scalable, integrated frailty care. Emerging implementations are targeting earlier detection, risk stratification, and personalized interventions.

Conclusion

The digital eCGA and eFI-CGA tools hold potential to enhance ("geriatrize") capacity to identify and manage frailty across care settings. Further research is needed to validate them across populations, and leverage innovative technologies to advance frailty care, in these ways promoting healthy aging.

Key words: frailty, Frailty Index (FI), Comprehensive Geriatric Assessment (CGA), electronic Comprehensive Geriatric Assessment (eCGA), electronic Frailty Index based on Comprehensive Geriatric Assessment (eFI-CGA), Clinical Frailty Scale (CFS), primary care, acute care, long-term care, early management, healthy aging

INTRODUCTION

In 2021, the baby boom cohort began to turn 75, the age at which most diseases of aging begin to accelerate.[1] Central to caring for older adults is frailty, a multiply determined, age-related dynamic health state. As health deficits accumulate, the ability to withstand stress related injuries (i.e., "robustness") declines, as does the ability to repair such damage ("resilience").[2,3] With frailty, even minor stressors can result in major clinical consequences. Although frailty increases with age, individuals of the same age can exhibit varying levels of vulnerability—this also undergirds the statistical definition of frailty: variability in risk for people with the same exposure.[4] Identifying frailty early, perhaps even before clinical manifestation arise (e.g., in laboratory tests[5] or performance measures such as gait speed or grip strength[6]), has implications for both clinical practice and public health.[7]

A deficit accumulation frailty index (FI) quantifies the degree of frailty by a summary score as the proportion of health deficits an individual exhibits in a defined set of variables.[6,7] These deficits include diverse health measures such as symptoms, diseases, and disabilities. The FI principle recognizes that, arising from the age-related accumulation of multiple health problems, higher frailty levels represent poorer health states/greater biological aging, and correspond

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to an increased risk of adverse outcomes.[8,9] It also facilitates cross-species translational research on frailty.[5]

Interest in digitalizing the FI has grown, particularly with the development in 2016 of the electronic Frailty Index (eFI).[10] Using the cumulative deficit model, the original eFI was constructed with 36 items from routine UK primary care electronic health record (EHR) data. Validated internally and externally across large datasets, it demonstrated strong predictive validity for one-, three-, and five-year risks of mortality, hospitalization, and nursing home admission.[10-12] The eFI has achieved wide adoption in UK primary care as a risk stratification tool embedded in policy frameworks. International uptake is widespread, using various EHRs (also called electronic medical records [EMRs]) data including demographics, diagnostic codes, medication lists, and laboratory values.[10,11] In Australia, Canada, China, and the United States,[12,13] eFIs rapidly identify frailty at scale, with accuracy, validity, and usability directly influenced by the quality and completeness of EHR data.[13,14,15] Since the Centers for Medicare and Medicaid made frailty screening a key component of its Age Friendly Hospital scheme,[16] uptake has accelerated.

A newer eFI2 refined prediction by using a wider range of linked EHR and other health measures from hospital, community, mental, and social care, showed improved discrimination for mortality, care home admission, and hospitalization.[17-19] By capturing a greater range of health indicators, the eFI model might yield a more comprehensive and dynamic view of frailty. Still, its ability to aid practice has yet to be demonstrated.[20]

Against this background, Comprehensive Geriatric Assessment (CGA), established as a multidimensional diagnostic and therapeutic process, presents a unique opportunity. It systematically evaluates an older person's medical, functional, psychological, and social domains, and guides individualized care planning.[21,22] In acute geriatric care, CGA can reduce frailty and improve patient and service outcomes through multifactorial interventions, including exercise, nutritional support, medication review, cognitive and behavioral therapies, and enhanced social support.[23] Much new work focuses on applying the CGA for early frailty identification and intervention in primary care and preventive settings.[24]

CGA-derived data have long supported the development of robust frailty measures, including a Frailty Index based on Comprehensive Geriatric Assessment (FI-CGA). Ongoing digitalization has led to the integration of the electronic CGA (eCGA) into EHRs and other digital platforms, facilitating real-time access and use. Applying standard FI methodology[25] to eCGA data through automated processing permits the eFI-CGA to be calculated automatically. Still, as children of geriatrics, the FI-CGA and eFI-CGA have yet to be reviewed and gain widespread recognition in research and clinical contexts.

The objective of this scoping review is to examine how the FI-CGA, eCGA, and eFI-CGA have been developed, validated, and applied across various care settings, and to identify gaps and directions for future research.

METHODS

We conducted a scoping literature search of the MEDLINE and CINAHL databases to identify relevant studies describing the development, validation, and use of the FI-CGA, eCGA, and eFI-CGA. Although no formal protocol was developed or registered, the review was conducted and reported in accordance with established PRISMA-ScR guidelines for scoping reviews (https://www.equator-network.org/reporting-guidelines/prisma-scr/). We retrieved original research and review articles published in peer-reviewed journals in English since 2004 when the first FI-CGA paper was published. Last updated on July 1, 2025, the search strategy combined keywords and Medical Subject Headings (MeSH) using Boolean search strings with a truncation symbol "*" to capture word variations: ("frail" OR "deficit accumulation") AND ("index" OR "FI" OR "risk index" OR "RI") AND ("old" OR "aged" OR "geriatric" OR "elderly" OR "senior" OR "patient") AND "comprehensive geriatric assessment" OR "CGA" OR "electronic comprehensive geriatric assessment" OR "eCGA" OR "electronic health record" OR "EHR" OR "electronic medical record" OR "EMR" OR "clinical frailty scale" OR "CFS" OR "electronic frailty index" OR "eFI" OR "FI-CGA" OR "eFI-CGA") AND ("primary" OR "assisted" OR "acute" OR "hospital" OR "emerg" OR "long-term" OR "home" OR "physician" OR "nurse" OR "healthcare" OR "care setting").

Titles and abstracts were screened independently by two reviewers. Studies were excluded if not published in English or in peer-reviewed journals, or not original research or review articles. Each of the 98 remaining journal publications underwent full-text evaluation for relevance to the review topics by the same reviewers. Discrepancies were resolved through discussions, with consultation of a third reviewer when necessary. To ensure comprehensiveness, references from the selected articles were also assessed for additional relevant publications.

Through full-text review of each included study, we extracted the following data items: author and year, geographical region, study purpose and design, care setting, sample size and characteristics, frailty assessment tool used, outcomes assessed (e.g., mortality, hospitalization, functional decline), follow-up period, and key findings relevant to frailty measurement and management. Data from each included full-text study were charted independently by two reviewers using a pre-designed data charting form that captured the predefined data items. Discrepancies were resolved through discussion among the reviewers.

Studies were categorized by review theme (e.g., FI-CGA, eCGA, eFI-CGA) and organized according to the extracted data items. Any articles related to more than one theme were discussed under the higher-order theme. Studies were further summarized using figures that illustrated publication trends over time, as well as mapping by care setting, geological region, and sample size.

RESULTS

Final selection yielded 38 original research articles, including 24 on FI-CGA and 14 on eCGA/eFI-CGA. Table 1 summarizes these studies by review theme, with extracted data items organized in chronological order within each theme subhead and corresponding reference citations indicated. Most studies focused on participants aged 65 years and older. Over the past two decades, the FI-CGA has been validated across geriatric, hospital, and home/primary care settings worldwide, and has served as a benchmark for other frailty screening and assessment tools (Table 1A, B; Figures 1–2). Comparisons with alternative frailty measures in relation to clinical outcomes continue. Since the first digitalization of the CGA in the late 2000s, the CGA has been implemented on online platforms and within EHR systems to facilitate frailty care, leading to the development of the eFI-CGA (Figure 1). While early work focused primarily on geriatric care, interest in CGA digitalization has expanded to primary and integrated care settings in Canada, Australia, the United States, and beyond. However, most emerging eFI-CGA studies remain limited by small sample sizes, restricting the evidence on effectiveness (Figure 2).

FI-CGA Initiation

A Canadian research group first developed the FI-CGA by combining FI-defined deficits collected in a standard CGA form of 12 domains (Appendix 1). These domains included: Medical (chronic diseases, acute illnesses); Function (activities of daily living [ADLs] and instrumental ADLs [IADLs]); Cognition (cognitive impairment); Psychological health (depression, anxiety); Medications; Nutrition; Social, environmental, and quality-of-life factors (support systems, living conditions). The FI-CGA summarizes the 72 components from these domains in a single summary score.[26,27]

The FI-CGA's predictive validity was assessed against mortality, institutionalization, and functional decline; construct validity compared it with other frailty measures. Validated in a randomized controlled trial, it was a valid, reliable, and practical tool for stratifying outcome risks.[26] Its utility was further confirmed in a longitudinal population secondary analysis, demonstrating its feasibility for quantifying frailty using routinely collected data.[27]

Those FI-CGA scores were calculated as the proportion of CGA deficits present, with each deficit coded as "1" (present) or "0" (absent).[26,27] Creating an FI-CGA for both prospective and retrospective data was later standardized in two publications.[25,28] More recent FI methodology developments suggest that retaining the original discrete coding of input variables (rather than binary coding) can improve frailty accuracy and precision.[29]

FI-CGA Validation

Since its introduction, researchers from multiple countries validated the FI-CGA in acute hospital care settings, and continued to examine the prognostic validity of individual CGA domains and as a summative count.[30,31] Studies evaluated its utility for predicting adverse outcomes such as mortality, prolonged hospital length of stay (LoS), non-home discharge, postoperative complications, and functional decline in inpatients with various geriatric conditions.

A prospective hospital cohort study showed that higher baseline FI-CGA scores were seen in patients who died, had longer hospital stays, or were discharged to long-term care facilities.[32] Other investigations used retrospective datasets, including the National Hip Fracture Database (NHFD), interRAI Acute Care (AC), and routine medical records.[33–35] Krishnan *et al*.[33] reported that the combined FI-CGA score was a more reliable predictor of adverse outcomes—including mortality, LoS, and discharge destination—than individual CGA components. Hubbard *et al*.[34] identified a threshold of FI-CGA <0.40 that discriminated inpatients unlikely to experience severe in-hospital events such as falls, delirium, pressure ulcers, and death, supporting its use in clinical decision-making. Kim *et al*.[35] found that the FI-CGA provided greater prognostic value for mortality and non-home discharge risks in older patients with atrial fibrillation and complemented other risk scores.

The FI-CGA has also been applied to home-dwelling older adults with primary care. Burn *et al*.[36] used an FI-CGA derived from a large interRAI Home Care (HC) dataset to predict five-year mortality and long-term care (LTC) admission: patients with baseline FI-CGA <0.1 were more likely to remain alive and in their own home than those with FI-CGA >0.5.

Collectively, these studies support integrating frailty as graded by the FI-CGA into clinical practice to identify individuals at high risk of adverse outcomes, thereby enabling targeted interventions, care planning, and resource allocation. The CARE-FI study provided further evidence that for patient-reported FI-CGA to predict adverse outcomes in older adults with gastrointestinal malignancies.[37]

FI-CGA as a Benchmark

The FI-CGA has served as a benchmark in developing/validating other frailty measures. Goldstein *et al*.[38] compared the FI-CGA with a simplified CP-FI-CGA, designed for care partners (families and community care teams) in urgent situations.

A cross-sectional validation of the CAN (Care Assessment Need) score, based on EHR data, used a 40-item FI-CGA as reference. There, automating frailty screening in primary care EHR systems is feasible.[39] Abbasi *et al*.[40] reported the convergent validity of an EMR-derived eFI against the FI-CGA, to be strong (r=0.72), supporting their =utility in identifying frailty in primary care.

Liang *et al*.[41] showed strong correlation between a generic eFI and a manual FI-CGA in hospitalized inpatients, with both indices independently predicting adverse outcomes including prolonged LoS, mortality, and higher health-care costs with comparable performance.

The Clinical Frailty Scale (CFS), an established judgment-based frailty-screening tool introduced to summarize a CGA[42,43] and the five-item frailty phenotype

(FP)[6] have also been examined with the FI-CGA. Jung *et al*.[44] developed an electronic Short Physical Performance Battery (eSPPB) and showed its stronger correlation with the FI-CGA than chronological age. Jung *et al*.[45] validated the CFS against the FI-CGA and FP in geriatric outpatients. The CFS showed a stronger association with FI-CGA than did the FP.[45] DuMontier *et al*.[46] used both FI-CGA and CFS as reference standards to validate a veterans' frailty index (VA-FI) and found moderate associations between the VA-FI with each benchmark scale.

TABLE 1A (part 1 of 3).
Summary of studies on FI-CGA, eCGA, and eFI-CGA: list of studies under review[a]

Ref. #	*First Author (Yr)*	*Country/ Region*	*Purpose*	*Measure*	*Care Setting*	*Design*	*Follow-up*	*Sample Size*
				FI-CGA				
26	Jones MD (2004)	Canada	FI-CGA Establishment	FI-CGA	Community care (by mobile geriatric team)	Prospective cohort (randomized trial)	Three-month death and institutionalization	169
27	Jones MD (2005)	Canada	FI-CGA Establishment	FI-CGA; FI	Population-based care (communities, nursing homes, clinics, inpatients, outpatients)	Retrospective analysis (CSHA-2)	Five-year mortality and institutionalization	2,305
32	Evans SJ (2014)	USA	FI-CGA Validation	FI-CGA	Acute care hospital (inpatients)	Prospective cohort (observational)	30-day mortality, hospital LoS, and discharge destination	752
33	Krishnan M (2014)	UK	FI-CGA Validation	FI-CGA	Acute care hospital (hip fracture surgery)	Retrospective analysis (NHFD)	30-day mortality, post-operative complications, and hospital LoS	178
34	Hubbard R (2017)	Australia	FI-CGA Validation	FI-CGA	Acute care hospital (inpatients)	Retrospective analysis (InterRAI AC)	30-day hospital LoS, complications, discharge destination, mortality	1,418
35	Kim SW (2017)	South Korea	FI-CGA Validation	FI-CGA	Acute care tertiary hospital (atrial fibrillation)	Retrospective analysis (medical record data)	30-day cardiovascular and all-cause mortality	365
36	Burn R (2018)	New Zealand	FI-CGA Validation	FI-CGA	Primary care (home care)	Retrospective analysis (interRAI MDS-HC)	Five-year mortality and long-term care admission	5,586
37	Giri S (2023)	USA	FI-CGA Patient-reported Validation	CARE-FI	Post-acute care (medical oncology clinic)	Prospective registry	Six-month mortality and three-month post-therapy functional decline	589
38	Goldstein J (2015)	Canada	FI-CGA Benchmark	FI-CGA; CP-FI-CGA	Primary care (EMS or GAC)	Prospective cohort (observational)	18-month mortality	203
39	Ruiz JG (2018)	USA	FI-CGA Benchmark	CGA-FI; EHR-CAN	Primary care (veteran outpatients)	Cross-sectional	N/A	184
40	Abbasi M (2019)	Canada	FI-CGA Benchmark	FI-CGA; EMR-eFI	Primary care (SCH)	Cross-sectional	N/A	85
41	Liang YD (2021)	China	FI-CGA Benchmark	CGA-FI; EHR-eFI	Acute hospital care (inpatients)	Prospective cohort (observational)	30-day hospital death, LoS, and care costs	685
44	Jung HW (2020)	South Korea	FI-CGA Benchmark	CGA-FI; eSPPB	Post-acute care (geriatric outpatients)	Cross-sectional	NA	117
45	Jung HW (2021)	South Korea	FI-CGA Benchmark	CGA-FI; CFS; FP	Community care (ambulatory outpatients)	Cross-sectional	N/A	123
46	DuMontier C (2023)	USA	FI-CGA Benchmark	CGA-FI; CFS; VA-FI	Veterans care (inpatients or outpatients)	Cross-sectional	N/A	132

[a]See Appendix 1 for abbreviations.

TABLE 1A (part 2 of 3).
Summary of studies on FI-CGA, eCGA, and eFI-CGA: list of studies under review[a]

Ref. #	*First Author (Yr)*	*Country/ Region*	*Purpose*	*Measure*	*Care Setting*	*Design*	*Follow-up*	*Sample Size*
				FI-CGA *(continued)*				
47	Pilotto A (2012)	Italy	FI-CGA Prognostic Comparison	FI-CGA, MPI, FI-CD, FI-SOF	Acute hospital care (geriatric inpatients)	Prospective cohort (observational)	One-month and one-year mortality	2,033
48	Ritt M (2016)	Germany	FI-CGA Prognostic Comparison	FI-CGA-10D; FI-CGA-10D+CM; FI-CGA-MIHD	Acute hospital care (geriatric inpatients)	Prospective cohort (observational)	Six-month mortality, hospital re-admission, and falls	307
49	Ritt M (2016)	Germany	FI-CGA Prognostic Comparison	FI-CGA; CFS; FI; FP; CSHA-RBFD	Acute hospital care (geriatric inpatients)	Prospective cohort (observational)	One-year mortality	307
50	Nishijima TF (2021)	Japan	FI-CGA Prognostic Comparison	FI-CGA-10, CFS; FI	Acute hospital care (geriatric oncology patients)	Prospective cohort (observational)	Five-year mortality	540
51	Stuck AK (2022)	Switzer-land	CFS Prognostic Comparison	CFS; FI; FP	Post-acute care (rehab inpatients)	Prospective cohort (observational)	Non-home discharge, acute-care readmission, functional decline, prolonged rehab LoS	207
52	Zeng M (2025)	China	FI-CGA Prognostic Comparison	CGA-FI; CFS; FP; FRAIL; EFS	Acute care hospital (inpatients)	Prospective cohort (observational)	Five-year mortality	917
53	Ritt M (2017)	Germany	FI-CGA Relationship	FI-CGA; CFS; FI; FP	Acute hospital care (geriatric inpatients)	Cross-sectional	N/A	123
54	Schülein S (2020)	Germany	FI-CGA Relationship	FI-CGA; CFS; FI; FP	Acute hospital care (geriatric inpatients)	Cross-sectional	N/A	123
55	Patel J (2024)	United States	FI-CGA Relationship	CGA rating, FP	Acute hospital care (renal disease inpatients)	Cross-sectional (retrospective)	NA	203
				eCGA				
67	Gray L (2008)	Australia	Online CGA Establishment	Online CGA	Acute hospital care (interRAI AC)	Implementation feasibility	N/A	N/A
68	Gray L (2012)	Australia	Online CGA Validation	Online CGA vs. CGA	Acute care hospital (geriatric consultation)	Implementation reliability	N/A	166
69	Martin-Khan MG (2016)	Australia	Online CGA Validation	Online CGA vs. CGA	Acute care hospital (geriatric consultation)	Randomized control trial	N/A	166
70	Martin-Khan MG (2017)	Australia	Online CGA Validation	Online CGA vs. CGA	Acute care hospital (geriatric consultation)	Randomized control trial	N/A	166
72	Tsubata Y (2019)	Japan	EMR CGA Validation	EMR CGA scores	Acute care hospital (geriatric oncology)	Prospective clinical trial	N/A	100
73	Chu WM (2023)	Taiwan	EHR CGA Validation	Combined CGA and EHR items	Acute hospital care (geriatric inpatients)	Prospective cohort (observational)	Falls	1,101
74	Chu WM (2023)	Taiwan	EHR CGA Validation	Combined CGA and EHR items	Acute hospital care (geriatric inpatients)	Prospective cohort (observational)	Physical functions	1,755

[a]See Appendix 1 for abbreviations.

TABLE 1A (part 3 of 3).
Summary of studies on FI-CGA, eCGA, and eFI-CGA: list of studies under review[a]

Ref. #	*First Author (Yr)*	*Country/ Region*	*Purpose*	*Measure*	*Care Setting*	*Design*	*Follow-up*	*Sample Size*
				eFI-CGA *(continued)*				
77	Cooper L (2022)	USA	eFI-CGA Establishment	EHR eFI-CGA	Acute hospital care (geriatric patients)	Quality improvement (qualitative)	N/A	N/A
78	Garm A (2017)	Canada	eFI-CGA Establishment	EMR eCGA, eFI-CGA	Primary care (CARES model)	Quality improvement (qualitative)	N/A	N/A
79	Theou O (2017)	Canada	eFI-CGA Establishment	EMR eCGA, eFI-CGA, CFS	Primary care (CARES model)	Prospective cohort	Six-month reassessment	51
80	Sepehri K (2020)	Canada	eFI-CGA Implementation	Standalone eCGA; eFI-CGA	Integrated care	Quality improvement (software development)	N/A	57
81	Sepehri K (2022)	Canada	eFI-CGA Implementation	Standalone eCGA; eFI-CGA	Integrated care	Quality improvement (software development)	N/A	80
82	Team efi-cga.ca (2025)	Canada	eFI-CGA Implementation	Web-based eCGA; eFI-CGA web app	Integrated care	Quality improvement (software development)	N/A	36
83	Attwood D (2024)	UK	iCGA Establishment / Validation	i-CGA	Primary care (GP-led LTC delivery)	Quality improvement (quasi-experimental)	One-year CGA, ACP, mortality, hospital admission/stay	296

[a]See Appendix 1 for abbreviations.

TABLE 1B (part 1 of 3).
Summary of studies on FI-CGA, eCGA, and eFI-CGA: key findings of the studies under review[a]

Ref. #	*First Author (Yr)*	*Relevant Key Findings*
		FI-CGA
26	Jones MD (2004)	**(a)** Strong intra-rater reliability of the FI-CGA; **(b)** Higher FI-CGA correlations with worse functional and mental statuses; **(c)** Increased death/ institution risks in individuals with moderate (HR= 1.02) and severe (HR = 1.06) levels of the FI-CGA.
27	Jones MD (2005)	**(a)** Good convergent validity of the FI-CGA, shown by a strong correlation with the generic FI (r = 0.76); **(b)** HR was 1.23 for mortality and 1.20 for institutionalization with each 0.01 increment of FI-CGA.
32	Evans SJ (2014)	**(a)** Patients who died had higher mean FI-CGA scores at admission, with HR = 1.05 for each 0.01 FI-CGA increment; **(b)** home-discharged patients had lower baseline mean FI-CGA than LTC home discharged ones (0.38 ± 0.11 vs. 0.49 ± 0.11); **(c)** Higher FI-CGA values were linked to longer LoS.
33	Krishnan M (2014)	**(a)** FI-CGA strongly predicted mortality: 17.2% for high FI-CGA group vs. 3.4% for the intermediate FI-CGA group; **(b)** mean LoS was longer for the high vs. intermediate FI-CGA group (68 vs. 36 days); **(c)** Patients in the low FI-CGA group 100% returned home.
34	Hubbard R (2017)	**(a)** FI-CGA predicted multiple adverse outcomes (prolonged LoS, LTC discharge, falls, delirium, pressure ulcer, and in-hospital mortality); **(b)** Best predictive cut-point was FI-CGA = 0.40
35	Kim SW (2017)	**(a)** FI-CGA was correlated with clinical prognostic risk scores; **(b)** FI-CGA independently predicted both cardiovascular and all-cause mortality (HR = 4.60).

[a]See Appendix 1 for abbreviations.

TABLE 1B (part 2 of 3).
Summary of studies on FI-CGA, eCGA, and eFI-CGA: key findings of the studies under review[a]

Ref. #	*First Author (Yr)*	*Relevant Key Findings*
		FI-CGA *(conintued)*
36	Burn R (2018)	**(a)** Individuals with a lower baseline FI-CGA (<0.10) were less likely to die compared to those with a higher FI-CGA (≥0.50). **(b)** Individuals with a lower baseline FI-CGA (<0.10) were more likely to be home living, compared to those with a higher FI-CGA (≥0.50).
37	Giri S (2023)	**(a)** Frail patients were associated with poorer overall survival (HR = 1.83 for mortality vs. robust patients); **(b)** 3.01 times higher odds of functional decline; **(c)** 3.65 times higher odds of experiencing grade ≥3 non-hematologic toxicities.
38	Goldstein J (2015)	**(a)** The CP-FI-CGA correlated well with the standard FI-CGA (r = 0.70); **(b)** The scores differed between patients who died and survived; **(c)** Each 0.01 score increment increased the risk of death (HR = 1.04).
39	Ruiz JG (2018)	**(a)** CGA-FI based diagnostic accuracy of CAN was 0.74; **(b)** Frailty screening tool automation using existing EHR data in primary care was feasible.
40	Abbasi M (2019)	**(a)** Strong correlations between eFI and FI-CGA (r = 0.72); **(b)** Significant linear regression between eFI and FI-CGA scores (r = 0.51); **(c)** Correlations of the two frailty measures with age, chronic conditions and medication numbers.
41	Liang YD (2021)	**(a)** A strong correlation between eFI and CGA-FI (r = 0.72; **(b)** At 0.25 GCA-FI and eFI ≥ 0.25 had 65% sensitivity and 89% specificity; **(c)** eFI was associated with long hospital stay, various healthcare costs, and in hospital mortality.
44	Jung HW (2020)	**(a)** Defined the eSPPB based on cumulative deficits; **(b)** In a validation cohort, the eSPPB measure was positively correlated with the FI-CGA (p <.001), stronger than chronological age.
45	Jung HW (2021)	**(a)** CFS scores positively correlated with CGA-FI (0.78) and FP (0.67) scores; **(b)** The C-statistics for the CFS to classify CGA-FI-based and FP-based frailty evaluation was 0.91 and 0.83 respectively.
46	DuMontier C (2023)	**(a)** The VA-FI scores were moderately correlated with the CGA-FI (r = 0.45) and fit by linear regression; **(b)** A higher VA-FI was associated with higher CFS category with ordinal regression OR = 1.69.
47	Pilotto A (2012)	**(a)** All frailty instruments were significantly associated with shorter and longer-term mortality; **(b)** AUC of ROC for one-month mortality: FI-SOF (0.66), FI-CGA (0.68), FI-CD (0.71), MPI (0.79); **(c)** ROC for one-year mortality: FI-SOF (0.64), FI-CGA (0.68), FI-CD (0.69), MPI (0.75).
48	Ritt M (2016)	**(a)** All the FI-CGA versions predicted mortality at ≥0.25; **(b)** The AUC was higher using FI-CGA-MIHD and FI-CM than simplified FI-CGA-10D; **(c)** The AUC was higher with the continuous than categorical measure of each version; **(d)** The measures did not significantly predict a non-mortality outcome.
49	Ritt M (2016)	**(a)** All the five instruments discriminated patients who died vs. survived with varied AUC of ROC: CFS (0.73), FI and FI-CGA (0.72), CSHA-RBFD (0.68), and FP (0.67); **(b)** Performance of CFS was higher than the others; FI and FI-CGA were superior to FP and CHSA-RBFD and FP.
50	Nishijima TF (2021)	**(a)** FI-CGA-10 was correlated with CFS (r = 0.83), FI (r = 0.67) and function score (r = 0.77); **(b)** FI-CGA-10 was associated with cognitive and functional impairments and comorbidity burden. **(c)** Frailer patients identified by FI-CGA-10 and other scores had higher probability of death.
51	Stuck AK (2022)	**(a)** All measures (categorized with a pre-set cut point) showed acceptable discriminatory accuracy for each outcome; **(b)** The CFS was particularly predictive for short-term rehabilitation outcomes; **(c)** predictive ability varied among the measures for different outcomes.
52	Zeng M (2025)	**(a)** Frail patients had higher mortality risk based on all measures; **(b)** Hazard ratios ranged from highest to lowest were FI-CGA, FRAIL, FP, CFS, and EFS; **(c)** AUCs for the ROC ranged from highest with FI-CGA (0.72) to lowest with FRAIL (0.67), with similar values for CFS, FP, and EFS.
53	Ritt M (2017)	**(a)** The various spatial-temporal and 3D gait characteristics were independently associated with frailty severity as assessed using different measures; **(b)** The FI-CGA and FI showed stronger correlations with complex gait impairment parameters than CFS and FP.
54	Schülein S (2020)	**(a)** Various static equilibrium parameters of postural sway measures were independently associated with frailty severity as assessed using different measures. **(b)** Higher correlations of the FI-CGA with a broad range of functional declines with balance and postural control.
55	Patel J (2024)	**(a)** A higher overall CGA rating was associated with better cognitive and physical health; **(b)** A high CGA rating increased the likelihood of kidney transplant waitlist.

[a]See Appendix 1 for abbreviations.

TABLE 1B (part 3 of 3).
Summary of studies on FI-CGA, eCGA, and eFI-CGA: key findings of the studies under review[a]

Ref. #	*First Author (Yr)*	*Relevant Key Findings*
		eCGA
67	Gray L (2008)	**(a)** Described an online method incorporating the InterRAI-AC for remote review the CGA; **(b)** Preliminary evaluations showed safety (i.e., recommendations made via the online platform did not compromise patient care) and clinician acceptance (i.e., nurses and geriatricians were appeal of the digital platform and its utilization).
68	Gray L (2012)	**(a)** Described a protocol for comparing paired live/online (n = 85) and face/face (n = 81) CGA assessments; **(b)** Triage decisions were highly compatible between the two methods (weighted Kappa = 0.64 vs. 0.71); **(c)** An in-person follow-up was still required for complex cases.
69	Martin-Khan MG (2016)	**(a)** The online CGA was more time-efficient than traditional in-person consultations (10 minutes vs. 26 minutes) for reaching geriatric triage decision; **(b)** Online assessment showed comparable reliability to traditional face/face methods.
70	Martin-Khan MG (2017)	**(a)** Geriatric triage decision agreement rate was 88% between live-live and 91% between live-online; **(b)** Comparable outcomes in both groups.
72	Tsubata Y (2019)	**(a)** Incorporating CGA measures into EMR was feasible; **(b)** EMR CGA measures distinguished non-frail vulnerable/frail older patients with lung cancer; **(c)** Vulnerable/frail patients has a higher risk of chemotherapy toxicity and treatment discontinuation.
73	Chu WM (2023)	**(a)** CGA items in the HER were used to predict the risk of falls; **(b)** All four models significantly predicted outcome; **(c)** The highest accuracy achieved in predicting incidences of falls in the validation dataset was 73%.
74	Chu WM (2023)	**(a)** CGA items in the EHR were used to predict physical function upon discharge using machine leaning algorithms; **(b)** Combining CGA and EHR data yielded high accurate for up to 87% for predicting continued physical function scores, 94% for classification preserving vs. declining, and 98% for discrimination; **(c)** CGA machine learning held potential for improving decision-making.
		eFI-CGA
77	Cooper L (2022)	**(a)** Described an iterative process to build a bedside FI-CGA for geriatric co-management; **(b)** Incorporated the FI-CGA into the EHR for access across care services; **(c)** Increased the number of patients with FI-CGA; (d) Clinicians reported beneficial with adaptability.
78	Garm A (2017)	**(a)** Introduced a novel primary care model (CARES) incorporating CGA and community coaching; **(b)** Introduced the effort to implement the eCGA onto the EMR system for early frailty assessment and frailty-informed decision-making at the first point of care.
79	Theou O (2017)	**(a)** Demonstrated an average of 11% (or 1.8 deficits) reduction in FI-CGA over six months; **(b)** 61% of the participants showed an improvement in the FI-CGA deficits, compared to 38% showing a 1-point CFS improvement; **(c)** Vulnerable/frail participants were more responsive to CARES intervention.
80	Sepehri K (2020)	**(a)** Introduced the implementation and functionality of the eCGA / eFI-CGA software version 1.0; **(b)** Described the algorithms and tests of the eFI-CGA automation; **(c)** Illustrated the usage of the eCGA / eFI-CGA tool as standalone software on a personal computer.
81	Sepehri K (2022)	**(a)** Introduced the updated functions in the Standalone eCGA / eFI-CGA version 3.0; **(b)** Described use of the updated features to better support virtual assessments of frailty and care management in the new era facing/posting the COVID-19 pandemic.
82	Team efi-cga.ca (2025)	**(a)** Described the development and implementation of the web-based eCGA and eFI-CGA software (i.e., the eFI-CGA web app); **(b)** Described the software functions supporting clinical assessments and potential data sharing for large-scale and integrated-care for populations.
83	Attwood D (2024)	**(a)** The i-CGA was incorporated into routine primary care; **(b)** The i-CGA led to more advanced care planning and less unplanned hospital stay; **(c)** The i-CGA was associated with reduced mortality in severely frailty: from 77% to 55%.

[a]See Appendix 1 for abbreviations.

Some studies refer to the FI-CGA interchangeably as "CGA-FI" (see Table 1A, B). These variations reflect adaptations of the FI-CGA tailored to specific cohorts and the precise CGA items used. Despite this variation in item composition or coding (e.g., dichotomous vs. discrete), these models consistently embody the cumulative-deficit and CGA-based approach to frailty measurement.[8] Maintaining a consistent naming convention (FI-CGA) in this review promotes clarity and coherence.

FI-CGA Compared with Other Scores

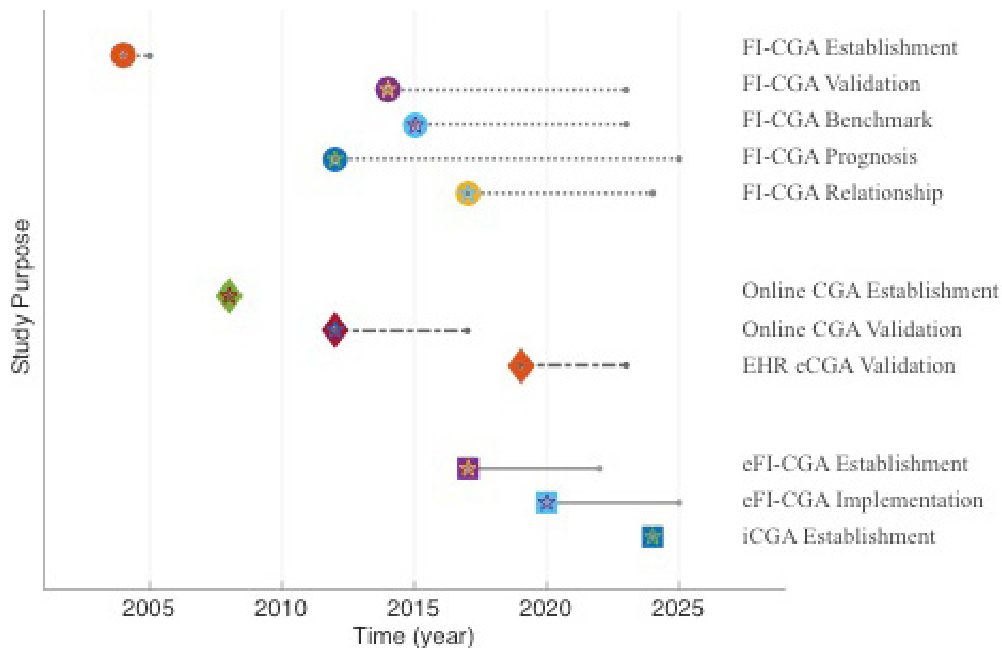
Several prospective cohort studies compared the prognostic value of the FI-CGA and CFS with other frailty assessments or functional and diagnostic markers in geriatric inpatients, focusing on mortality and related outcomes.[47-52] In parallel, a few cross-sectional studies have assessed how these measures correlate with other frailty measures.[53-55]

Some instruments share a conceptual basis with the FI-CGA by incorporating CGA-derived items—for example, many versions of the Multidimensional Prognostic Index (MPI), FI-CGA-10D, and FI-CGA-10D+CM. Others are not CGA-specific, such as the generic deficit-accumulation tools (FI-CD, FI-SOF) and rule-based frailty scales (CSHA-RBFD), Edmonton Frail Scale (EFS), Fried Phenotype (FP), and FRAIL. Comparative evaluations between the FI-CGA and these methods are reviewed below; further details are available elsewhere.[6,8,25-27,42,43,56–66]

In a prospective study of how four indices predicted one-month and one-year all-cause mortality in geriatric inpatients,[47] all methods showed significant prognostic accuracy, with the MPI achieving the highest AUC (0.79 for one month, 0.75 for one year). An evaluation of FI-CGA variants compared CGA item composition: a standard version, using continuous, individual health deficits (MIHD) and simplified domain-based versions (FI-CGA-10D and FI-CGA-10D+CM).[48] The standard FI-CGA demonstrated superior predictive accuracy for six-month mortality. The same group separately compared FI-CGA, CFS, generic FI, FP, and CSHA-RBFD for one-year mortality prediction, finding FI-CGA, CFS, and FI outperformed FP and CSHA-RBFD.[60] Studies by Nishijima *et al*.[50] in geriatric oncology patients and Stuck *et al*.[51] in patients with post acute rehabilitation also reported strong correlation and significant prognostic values for FI-CGA-10 and CFS, respectively, for longer and shorter outcomes. In the recent longitudinal analysis, Zeng *et al*.[52] examined FI-CGA, CFS, FP, FRAIL, and EFS for predicting five-year mortality. All scales identified individuals at increased mortality risk; however, the CFS was the preferred screening tool, while the FI-CGA yielded the highest predictive accuracy (AUC=0.72). Cross-sectional research also shows the FI-CGA's use in capturing functional decline. For example, one gait analysis study reported stronger correlations between gait impairment parameters and both FI-CGA and FI, compared with CFS and FP.[53] A related balance study in 2020 found that greater postural instability was consistently detected by FI-CGA, which captured a broader spectrum of functional decline than did other frailty measures.[54] Lastly, Patel *et al*.[55] related CGA rating with cognitive and physical health, offering insight for selecting older adults for kidney transplantation.

eCGA Online

In 2008, Gray and Wootton[67] in Australia published on digitally transforming the paper-based CGA into an online format, demonstrating a proof-of-concept for use via an Internet platform. Using the InterRAI Acute Care tool, nurses collected patient assessment data online and uploaded it for remote review. This enabled geriatricians to interact with nurses

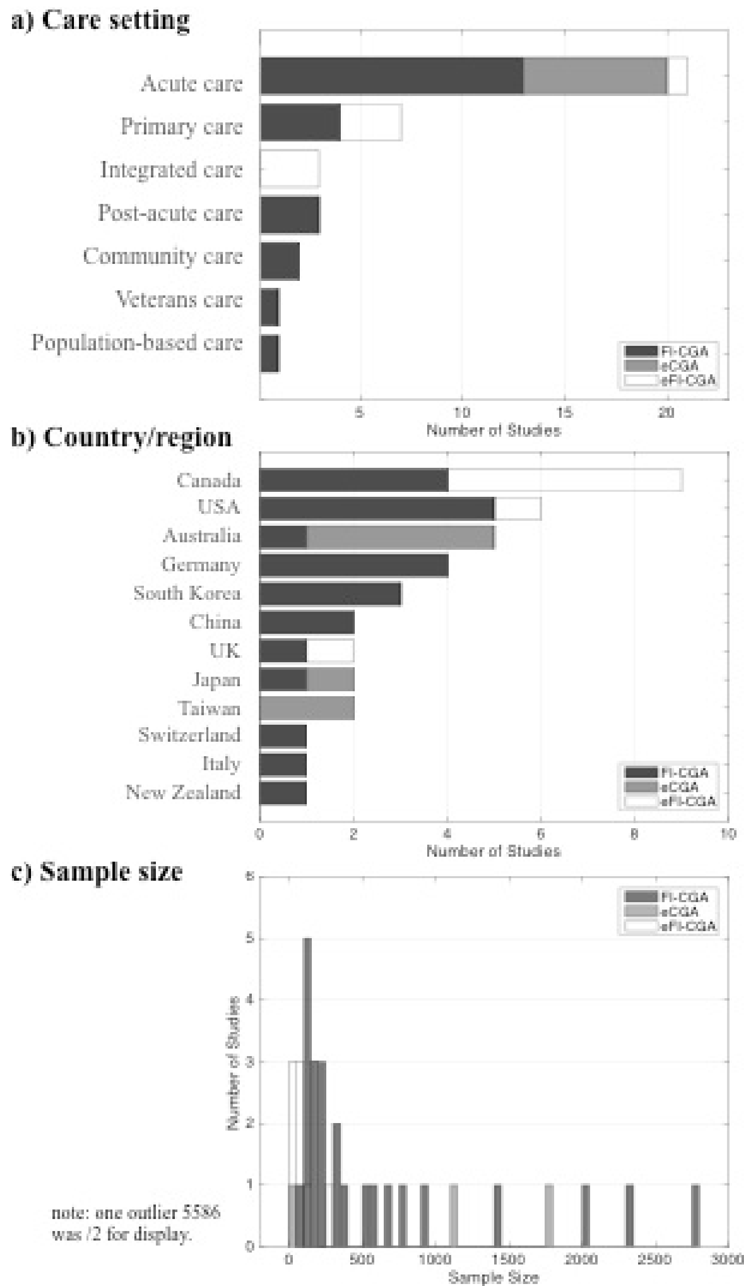


Symbols indication the time of study initiation and lines indicate the duration the studies continued: Circles show FI-CGA studies; Diamonds show eCGA studies; Squares show eFI-CGA studies.
CGA = Comprehensive Geriatric Assessment; FI-CGA = Frailty Index based on CGA; eCGA = electronic CGA, EHR = electronic Health Records; eFI-CGA = electronic Frailty Index base on eCGA.

FIGURE 1. Summary of studies over time by purpose

without physically seeing the patient, generate structured reports, available to authorized clinicians, both within and outside the hospital. Workflow evaluations and clinician feedback suggested that the system was safe and acceptable for remote consultation, supplementing traditional geriatric care.[67]

Subsequently, this group conducted validation studies comparing the online CGA with traditional face-to-face CGA for acute care patients requiring geriatric consultation.[68-70] They assessed whether remote review of online CGA data could support triage decisions, and reported substantial concordance with face-to-face clinical judgment.[68] A time-efficiency analysis showed that online triage decisions took, on average, 62% less time than face-to-face assessment.[69] In 2017, the group's trial data indicated high agreement between face/online and face/face CGA for key outcomes, including permanent residential care referral, geriatric syndrome detection, and medication recommendations, demonstrating noninferiority of the online method.[70]



Based on care setting (a), country/region (b), and sample size (c). CGA = Comprehensive Geriatric Assessment; FI-CGA = Frailty Index based on CGA; eCGA = electronic CGA; eFI-CGA = electronic Frailty Index base on eCGA.

FIGURE 2. Summary of the numbers of studies in results

These studies highlight the potential of digital platforms for CGA, particularly where traditional CGA is difficult to implement consistently. Still, there is a lack of evidence from large-scale clinical trials or long-term follow-up studies evaluating patient outcomes using this online CGA model.

eCGA in EHR

The CGA has been embedded directly into EHR or EMR systems. The terminology varies internationally. In the United States, "EMR" typically refers to a digital version of a paper chart, while "EHR" refers to a broader, interoperable record that can be shared across settings. In Australia and Canada, the two terms are often used interchangeably, with EMR more common among clinicians. In China, EMRs are complete clinical information resources created by hospitals and serve as the primary data source for EHRs. It appears that both systems can support structured CGA documentation and facilitate its use in clinical decision-making.[71]

Tsubata *et al*.[72] integrated a structured CGA module into the hospital EMR to assess older patients newly diagnosed with lung cancer and automatically classify them as fit, vulnerable, or frail. The study demonstrated the feasibility of using EMR-based CGA for real-time classification to identify chemotherapy risks associated with frailty, supporting treatment decision-making, albeit with limited grades of frailty.

In 2022, Chu *et al*.[73] combined CGA items stored in the EHR with routinely collected clinical data (e.g., demographics, diagnoses, medications, laboratory results) to develop machine-learning models predicting fall risk. Among four tested algorithms, XGBoost achieved the best performance, with 73% accuracy in the validation dataset. In 2023, this group used CGA plus EHR data to predict physical function at hospital discharge, comparing three machine-learning models.[74] The eCGA showed excellent predictive capacity, with accuracy rates of 98% for discrimination, 94% for classification, and 87% for prediction in the validation dataset—superior to performance reported for eFI without CGA in other studies, though based on different populations.[75,76]

While some studies were not exclusively frailty-focused, they illustrate the potential of integrating CGA into EHR/EMR systems to enhance predictive analytics and clinical decision-making. As AI matures, this might be useful, although concerns about bias remain.

eFI-CGA in Acute Care

Cooper *et al*.[77] reported a quality-improvement initiative to build a bedside FI-CGA for use in acute care hospitals, where comprehensive geriatric input is often needed. An FI-CGA, incorporated into the EHR, enabled access across care services and supported geriatric management. The successful integration of a digitalized CGA-based FI into routine practice highlighted that the tool not only graded frailty, but also provided a uniform and efficient way to communicate complex geriatric concepts, such as vulnerability and reserve, among multidisciplinary teams. In these ways, eFI-CGA could enhance team communication and inform clinical decision-making in hospital care of older adults, but further validation is needed.[77]

eFI-CGA in Primary and Integrated Care

Building on the eFI approach for large-scale frailty screening, attention has turned towards enhancing frailty assessment and management at the first point of care. Garm *et al*. described a novel primary care model, Community Actions and Resources Empowering Seniors (CARES),[78] a Canadian interprovincial collaboration between the authors' teams. By helping seniors age well through upstream interventions intended, the aim is to reduce the downstream impact of frailty on acute care and emergency resources. CARES integrates standard care with telephone-based wellness coaching provided by trained community volunteers supported by the digitization of CGA into the EMR to enable routine, periodic geriatric assessments. Wellness plans were individualized, focusing on exercise, socialization, and nutrition.[78] At six months, frailty-informed multidisciplinary care plans in 51 community-dwelling older adults were associated with self-reported frailty level improvement in 61% of participants, outperforming the CFS in sensitivity.[79] The pilot work supported CGA integration into EMRs for potential real-time use in primary care.

Following the initial results, efforts progressed toward developing from CGA (see Appendix S1-A in the supplementary material) to eCGA and eFI-CGA solutions for EMR-embedded (see Appendix S1-B in the supplementary material), standalone (see Appendix S1-C in the supplementary material), and web-based (see Appendix S1-D in the supplementary material) developments. Sepehri *et al*.[80] introduced a standalone eFI-CGA tool that automated FI-CGA calculation, adapted from a widely used paper CGA form, and achieved 100% scoring accuracy. The tool ensured secure data handling and allowed clinicians to record follow-up actions for care planning. With the COVID-19 pandemic, the software was updated with a search function for resuming disrupted assessments and an improved interface for care management documentation, supporting virtual and in-person assessments.[81] The eFI-CGA web application (Fraser Health Authority Surrey, BC / Nova Scotia Health Authority, Halifax Nova Scotia https://efi-cga.ca) was launched to promote widespread adoption, continuity of care, and large-scale analyses.[82] A version for clinical use was offered (https://clinical.efi-cga.ca), enabling local data management and enhanced confidentiality for health-care providers.[82]

In another EHR-embedded protocol, the IT-assisted CGA (i-CGA),[83] like the eCGA, combined the traditional multidisciplinary FI-CGA framework with EHR integration. The system allowed review of prior CGA entries, domain-specific remarks, medication review, and streamlined care planning through reminders, standardized documentation, medication lists, and information on hospital or long-term care availability. In a quasi-experimental quality-improvement study, i-CGA use was associated with reduced mortality in severely frail residents.[83] While the study did not compute an FI score, the richness of CGA data feasibly allows automating an eFI-CGA down the line.

DISCUSSION

This scoping review examined the development, validation, and application of the FI-CGA, eCGA, and eFI-CGA tools in frailty care. The findings highlight the role of these tools in frailty assessment and management, while suggesting opportunities for their further validation and application to enhance clinical decision-making. The review was limited to studies published in English and indexed in major medical databases, without quality assessment or meta-analysis. These limitations may have excluded relevant non-English publications and restricted cross-study comparisons.

Our review underscores several points. First, the FI-CGA, grounded in the cumulative deficit model[5-9] and encompassing multidisciplinary health-relevant factors assessed through the reference standard CGA,[21-24] provides a continuous, multi-domain measure of frailty with demonstrated predictive validity for important adverse outcomes. Since its introduction in 2004, the FI-CGA has been validated across hospital, primary care, and community settings, supporting both patient care and epidemiological research. The FI-CGA has also served as a benchmark for validating other frailty and risk assessment tools. Comparative studies generally indicate that the FI-CGA offers superior predictive performance, especially using the standard continuous score that allows more accurate grading of frailty, and capturing dose-responsive impacts.

Digital implementation of standard CGA forms streamlines its administration. Automation of CGA item-value coding and FI score calculation, and accelerated data collection and processing, while reducing human error, are each possible. Integrating structured eCGA and eFI-CGA tools into EHRs/EMRs enables wider deployment, particularly in primary and acute care settings where geriatric expertise may be limited.[84-86] During the eCGA session, documentation of findings, care needs, and available resources further supports individualized interventions and advanced care planning. This in turn can enhance care provider and recipient engagement in frailty identification.[87-89] Overall, the eCGA and eFI-CGA tools have the potential to enhance workflow efficiency, standardize data collection and frailty measurement, and enable earlier identification, risk stratification, and management of frailty, thereby allowing more geriatrics-informed care.

Growing interest in primary care implementation reflects this shift. Innovative models in communities and care homes across the United Kingdom, Canada, China, and elsewhere have demonstrated the feasibility of integrating frailty assessment into routine practice. These initiatives underscore substantial progress toward earlier detection, holistic care planning, and targeted interventions.

Much of the current evidence for the FI-CGA comes from single-site studies involving older adults aged 65+ years, whereas the eCGA and eFI-CGA tools, though now reaching implementation and feasibility successes in several sites, remain largely in the early stages of validation. Consequently, large-scale, multi-center, cross-setting validation involving diverse populations remains a critical gap. The proof of the effort is its impact on performance and output. One important focus must be on how effectively general practitioners, who typically do not receive formal CGA training, can apply the eCGA and eFI-CGA in frailty care. This underscores the need for rigorous reliability testing.[90]

Further research is also warranted to determine the extent to which the eFI-CGA can benefit the interpretability of frailty scores, particularly when based chiefly on administrative rather than clinical data. A better understanding of care needs rooted in the impairments recorded on the CGA and giving rise to frailty will provide clinical meaningful insights. Moreover, consensus on the optimal selection of eFI items, tailored to different care purposes and care settings, has yet to be established. In addition, even though FI allows precise risk stratifications (e.g., 0.01 FI increment), it has often been used to categorize individuals and no consensus exists on the cut-points for classifying frailty (e.g., frail vs. non-frail). Previous studies have applied thresholds ranging from 0.2 to 0.3 to define frail, non-frail, or pre-frail groups, depending on the population, the number and type of deficits included, and the intended use of the classification.[2,8] This underscores the ongoing need for context-specific validation of eFI thresholds to enable meaningful cross-study comparisons—a process for which standardization using eCGA-based assessments may be particularly beneficial. As studies mature to include people across the full spectrum of frailty, it will be important to move beyond simple dichotomization of this health state.

Taken together, the eCGA and eFI-CGA in older adult care beyond specialized geriatric clinics are compelling. Both have the potential to be useful tools in "geriatrizing" care approaches, and not only in primary care. They offer scalability without compromising quality, enabling timely, individualized interventions at the first point of contact and supporting a preventive, patient-centered, and standard frailty care. Already we can look to linking them with the FI-Lab, a frailty index based on routine laboratory tests.[5] As frailty becomes increasingly recognized as a common life stage that places a substantial burden on health and social care—particularly in supporting aging at home—broader, distributed care models will be essential.

CONCLUSION

The CGA-based frailty evaluation remains a cornerstone for effective management of frailty in older adults. The digital evolution provides a pathway toward more accessible, efficient standard, engaging care providers at the first points of contact. Large-scale, multi-center studies by countries willing to make the investments are essential to validate the diverse range of health scores across care settings and populations. We must also learn how to leverage innovative technologies that can promote healthy aging across the life course.

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CONFLICT OF INTEREST DISCLOSURES

We have read and understood the *Canadian Geriatrics Journal*'s policy on conflicts of interest disclosure and declare no conflict of interest with this work and its publication. The work cited here for the development of the eCGA and eFI-CGA is in the public domain.

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SUPPLEMENTARY MATERIALS

Supplemental material linked to the online version of the paper (https://doi.org/10.5770/cgj.29.804):

- **Appendix S1 A:** A Standard CGA Paper Form
- **Appendix S1 B:** EMR-embedded eCGA / eFI-CGA
- **Appendix S1 C:** EMR- Standalone eCGA / eFI-CGA
- **Appendix S1 D:** Web-based eCGA / eFI-CGA Homepage

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APPENDIX 1. List of abbreviations

3D: 3 dimensional
AC: Acute Care
ACP: Advanced Care Planning
ADL: Activities of Daily Living
ARC: Aged Residential Care
AUC: Area Under the Curve
CAN: Care Assessment Need
CARES: Community Actions and Resources Empowering Seniors
CARE-FI: Deficit accumulation index based on patient-reported geriatric assessment
CFS: Clinical Frailty Scale
CGA: Comprehensive Geriatric Assessment
eCGA: electronic Comprehensive Geriatric Assessment
CGA-FI: Comprehensive Geriatric Assessment based Frailty Index
i-CGA: Information technology-assisted Comprehensive Geriatric Assessment
CI: Confidence Interval
CP-FI-CGA: Care Partner-derived Frailty Index based on Comprehensive Geriatric Assessment
CSHA-2: Canadian Studies of Health and Aging 2nd wave
CSHA-RBFD: Canadian Studies of Health Rules-Based Frailty Definition
EFS: Edmonton Frailty Scale
HER: Electronic Health Records
EMR: Electronic Medical Records
EMS: Emergency Medical Services
FI: Frailty Index
FI-CGA: Frailty Index based on Comprehensive Geriatric Assessment
eFI: electronic Frailty Index
eFI-CGA: electronic Frailty Index based on Comprehensive Geriatric Assessment
FI-CD: Frailty Index based on the Cumulative Deficit Model
FI-CGA-10D: FI based on 10 CGA Domains
FI-CGA-10D+CM: FI-CGA based on 10 Domains plus Comorbidity Measures
FI-CGA-MIHD: FI-CGA of Multiple Individual Health Deficits
FRAIL: Fatigue, Resistance, Ambulation, Illnesses, Lost of weight
FI-SOF: Frailty Indexes - Study of Osteoporotic Fractures
FP: Frailty Phenotype
GAC: Geriatric Ambulatory Care
GP: General Practitioner
HAS
HC: Home Care
HR: Hazard Ratio
IADL: Instrumental Activities of Daily Living
InterRAI: International Resident Assessment Instrument
LoS: Length of Stay
MDS: Minimum Data Set
MFS: Multidimensional Frailty Score
MPI: Multidimensional Prognostic Index
N/A: Not Applicable
NHFD: National Hip Fracture Database
LTC: Long-Term Care
ROC: Receiver Operating Characteristic
SCH: Seniors' Community Hub
eSPPB: electronic Short Physical Performance Battery
VA-FI: Veterans Affairs Frailty Index