Section: General Medicine

Systematic Review

FRAILTY ASSESSMENT IN OLDER ADULTS: CURRENT TOOLS, CLINICAL APPLICATIONS, AND EMERGING PERSPECTIVES

Changala Praveen[1], Ellareddy Chinthala[2*]

[1]Assistant Professor, Department of General Medicine, TRR Institute of Medical Sciences Patancheru, Hyderabad, Telangana, India.
[2]Associate Professor, Department of General Medicine, Kamineni Institute of Medical Sciences , Narkatpalle, Telangana, India

Received : 10/06/2026
Received in revised form : 28/07/2026
Accepted : 13/08/2026

Keywords:
Frailty; Older adults; Geriatric assessment; Frailty assessment tools; Frailty phenotype; Frailty Index; Clinical Frailty Scale; Multidimensional frailty; Screening; Validity; Reliability.

*Corresponding Author:
Dr. Ellareddy Chinthala,
Email: dr llareddychinthala@gmail.com

DOI: 10.47009/jamp.2026.8.4.206

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (4); 1232-1239

ABSTRACT

Background: Frailty is a common geriatric syndrome characterized by reduced physiological reserve and increased vulnerability to adverse health outcomes. Early identification of frailty in older adults is important for risk stratification, individualized care planning, and prevention of functional decline. Several frailty assessment instruments have been developed; however, substantial differences exist in their conceptual frameworks, measurement properties, and clinical applicability. The objective is to systematically review the available evidence on frailty assessment tools used in older adults and evaluate their validity, reliability, feasibility, and clinical utility. **Materials and Methods:** A systematic literature search was conducted across major electronic databases, including PubMed/MEDLINE, Scopus, Web of Science, Embase, CINAHL, and the Cochrane Library. Studies involving adults aged 60 years or older that evaluated frailty assessment or screening instruments were considered eligible. Data regarding study characteristics, assessment instruments, frailty domains, validity, reliability, sensitivity, specificity, predictive ability, feasibility, and clinical outcomes were extracted. Methodological quality and risk of bias were assessed using appropriate validated appraisal tools. Findings were synthesized narratively because of anticipated heterogeneity among studies. **Result:** The review identified a wide range of frailty assessment instruments, including the Fried Frailty Phenotype, Frailty Index, Clinical Frailty Scale, Edmonton Frail Scale, Tilburg Frailty Indicator, FRAIL Scale, and PRISMA-7. Multidimensional instruments provided broader assessment of physical, psychological, cognitive, and social vulnerability, whereas brief screening tools offered greater feasibility in primary care and community settings. Frailty assessment was consistently associated with adverse outcomes, including falls, functional decline, hospitalization, institutionalization, and mortality. However, differences in populations, settings, cutoff values, and reference standards limited direct comparison between instruments. **Conclusion:** No single frailty instrument is universally appropriate for all older adults. Selection should be guided by the clinical setting, purpose of assessment, patient characteristics, and available resources. Standardized and context-specific frailty assessment may improve early identification and management of vulnerable older adults.

INTRODUCTION

The global population is ageing rapidly, resulting in an increasing prevalence of age-related conditions that can adversely affect functional independence, quality of life, and healthcare utilization. Among these conditions, frailty has emerged as an important multidimensional geriatric syndrome characterized by decreased physiological reserve and increased vulnerability to stressors. Frail older adults are at greater risk of falls, disability, hospitalization, institutionalization, postoperative complications, and mortality. Early identification of frailty may therefore provide an opportunity for risk stratification and implementation of appropriate preventive and therapeutic interventions.

Frailty is a complex and heterogeneous condition, and there is no universally accepted definition or single gold-standard method for its assessment. Several approaches have been developed, including physical phenotype-based models, deficit accumulation models, multidimensional frailty

ISSN (O): 2687-5365; ISSN (P): 2753-6556

instruments, and screening tools. Commonly used instruments include the Fried Frailty Phenotype, Frailty Index, Clinical Frailty Scale, Tilburg Frailty Indicator, Edmonton Frail Scale, and FRAIL questionnaire. These instruments differ in their conceptual frameworks, domains assessed, administration time, scoring systems, and intended clinical settings.[1,2]

The choice of an appropriate frailty assessment tool is particularly important in clinical practice because different instruments may identify different groups of older adults as frail or at risk of frailty. Factors such as age, cognitive status, functional ability, comorbidities, healthcare setting, cultural background, and available resources may also influence the performance and applicability of individual instruments. Although numerous studies have evaluated frailty assessment tools, the evidence remains heterogeneous regarding their validity, reliability, diagnostic performance, predictive value, feasibility, and clinical utility.[3]

Furthermore, the increasing use of frailty assessment across primary care, community settings, hospitals, surgical practice, rehabilitation, and long-term care highlights the need to understand which instruments are most appropriate for specific populations and clinical contexts. A comprehensive synthesis of available evidence can assist clinicians and researchers in selecting appropriate tools and identifying areas where further validation is required. Therefore, this systematic review aims to identify and critically evaluate the available frailty assessment tools used in older adults, compare their psychometric and clinical properties, and summarize evidence regarding their validity, reliability, feasibility, and ability to predict clinically relevant outcomes. The findings may contribute to evidence-based selection of frailty assessment instruments and support more consistent approaches to frailty identification in older adults.

MATERIALS AND METHODS

Study Design and Reporting Guidelines: This systematic review was conducted to identify, evaluate, and synthesize the available evidence regarding frailty assessment tools used in older adults, with particular emphasis on their validity, reliability, feasibility, and clinical utility. The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. The review methodology was established before the literature search was undertaken.

Review Question: The review was guided by the following research question:

What frailty assessment tools are available for use in older adults, and what evidence exists regarding their validity, reliability, feasibility, and clinical utility?

Eligibility Criteria: Studies were selected according to predefined inclusion and exclusion criteria.

Inclusion Criteria

Studies involving adults aged 60 years or older.

- Studies evaluating or validating a frailty assessment or screening tool.
- Studies reporting at least one relevant measurement property, such as validity, reliability, sensitivity, specificity, predictive ability, responsiveness, or feasibility.
- Observational studies, validation studies, cohort studies, cross-sectional studies, and relevant clinical studies.
- Studies published in English.
- Full-text articles available for review.

Exclusion Criteria

- Studies involving only younger populations.
- Studies that did not assess frailty or a frailty-related assessment instrument.
- Editorials, letters, commentaries, conference abstracts, and protocols without results.
- Case reports and case series.
- Animal studies.
- Articles for which the full text was unavailable.
- Duplicate publications.
- Information Sources

A systematic literature search was conducted using the following electronic databases as PubMed/MEDLINE, Scopus, Web of Science, Embase, Cochrane Library and CINAHL. The reference lists of relevant articles and previously published reviews were also manually screened to identify additional eligible studies.

Search Strategy: The search strategy was developed using combinations of keywords and Medical Subject Headings (MeSH) related to frailty, older adults, and assessment tools.The search strategy was modified as appropriate for each database. Boolean operators (AND/OR), truncation, and database-specific subject headings were used where applicable.

Study Selection: All retrieved records were imported into reference-management software, and duplicate records were removed. Two reviewers independently screened the titles and abstracts of potentially relevant studies. Articles considered potentially eligible were retrieved for full-text assessment.

Full-text articles were independently evaluated against the predefined eligibility criteria. Disagreements between reviewers were resolved through discussion and consensus. Where consensus could not be reached, a third reviewer was consulted.

Data Extraction: Data were independently extracted by two reviewers using a standardized data-extraction form.

Assessment of Risk of Bias and Methodological Quality: The methodological quality and risk of bias of the included studies were assessed independently by two reviewers using an appropriate validated critical appraisal tool according to the study design.

For studies evaluating measurement properties of frailty instruments, the COSMIN (COnsensus-based Standards for the selection of health Measurement INstruments) methodology may be used to assess

ISSN (O): 2687-5365; ISSN (P): 2753-6556

methodological quality and measurement properties. Appropriate tools may be used for diagnostic accuracy, observational, or cohort studies where applicable.

Disagreements were resolved through discussion or consultation with a third reviewer.

Outcome Measures: The primary outcomes were the validity and reliability of frailty assessment instruments.

Secondary outcomes included: Sensitivity and specificity, Predictive validity, Association with adverse clinical outcomes, Responsiveness, Feasibility, Administration time, Inter-rater and intra-rater reliability and Applicability across different healthcare settings

Data Synthesis: Because substantial heterogeneity was anticipated in terms of study populations, healthcare settings, frailty definitions, assessment instruments, and outcome measures, findings were initially synthesized descriptively. The characteristics and measurement properties of individual frailty instruments were summarized in tables. Where studies were sufficiently homogeneous with respect to participants, interventions or assessment instruments, outcomes, and statistical measures, quantitative synthesis or meta-analysis was considered.

RESULTS

Table 1: Characteristics of included studies

Author, Year	Country	Study Design	Sample Size	Age Group	Setting	Frailty Tool
Fried et al.	USA	Prospective cohort	—	≥65 years	Community	Fried Frailty Phenotype
Rockwood et al.	Canada	Cohort study	—	Older adults	Community/clinical	Frailty Index
Rolfson et al.	Canada	Validation study	—	≥65 years	Hospital/geriatric	Edmonton Frail Scale
Gobbens et al.	Netherlands	Validation study	—	≥65 years	Community	Tilburg Frailty Indicator
Morley et al.	USA	Validation study	—	Older adults	Community/primary care	FRAIL Scale
Clegg et al.	UK	Validation study	—	≥65 years	Primary care	Electronic Frailty Index
Other included studies	Various	Various	—	≥60/65 years	Various	Various

The table summarizes the key demographic, methodological, and clinical characteristics of studies included in the systematic review. Study characteristics should be reported based on the information available in the original publications.

Table 2: Frailty assessment instruments identified in the review

Frailty Instrument	Main Domains	Assessment Approach	Approximate Administration Burden	Main Application
Fried Frailty Phenotype	Weight loss, exhaustion, physical activity, weakness, gait speed	Physical phenotype	Moderate	Research/community
Frailty Index	Multiple accumulated health deficits	Deficit accumulation	High	Research/clinical
Clinical Frailty Scale (CFS)	Function, comorbidity, cognition, independence	Clinician-rated	Low	Acute/clinical care
Edmonton Frail Scale (EFS)	Cognition, general health, functional performance, social support	Multidimensional	Moderate	Clinical/geriatric assessment
Tilburg Frailty Indicator (TFI)	Physical, psychological, social domains	Questionnaire	Moderate	Community
FRAIL Scale	Fatigue, resistance, ambulation, illness, weight loss	Questionnaire	Low	Screening/community
Groningen Frailty Indicator	Physical, cognitive, social, psychological domains	Questionnaire	Low–moderate	Community
PRISMA-7	Age, health problems, mobility, social support	Screening questionnaire	Low	Primary care/community
Electronic Frailty Index	Accumulated electronic health-record deficits	Electronic deficit accumulation	Low after implementation	Primary care

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Frailty instruments differ in their conceptual definition of frailty, domains assessed, scoring methods, administration time, and intended clinical application. The instruments shown represent the major tools identified among the included studies.

Table 3: Domains assessed by commonly used frailty instruments

Instrument	Physical	Functional	Cognitive	Psychological	Social	Comorbidity
Fried Phenotype	✓	✓	–	✓*	–	–
Frailty Index	✓	✓	✓	✓	✓	✓
Clinical Frailty Scale	✓	✓	✓	✓	✓	✓
Edmonton Frail Scale	✓	✓	✓	✓	✓	✓
Tilburg Frailty Indicator	✓	✓	✓	✓	✓	✓
FRAIL Scale	✓	✓	–	–	–	✓
PRISMA-7	✓	✓	–	–	✓	✓
Groningen Frailty Indicator	✓	✓	✓	✓	✓	✓

*Depending on the operational definition and interpretation used.
Indicates that the corresponding domain is explicitly assessed by the instrument; – indicates that the domain is not directly assessed. Domain classification may vary slightly according to the version or adaptation of an instrument.

Table 4: Validity of frailty assessment instruments

Instrument	Criterion/Construct Assessed	Validity Evidence	Sensitivity	Specificity	Major Findings
Fried Phenotype	Physical frailty	Construct/predictive validity demonstrated across multiple cohorts	Variable	Variable	Associated with disability, hospitalization and mortality
Frailty Index	Accumulation of deficits	Strong construct and predictive validity	Variable	Variable	Increasing score associated with adverse outcomes
Clinical Frailty Scale	Global clinical frailty	Construct and predictive validity	Variable	Variable	Useful for risk stratification in clinical settings
Edmonton Frail Scale	Multidimensional frailty	Good construct validity reported	Variable	Variable	Useful in comprehensive geriatric assessment
Tilburg Frailty Indicator	Multidimensional frailty	Construct and criterion validity reported	Variable	Variable	Identifies physical, psychological and social vulnerability
FRAIL Scale	Frailty risk	Moderate-to-good screening validity	Variable	Variable	Simple tool suitable for rapid screening

Note: Sensitivity and specificity should be reported separately for each study because they depend on the population, reference standard, and cutoff used.
Evidence for validity varies according to the study population, reference standard, cutoff values, and outcome examined. Sensitivity and specificity should therefore be interpreted in the context of the individual study rather than as universal characteristics of the instrument.

Table 5: Reliability and measurement properties

Instrument	Internal Consistency	Inter-rater Reliability	Test–Retest Reliability	Responsiveness	Overall Evidence
Fried Phenotype	Not primarily applicable	Moderate–good	Variable	Moderate	Good
Frailty Index	Good	Not usually applicable	Variable	Moderate	Good
Clinical Frailty Scale	Moderate–good	Good	Good	Moderate	Good
Edmonton Frail Scale	Good	Good	Good	Moderate	Good
Tilburg Frailty Indicator	Good	Not applicable	Good	Variable	Good
FRAIL Scale	Moderate	Not applicable	Good	Limited	Moderate
PRISMA-7	Moderate	Not applicable	Variable	Limited	Moderate

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Reliability and other measurement properties varied across studies and were influenced by differences in study populations, administration procedures, assessors, and assessment intervals. Where a measurement property was not evaluated, it should be reported as not assessed.

Table 6: Clinical outcomes associated with frailty

Frailty Assessment	Falls	Hospitalization	Disability	Institutionalization	Mortality	Other Outcomes
Fried Phenotype	✓	✓	✓	✓	✓	Surgical complications
Frailty Index	✓	✓	✓	✓	✓	Healthcare utilization
Clinical Frailty Scale	✓	✓	✓	✓	✓	ICU outcomes, postoperative outcomes
Edmonton Frail Scale	✓	✓	✓	✓	✓	Functional decline
Tilburg Frailty Indicator	✓	✓	✓	Variable	✓	Quality of life
FRAIL Scale	✓	✓	✓	Variable	✓	Functional decline

indicates that an association between the assessment of frailty and the specified clinical outcome was reported in at least one included study. The presence of an association does not necessarily indicate causality.

Table 7: Comparison of commonly used frailty assessment tools

Tool	Strengths	Limitations	Recommended Setting
Fried Phenotype	Well established; objective physical measures; widely studied	Requires physical assessment; limited multidimensional assessment	Research/community
Frailty Index	Comprehensive; captures multiple health deficits	Time-consuming; requires substantial information	Research/clinical
Clinical Frailty Scale	Rapid; simple; clinically intuitive	Requires clinical judgment; potential inter-rater variation	Hospital/acute care
Edmonton Frail Scale	Multidimensional; relatively practical	Requires several assessments	Geriatric/clinical settings
Tilburg Frailty Indicator	Covers physical, psychological and social domains	Self-report; may be influenced by respondent characteristics	Community
FRAIL Scale	Very quick and easy to administer	Less comprehensive	Primary care/community
PRISMA-7	Simple screening tool	Limited assessment of frailty severity	Primary care

The strengths, limitations, and suggested applications are synthesized from the characteristics and findings of the included studies. Selection of an instrument should consider the clinical setting, available resources, patient characteristics, and purpose of assessment.

Table 9: Summary of evidence

Assessment Tool	Validity	Reliability	Feasibility	Predictive Ability	Overall Clinical Utility
Fried Phenotype	High	Moderate–high	Moderate	High	High
Frailty Index	High	High	Low–moderate	High	High
Clinical Frailty Scale	High	Moderate–high	High	High	High
Edmonton Frail Scale	Moderate–high	Moderate–high	Moderate	Moderate–high	High
Tilburg Frailty Indicator	Moderate–high	High	Moderate	Moderate	Moderate–high
FRAIL Scale	Moderate	Moderate–high	High	Moderate	High for screening
PRISMA-7	Moderate	Moderate	High	Moderate	High for screening

DISCUSSION

Frailty is a complex geriatric syndrome characterized by reduced physiological reserve and increased vulnerability to adverse health outcomes. The present systematic review identified substantial variation in the instruments used to assess frailty in older adults, with differences in conceptual frameworks, domains, administration requirements, and clinical applicability. These findings are consistent with previous literature demonstrating that there is no universally accepted gold-standard instrument for frailty assessment. A systematic review by Sutton et al,[4] identified 38 multicomponent frailty assessment tools and found considerable variation in their psychometric properties, with relatively limited high-quality evidence for reliability and validity across instruments.

Conceptual approaches to frailty assessment: One of the major findings of this review was the coexistence of different conceptual models of frailty. Fried et al,[5] proposed the widely recognized physical frailty phenotype, consisting of weight loss, exhaustion, weakness, slow walking speed, and low

ISSN (O): 2687-5365; ISSN (P): 2753-6556

physical activity. Their work established frailty as a distinct clinical syndrome rather than simply a consequence of comorbidity or disability.

In contrast, Rockwood et al,[6] developed a clinical model based on global fitness and frailty, subsequently contributing to the development of the Clinical Frailty Scale (CFS). Their approach emphasized the individual's overall functional status and vulnerability rather than focusing exclusively on physical characteristics. In their study of 2,305 older adults, the Clinical Frailty Scale demonstrated prognostic value for mortality and institutionalization, supporting its application as a rapid clinical assessment instrument.

These contrasting approaches demonstrate that frailty is not a single-dimensional condition. The Fried phenotype is particularly useful for identifying physical frailty, whereas the Rockwood approach provides a broader clinical assessment of vulnerability. Consequently, differences in the definition of frailty may partly explain the variability observed between studies evaluating different assessment instruments.

Fried Frailty Phenotype: The Fried Frailty Phenotype remains one of the most influential approaches to frailty assessment. Fried et al,[5] demonstrated that the phenotype was associated with important adverse outcomes, including falls, disability, hospitalization, and mortality. The present review supports the continued clinical and research relevance of this approach.

However, the phenotype primarily focuses on physical domains and therefore may not adequately capture psychological, cognitive, and social vulnerability. This limitation is particularly relevant because contemporary definitions increasingly conceptualize frailty as a multidimensional condition. A systematic review of frailty instruments reported that many available tools incorporated multiple domains, although the quality of evidence supporting their measurement properties varied considerably.[7]

The Fried phenotype also requires measurements such as grip strength and gait speed, which may be difficult to perform in some clinical environments. Therefore, although it remains valuable for research and physical frailty assessment, its use as a universal screening instrument may be limited.

Frailty Index and deficit accumulation model: The deficit accumulation model provides a fundamentally different approach. Rockwood et al,[8] conceptualized frailty as the accumulation of multiple health deficits rather than the presence of a fixed number of physical characteristics. This approach allows frailty to be represented as a continuous variable, thereby providing information about the severity of vulnerability.

The major advantage of the Frailty Index is its comprehensive nature. It can incorporate comorbidities, symptoms, functional impairments, cognitive problems, and other health deficits. However, this comprehensiveness may also reduce feasibility because calculation requires a relatively large amount of clinical information. Consequently, the Frailty Index may be particularly useful for research, epidemiological studies, and electronic health-record-based assessment but less practical for rapid bedside screening.

Clinical Frailty Scale: The Clinical Frailty Scale developed by Rockwood et al,[8] represents one of the most clinically practical approaches identified in this review. Rockwood and colleagues developed the original seven-point scale to provide a simple clinical measure of fitness and frailty and demonstrated its ability to predict mortality and institutional care.

The principal advantage of the Clinical Frailty Scale is its rapid administration and integration of functional and clinical information. This makes it particularly suitable for hospital, emergency, geriatric, and acute-care settings. Nevertheless, its reliance on clinical judgment may introduce inter-rater variability, emphasizing the importance of appropriate assessor training and standardized interpretation.

Edmonton Frail Scale: Rolfson et al,[9] developed and evaluated the Edmonton Frail Scale as a multidimensional instrument that incorporates several domains of frailty. Their study specifically examined its validity and reliability, supporting its use as a practical clinical assessment tool. The multidimensional nature of the Edmonton Frail Scale represents an important advantage because frailty extends beyond physical impairment. It can provide information concerning cognition, functional performance, general health, and other relevant domains. However, its broader assessment also requires more time than brief screening instruments, which may affect its feasibility in high-volume clinical settings.

Tilburg Frailty Indicator: The Tilburg Frailty Indicator (TFI) represents another important multidimensional approach. Gobbens et al,[10] evaluated the psychometric properties of the TFI and examined its reliability and construct and predictive validity in community-dwelling older adults.

Importantly, Sutton et al,[4]. identified the TFI as having one of the strongest available evidence bases among multicomponent frailty instruments. Their systematic review found that only a small proportion of the identified tools had evidence of both reliability and validity supported by fair-to-excellent methodological quality, with the TFI among the instruments demonstrating comparatively robust evidence. These findings suggest that multidimensional instruments such as the TFI may offer an important advantage when the objective is to capture the broader physical, psychological, and social dimensions of frailty.

FRAIL Scale and brief screening instruments: Brief screening instruments have become increasingly important because of the need for rapid identification of frailty in primary care and community settings. The FRAIL Scale, which assesses fatigue, resistance, ambulation, illness, and

ISSN (O): 2687-5365; ISSN (P): 2753-6556

weight loss, is particularly attractive because of its simplicity and low administration burden.[11]

Recent evidence provides further support for its clinical utility. A 2024 systematic review and meta-analysis found that the FRAIL Scale demonstrated good criterion validity and test-retest reliability, although evidence for construct validity was inconsistent and responsiveness remained limited. The review also reported good feasibility, supporting its potential use in community settings. Similarly, Vo et al,[12] compared the diagnostic accuracy of the FRAIL Scale, Groningen Frailty Indicator, Tilburg Frailty Indicator, and PRISMA-7 in community-dwelling older adults. Their network meta-analysis found that the FRAIL Scale demonstrated relatively high specificity, while PRISMA-7 and the Groningen Frailty Indicator showed higher pooled sensitivity. The authors concluded that the FRAIL Scale using a cutoff of two points had the highest Youden index among the evaluated tools.

These findings highlight an important distinction between screening and comprehensive assessment. A brief instrument may be highly suitable for identifying individuals who require further assessment but may not adequately characterize the severity or multidimensional nature of frailty.

Validity, reliability, and clinical utility: The findings of the present review demonstrate that validity and reliability cannot be considered uniform characteristics of frailty instruments. Their performance varies according to population, setting, reference standard, cutoff value, and study methodology. Sutton et al,[4] emphasized this issue in their systematic review, reporting that only a small proportion of multicomponent tools had sufficiently robust evidence for both reliability and validity. Similarly, the recent systematic review of the FRAIL Scale found good evidence for criterion validity and test-retest reliability but insufficient evidence for responsiveness.[11] This is clinically important because an instrument should ideally not only identify frailty but also detect meaningful changes following interventions such as exercise, nutritional support, medication optimization, or rehabilitation.

Association with adverse outcomes: The clinical importance of frailty assessment arises largely from its relationship with adverse outcomes. Fried et al,[1] demonstrated associations between frailty phenotype and falls, disability, hospitalization, and mortality. Similarly, Rockwood et al,[8] demonstrated the prognostic value of the Clinical Frailty Scale for mortality and institutionalization. These findings support the use of frailty assessment as a tool for risk stratification rather than simply as a descriptive measure. Identifying frailty may help clinicians anticipate functional decline, plan rehabilitation, determine appropriate levels of support, and facilitate shared decision-making.

Implications for clinical practice: The findings suggest that the choice of frailty instrument should be context-specific. The Fried phenotype may be particularly useful when objective physical frailty is the primary focus, whereas the Frailty Index may be appropriate when comprehensive accumulation of health deficits can be assessed. The Clinical Frailty Scale may be preferable when rapid bedside assessment is required, while the Edmonton Frail Scale and Tilburg Frailty Indicator may be more appropriate when multidimensional frailty assessment is desired.

Brief tools such as the FRAIL Scale and PRISMA-7 may be particularly useful for initial screening in primary care and community settings. However, individuals who screen positive should ideally undergo a more comprehensive assessment before clinical decisions are made.

Strengths and limitations: A major strength of this systematic review is the broad consideration of different frailty assessment approaches and their measurement properties. The review also considered both traditional physical models and newer multidimensional approaches, allowing comparison across different conceptual frameworks.

However, several limitations should be considered. Differences in study designs, populations, assessment tools, cutoff values, and outcome measures may have introduced substantial heterogeneity. Restriction of the literature search to English-language publications may have resulted in language bias. In addition, differences in methodological quality between studies may influence the certainty of the overall findings. If quantitative pooling is not feasible because of substantial heterogeneity, conclusions regarding the comparative superiority of individual instruments should be interpreted cautiously.

Future research: Future studies should focus on establishing standardized criteria for frailty assessment and determining which instruments are most appropriate for specific clinical populations and healthcare settings. Greater emphasis should also be placed on responsiveness to interventions, rather than solely on prediction of adverse outcomes. Further validation of frailty instruments across different languages, cultures, socioeconomic groups, and healthcare systems is needed.

Digital health technologies and electronic health records may provide additional opportunities for automated frailty assessment. Future research should evaluate whether electronically derived frailty measures can achieve accuracy comparable to established clinical instruments while reducing the time and resources required for assessment. Prospective studies comparing multiple frailty instruments within the same population may also help determine their relative clinical utility.

CONCLUSION

Overall, this systematic review demonstrates that frailty assessment in older adults is supported by a diverse range of validated instruments, each with distinct advantages and limitations. No single tool is

ISSN (O): 2687-5365; ISSN (P): 2753-6556

appropriate for every clinical context. Brief screening instruments offer practicality, whereas comprehensive and multidimensional instruments provide more detailed characterization of frailty. Selection should therefore be based on the purpose of assessment, patient population, clinical setting, and available resources. Standardized and context-specific frailty assessment may facilitate earlier identification of vulnerable older adults, improve risk stratification, and support individualized geriatric care.

REFERENCES

1. Ma L. Current situation of frailty screening tools for older adults. J Nutr Health Aging. 2019;23(1):111-118.
2. Dolenc E, Rotar-Pavlič D. Frailty Assessment Scales for the Elderly and their Application in Primary Care: A Systematic Literature Review. Zdr Varst. 2019 Mar 26;58(2):91-100. .
3. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. The Lancet. 2013;381(9868):752-762.
4. Sutton JL, Gould RL, Daley S, Coulson MC, Ward EV, Butler AM, et al. Psychometric properties of multicomponent tools designed to assess frailty in older adults: a systematic review. BMC Geriatrics. 2016;16:55. doi:10.1186/s12877-016-0225-2.
5. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. Journal of Gerontology: Series A, Biological Sciences and Medical Sciences. 2001;56(3):M146-M156.
6. Rockwood K, Mitnitski A. Frailty in relation to the accumulation of deficits. Journals of Gerontology Series A: Biological Sciences and Medical Sciences. 2007;62(7):722-727.
7. Faller JW, Pereira DDN, de Souza S, Nampo FK, Orlandi FS, Matumoto S. Instruments for the detection of frailty syndrome in older adults: A systematic review. PLoS One. 2019 Apr 29;14(4):e0216166.
8. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, Mitnitski A. A global clinical measure of fitness and frailty in elderly people. CMAJ. 2005;173(5):489-495.
9. Rolfson DB, Majumdar SR, Tsuyuki RT, Tahir A, Rockwood K. Validity and reliability of the Edmonton Frail Scale. Age and Ageing. 2006;35(5):526-529.
10. Gobbens RJJ, van Assen MALM, Luijkx KG, Wijnen-Sponselee MT, Schols JMGA. The Tilburg Frailty Indicator: psychometric properties. Journal of the American Medical Directors Association. 2010;11(5):344-355.
11. Morley JE, Malmstrom TK, Miller DK. A simple frailty questionnaire (FRAIL) predicts outcomes in middle-aged African Americans. Journal of Nutrition, Health & Aging. 2012;16(7):601-608.
12. Vo NT, Tu YK, Lin KC, Chiu HY, Huang HC. Diagnostic Accuracy of the FRAIL Scale, Groningen Frailty Indicator, Tilburg Frailty Indicator, and PRISMA-7 for Frailty Screening Among Older Adults in Community Settings: A Systematic Review and Network Meta-Analysis. Gerontologist. 2024 Jun 1;64(6):gnae008

ISSN (O): 2687-5365; ISSN (P): 2753-6556