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Comparison of frailty screening tools in predicting length of stay and disability in older patients on internal medicine inpatient wards transferred from the emergency department

A retrospective observational study

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Abstract

The aim of this study is to compare frailty screening tools in predicting length of stay (LOS) in older patients on internal medicine inpatient wards transferred from the emergency department (ED). This cross-sectional retrospective study involving 186 subjects aged 65 years or older was conducted at tertiary hospital internal medicine inpatient wards transferred from the ED from September to November 2023. Frailty was defined by the Clinical Frailty Scale (CFS), the identification of Seniors At Risk Tool and the Triage Risk-Screening Tool (TRST). Dependency was defined by Katz Index of Independence in activities of daily living (ADL) and the Lawton instrumental ADL. The presence of frailty according to the CSF and TRST was associated with a long LOS (coefficient of regression $\beta = 0.2$ with $P < .05$). But, in binary logistic regression analysis, there was no association between long LOS and frailty scales. All frailty tools were statistically significant predictors for disability ($P < .001$). Our findings suggest that, among the tools evaluated, the CFS may be the most robust predictor of both LOS and functional dependency, although its predictive power for actual disability remains limited. Future studies should focus on refining these tools for greater accuracy in predicting functional outcomes and should examine how factors such as polypharmacy and comorbidities impact frailty and hospital outcomes. Additionally, longitudinal studies are needed to establish causative relationships between frailty, LOS, and functional decline.

Abbreviations: ADL = activities of daily living, AUC = area under the Curve, CFS = the Clinical Frailty Scale, CGA = comprehensive geriatric assessment, ED = emergency department, FRAT = Falls Risk Assessment Tool, GLIM = Global Leadership Initiative on Malnutrition, IADL = the Lawton Instrumental Activities of Daily Living, ISAR = Identification of Seniors at Risk, LOS = length of stay, NPV = negative predictive value, PHQ-2 = The Patient Health Questionnaire-2, PPV = positive predictive value, ROC = receiver operating curve, TRST = the Triage Risk-Screening Tool

Keywords: disability, emergency department, frailty tool, internal medicine inpatient, length of stay

1. Introduction

With 42% of all hospital admissions made by people aged 65 and over, hospitalization rates are highest among older adults.[1] Dependency and frailty are common, and their prevalence has been reported to be 47% and 28%, respectively, among hospitalized older adults. Both dependency and frailty are associated

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Verbal informed consent was obtained from all participants by a systematic and standardized process used in the internal medicine inpatients clinic where the study was performed. Participants or their legal guardians, when appropriate, were informed that their medical information may be used for research purposes. If they disagreed, they informed the physician taking care of them and a note was recorded in their chart. No refusal was recorded for this study.

The authors declare that there is no conflict of interest.

The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

The research protocol was conducted in accordance with the Helsinki declaration and was approved by Bakırçay University Medical Research Ethical Committee (Ethics committee decision no:1468 date: February 21, 2024).

Statistical analyses were performed using SPSS 25.0 (SPSS, Chicago).

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with longer hospital stays, rehospitalization, institutionalization, lower quality of life and higher mortality.

Geriatric-specific triage tools currently utilized in the emergency department (ED) to categorize patients into high-risk and low-risk groups include the identification of seniors at risk (ISAR) and the triage risk-screening tool (TRST).[2] However, as the TRST and ISAR were originally designed as risk prediction tools and not frailty screening tools, only the appropriateness of frailty screening should be assessed. the Clinical Frailty Scale (CFS) was originally developed to summarize the Comprehensive geriatric assessment (CGA) and create a care plan.[3] It is recommended that all hospitalized patients aged 65 years and older be screened for frailty using a validated tool such as the CFS.

Frailty measurement varies with the tools used, leading to inconsistent findings on its link to geriatric syndromes. EDs commonly use frailty tools indicating hospitalization risk, like TRST and ISAR, unlike phenotypic tools like CFS used in acute care. However, patients over 65 are more likely to be frail and hospitalized when visiting the ED. The aim of this study is to compare frailty screening tools in predicting length of stay (LOS) in older patients on internal medicine inpatient wards transferred from the ED.

2. Methods

This cross-sectional retrospective study involving 186 subjects aged 65 years or older was conducted at tertiary hospital internal medicine inpatient wards transferred from the ED from September to November 2023. CGA completed within 48 hours of admission to the internal medicine ward by a geriatrician or internist. Hospital records were retrospectively scanned for patients' age, sex, comorbidities and medications. The inclusion and exclusion criteria are explained in detail in Figure 1. Assuming a power of 95%, a 2-sided alpha of 0.5 and effect size f^2 0.15, the power analysis showed that 89 individuals needed to be recruited to achieve the objective of this study.

2.1. Frailty assessment

Frailty was defined by CFS, the ISAR tool and TRST. The CFS is a validated scale used to measure the degree of disability due to frailty and is scored from 1 (very fit) to 9 (terminal) based on descriptions and pictorial representations of activity and functional status.[3,4] Greater frailty is indicated by a high score. Patients with CFS scores of 1 to 4 were classified as non-frail. The CFS is widely used as a tool to allocate resources and ration care by health professionals without training in frailty.

The ISAR is a self-report screening tool consisting of 6 simple yes/no questions about functional dependence, recent hospitalization, memory and visual impairment, and polypharmacy.[5] Each "yes" answer is worth one point, with a maximum score of 6 indicating high frailty. A cutoff score of ≥2 is preferred for the presence of frailty in older patients.

TRST is a tool that assesses cognitive impairment, difficulty walking, history of falls or transfers, use of 5 or more medications, and history of ED visits.[6] Each TRST component is scored 1. A maximum score of 5 indicates high frailty. Frailty is considered positive when the total score is 2 and above.

2.2. Comprehensive geriatric assessment

All patients have undergone a CGA. Disability was defined by Katz Index of Independence in activities of daily living (ADL) and the Lawton instrumental ADL (IADL).[7–9] The ADLs refer to the 6 ADL (bathing, dressing, feeding, ambulation, toileting, continence) while the IADLs require more complex planning and thinking acts such as managing medications, paying bills, and using the telephone. The total scores for ADLs and IADLs scales were 6 and 8 points, respectively. The patients were evaluated as "dependent" by ADLs and IADLs scales, if scores were <5, and <8, respectively. The Mini-Cog instrument was used to assess cognitive status.[10] A Mini-Cog score with a cutoff value of <3 was considered indicative

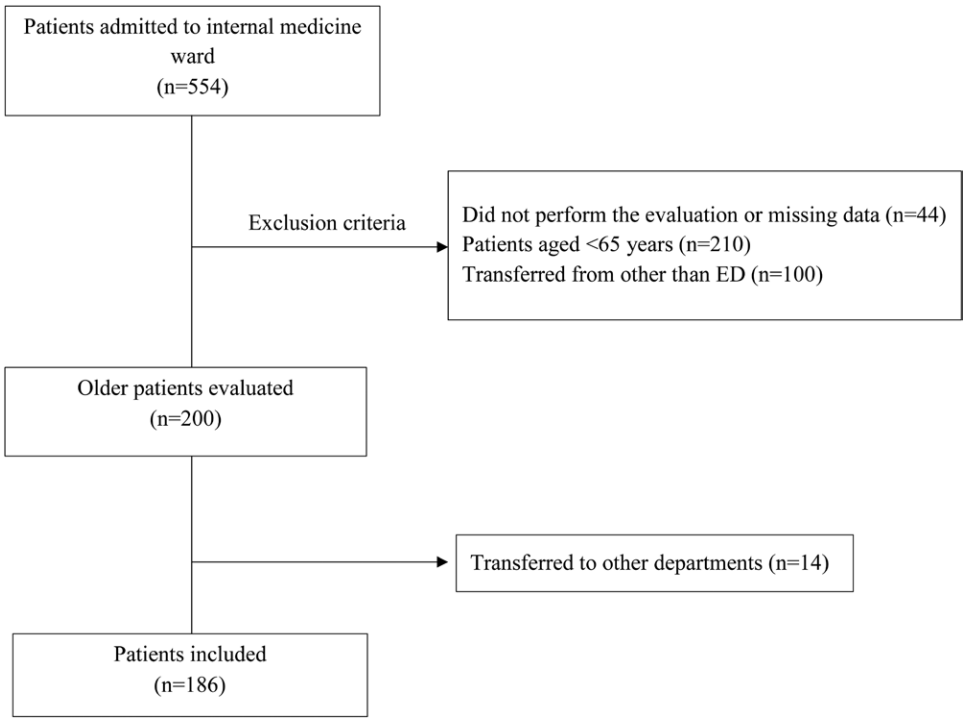

Figure 1. Flow chart of patients enrolled in the study. The exclusion and inclusion criteria of study and number of the patients are shown. ED = emergency department.

of cognitive impairment. Fall assessment was performed by Falls Risk Assessment Tool. Scores of 3 or more were classed as high falls risk. Depression was assessed by The Patient Health Questionnaire-2 (PHQ-2).[11] A cutoff score of ≥3 was considered for the presence of depressive mood. global leadership initiative on malnutrition criteria was used for the diagnosis of malnutrition.[12] The combination of at least one phenotypic criterion and one etiologic criterion was considered indicative of malnutrition.

2.3. Statistical analysis

Data normality was obtained using skewness and kurtosis (acceptable values felt between −3 and +3). The chi-squared (χ^2) test and Fisher exact test were used to compare categorical variables, while the independent sample *t*-test and Mann–Whitney *U* test were used to compare continuous variables. Baseline characteristics of the study population are presented as means ± standard deviations for normally distributed continuous variables or medians and minimum-maximum values for skewed continuous data. Numbers and percentages are used for categorical variables. Linear, logistic and Cox regression models were used to study the association of LOS (dependent variable) with the frailty levels (independent variable) derived from either CSF, ISAR and TRST. The non-frail level was used as a reference level in all models. A long LOS was defined as one that is in the highest tertile of LOSs (i.e., >9 days). Linear regression, the "enter" method, was used to define descriptive variable on the LOS. The construct validity of CFS, ISAR, and TRST was analyzed by Cohen's Kappa. Contingency tables, logistics regression models, multivariate analysis and receiver operating curve (ROC) curve statistical analysis were done to evaluate the prognostic efficacy of the scales. $P < .05$ was considered statistically significant. Data analyses were performed using SPSS version 25.0 for Windows.

2.4. Ethical statement

Verbal informed consent was obtained from all participants by a systematic and standardized process used in the internal medicine inpatients clinic where the study was performed. Participants or their legal guardians, when appropriate, were informed that their medical information may be used for research purposes. If they disagreed, they informed the physician taking care of them and a note was recorded in their chart. No refusal was recorded for this study. The research protocol was conducted in accordance with the Helsinki declaration and was approved by Bakırçay University Medical Research Ethical Committee (Ethics committee decision no:1468 date: February 21, 2024)

Table 1

Baseline characteristics and comparisons between frail and non-frail patients

		TRST			ISAR			CFS		
Variables	**All patients**	**Non**	**Frail**	***P* value**	**Non**	**Frail**	***P* value**	**Non**	**Frail**	***P* value**
Age, year, mean ± SD	76.3 ± 7.8	75 ± 7.3	78 ± 7.9	**.002**	72.5 ± 6.6	76.6 ± 7.8	>.05	74.2 ± 7	79.4 ± 8	**<.001**
Female, n (%)	109 (58.6%)	51 (58.6%)	58 (58.6%)	>.05	4 (33.3%)	105 (60.3%)	>.05	62 (56.4%)	47 (61.8%)	>.05
Illiterate, n (%)	51 (27.4%)	23 (26.4%)	28 (28.3%)	>.05	4 (33.3%)	47 (27%)	>.05	26 (23.6%)	25 (32.9%)	>.05
Living alone, n (%)	26 (14%)	17 (19.5%)	9 (9.1%)	**.04**	2 (16.7%)	24 (13.8%)	>.05	23 (20.9%)	3 (3.9%)	**.001**
Medication, mean ± SD*	4.8 ± 3	3.8 ± 2.8	5.8 ± 2.9	**<.001**	1.7 ± 1.2	5 ± 3	**<.001**	4.5 ± 3	5.3 ± 2.9	>.05
TRST										
Mean ± SD	1.9 ± 1.4	0.6 ± 0.5	3 ± 0.9	**<.001**	0.1 ± 0.3	2 ± 1.4	**<.001**	1.1 ± 0.9	3.1 ± 1.2	**<.001**
Frailty, n (%)	99 (53.2%)	–	–	–	0 (0.0%)	99 (56.9%)	**<.001**	98 (89.1%)	76 (100%)	**.002**
ISAR										
Mean ± SD	3.4 ± 1.2	2.5 ± 0.9	4.1 ± 0.9	**<.001**	1 ± 0	3.5 ± 1.1	**<.001**	2.8 ± 1.1	4.2 ± 0.9	**<.001**
Frailty, n (%)	174 (93.5%)	5 (5.7%)	71 (71.7%)	**<.001**	–	–	–	28 (25.5%)	71 (93.4%)	**<.001**
CFS score										
Mean ± SD	4.4 ± 1.8	3.2 ± 1	5.5 ± 1.7	**<.001**	2.8 ± 0.9	4.5 ± 1.8	**<.001**	3.1 ± 0.8	6.3 ± 0.9	**<.001**
Frailty, n (%)	76 (40.9%)	0 (0.0%)	61 (61.6%)	**<.001**	0 (0.0%)	76 (43.7%)	**.002**	–	–	–
ADL										
Mean ± SD	4.3 ± 2.2	5.7 ± 0.5	3 ± 2.3	**<.001**	6 ± 0	4.1 ± 2.2	**<.001**	5.7 ± 0.5	2.2 ± 2.1	**<.001**
Disability, n (%)	61 (32.8%)	0 (0.0%)	61 (61.6)	**<.001**	0 (0.0%)	61 (35.1%)	**.01**	2 (1.8%)	59 (77.6%)	**<.001**
IADL										
Mean ± SD	4.5 ± 3.3	6.8 ± 1.9	2.4 ± 2.7	**<.001**	7.9 ± 0.3	4.2 ± 3.2	**<.001**	6.7 ± 1.9	1.2 ± 1.6	**<.001**
Disability, n (%)	129 (69.4%)	37 (42.5%)	92 (92.9%)	**<.001**	1 (8.3%)	128 (73.6%)	**<.001**	53 (48.2%)	76 (100%)	**<.001**
FRAT										
Mean ± SD	2.2 ± 1.5	1.1 ± 1	3.2 ± 1.2	**<.001**	0.3 ± 0.8	2.3 ± 1.5	**<.001**	1.3 ± 1.2	3.5 ± 0.9	**<.001**
Fall risk, n (%)	83 (44.6%)	9 (10.3%)	74 (74.7%)	**<.001**	0 (0.0%)	83 (47.7%)	**.001**	19 (17.3%)	64 (84.2%)	**<.001**
Mini-cog										
Mean ± SD	2.5 ± 1.8	3.3 ± 1.5	1.8 ± 1.7	**<.001**	4 ± 1.2	2.4 ± 1.8	**.001**	3.3 ± 1.5	1.3 ± 1.5	**<.001**
Cognitive impairment, n (%)	91 (49%)	23 (26.4%)	68 (68.7%)	**<.001**	1 (8.3%)	90 (51.7%)	**.004**	32 (29.1%)	59 (77.6%)	**<.001**
PHQ-2										
Mean ± SD	2.4 ± 2.1	2.2 ± 2	2.6 ± 3.7	>.05	1.6 ± 1.8	2.5 ± 2.1	>.05	2.1 ± 2	2.9 ± 2.1	**.005**
Depressive mood, n (%)	74 (40.3%)	32 (36.8%)	43 (43.4%)	>.05	3 (25%)	72 (41.4%)	>.05	38 (34.5%)	37 (48.7%)	>.05
LOS										
Mean ± SD	7 ± 4.3	6.3 ± 3.7	7.8 ± 4.6	**.02**	6.5 ± 4.1	7.1 ± 4.3	>.05	6.4 ± 3.6	8 ± 5	**.02**
>9day,, n (%)	42 (22.6%)	16 (18.4%)	26 (26.3%)	>.05	1 (8.3%)	41 (23.6%)	>.05	20 (18.2%)	22 (28.9%)	>.05
Malnutrition, n (%)	66 (35.5%)	17 (19.5%)	49 (49.5%)	**<.001**	3 (25%)	63 (36.2%)	>.05	26 (23.6%)	40 (52.6%)	**<.001**
Urinary incontinance, n (%)	86 (46.2%)	20 (23%)	66 (66.7%)	**<.001**	0 (0.0%)	86 (49.4%)	**.001**	33 (30%)	53 (69.7%)	**<.001**

P-value significant (i.e., <.05) indicated in bold.

ADL = activities of daily living, CFS = the Clinical Frailty Scale, FRAT = Falls Risk Assessment Tool, IADL = instrumental activities of daily living, ISAR = Identification of Seniors at Risk, LOS = length of stay, NPV = negative predictive value, PHQ-2 = The Patient Health Questionnaire-2, PPV = positive predictive value, TRST = Triage Risk-Screening Tool

* Medication number before hospitalization.

Table 2

Multiple regressions showing the association of length of stay in days (dependent variable) with the Clinical Frailty Scale, the Seniors At Risk Tool, and Triage Risk-Screening Tool (independent variable, separated model for the Clinical Frailty Scale, the Seniors At Risk Tool, and Triage Risk-Screening Tool; n = 186).

	Linear regression*			Logistic regression†			Cox regression*		
	ß	95% CI	P-value	OR	[95% CI]	P-value	HR	[95% CI]	P-value
TRST									
Score	0.14	–0.01 to 0.85	>.05	1.2	0.91 to 1.47	>.05	0.9	0.84 to 1.02	>.05
Frailty	0.2	0.18 to 2.62	**.03**	1.6	0.78 to 3.19	>.05	0.7	0.55 to 0.99	**.04**
ISAR									
Score	0.3	–0.26 to 0.77	>.05	1.1	0.82 to 1.47	>.05	0.9	0.83 to 1.07	>.05
Frailty	0.03	–1.94 to 3.1	>.05	3.4	0.43 to 27.1	>.05	0.9	0.47 to 1.54	>.05
CFS									
Score	0.2	0.12 to 0.79	**.008**	1.2	0.99 to 1.45	>.05	0.9	0.84 to 0.99	**.03**
Frailty	0.2	0.29 to 2.77	**.02**	1.8	0.92 to 3.67	>.05	0.7	0.53 to 0.98	**.04**

Coefficient of regression beta, odds ratio, hazard ratio and *P*-value significant (i.e., <.05) indicated in bold.

CFS = the Clinical Frailty Scale, CI = confidence interval, HR = hazard ratio, ISAR = Identification of Seniors at Risk, OR = odds ratio, ß = coefficient of regression beta, TRST = Triage Risk-Screening Tool.

*Length of stay used as a continuous dependent variable.

†Length of stay used as a discontinuous variable defined as the highest tertile of lengths of stay (i.e., >9 d).

3. Results

A total of 186 subjects were examined, of which 105 (56.5%) were in the 75 to 101-year-old subgroup with a median age of 81 years. There were 109 (58.6%) female subjects. The 3 most common comorbidities were hypertension (n = 134, 72%), diabetes mellitus (n = 83, 44.6%) and coronary heart disease (n = 44, 23.7%). Almost 10% of patients had a history of dementia (n = 21, 11.3%) or stroke (n = 19, 10.2%). According to the ADL and IADL, 61 (32.8%) and 129 (69.4%) were classified as dependency, respectively. Frailty was identified in 76 (40.9%), 174 (93.5%) and 99 (53.2%) patients according to CSF, ISAR, and TRST, respectively. Seven patients had no medication before hospitalization, and the mean number of medications was 4.8 ± 3. Baseline characteristics and comparisons between frail and non-frail patients is shown in Table 1.

The concordance between CFS and TRST was moderate (Cohen *K*: 0.649, $P < .001$). There was no concordance for any of the other conditions.

Only the CFS score was significantly associated with LOS in linear regressions (Table 2). The presence of frailty according to the CSF and TRST was associated with a long LOS (coefficient of regression $\beta = 0.2$ with $P < .05$). But, in binary logistic regression analysis, there was no association between long LOS and frailty scales. Nevertheless, Cox regressions showed that only the CFS score was associated with a long LOS (Hazard ratio = 0.9 with $P = .03$). The regression analysis of the study is shown in Table 2.

All frailty tools were statistically significant predictors ($P < .001$). The area under the curve (AUC) values of the CFS, ISAR and TRST were 0.971 (95% CI: 0.950 to 0.991), 0.808 (95% CI: 0.746 to 0.869) and 0.946 (95% CI: 0.918 to 0.975) for predicting dependency in ADLs. The AUC values of the CFS, ISAR and TRST were 0.896 (95% CI: 0.853 to 0.939), 0.854 (95% CI: 0.799 to 0.909) and 0.808 (95% CI: 0.746 to 0.869) for predicting dependency in IADLs. Except for the sensitivity of TRST, ISAR and CSF and the specificity of CSF, all performance criteria were poor (i.e. <0.70) in predicting ADL disability (Table 3). Except for the sensitivity of TRST and ISAR, and the specificity of TRST and CSF, all performance criteria were poor (i.e. <0.70) in predicting IADL disability. ROC curves for disability by 3 different frailty scale were shown in Figure 2.

Table 3

Receiver operating characteristic analysis for presence of frailty with TRST, ISAR, and CFS to predict disability.

	Disability by ADL			Disability by IADL		
Frailty criteria	TRST	ISAR	CFS	TRST	ISAR	CFS
Sensitivity (%)	100	100	96.7	71.3	99.2	59
Specificity (%)	69.6	11	86.4	87.7	19.3	100
PPV (%)	61.6	43.7	77.6	92.9	73.6	100
NPV (%)	100	100	98.2	57.5	91.7	51.8
ROC						
AUC (95% CI)	0.946 (0.918 to 0.975)	0.808 (0.746 to 0.869)	0.971 (0.950 to 0.991)	0.808 (0.746 to 0.869)	0.854 (0.799 to 0.909)	0.896 (0.853 to 0.939)
Significance (*P*)	**<.001**	**<.001**	**<.001**	**<.001**	**<.001**	**<.001**

P-value significant (i.e., <.001) indicated in bold.

ADL = activities of daily living, AUC = area under the curve, CFS = the Clinical Frailty Scale, IADL = instrumental activities of daily living, ISAR = Identification of Seniors at Risk, NPV = negative predictive value, PPV = positive predictive value, ROC = receiver operating curve, TRST = Triage Risk-Screening Tool.

4. Discussion

This study compared frailty screening tools in predicting LOS and disability in older patients. Our study indicates that among the 3 tools, CFS had the most consistent and significant associations with LOS. We found that the CFS scale was significantly associated with LOS in both the linear and Cox regression models, suggesting that higher CFS scores increase LOS. Also, CFS scale appears to have the highest overall discriminatory power, especially in predicting disability by ADL, as indicated by its AUC values.

Frailty measurement varies with the tools used, leading to inconsistent findings on its link to geriatric syndromes. In addition, most studies that have examined the relationship between frailty and LOS have focused on patients with specific conditions, such as hip fracture, or compared phenotypic frailty tools. However, frailty tools that also indicate hospitalization, such as TRST and ISAR, are the most commonly used frailty tools in EDs.[2] This contrasts with the use of phenotypic frailty tools, such as CFS, in acute care settings.[13] ISAR and TRST tools are designed for the ED, whereas CFS can actually be used in the acute care setting because it is not time consuming and easy to use.[14] A cross-sectional study in the ED found that both the CFS and ISAR did not predict hospitalization.[15] It is well known that the CSF is a subjective tool for measuring frailty, based on clinical assessment. Therefore, older patients may be perceived by emergency physicians as being in worse condition than they actually are. It is well known that patients over the age of 65 in ED are more likely to be hospitalization when they visit the ED. Our study contributes to the literature in this regard by comparing these 3 frailty tools.

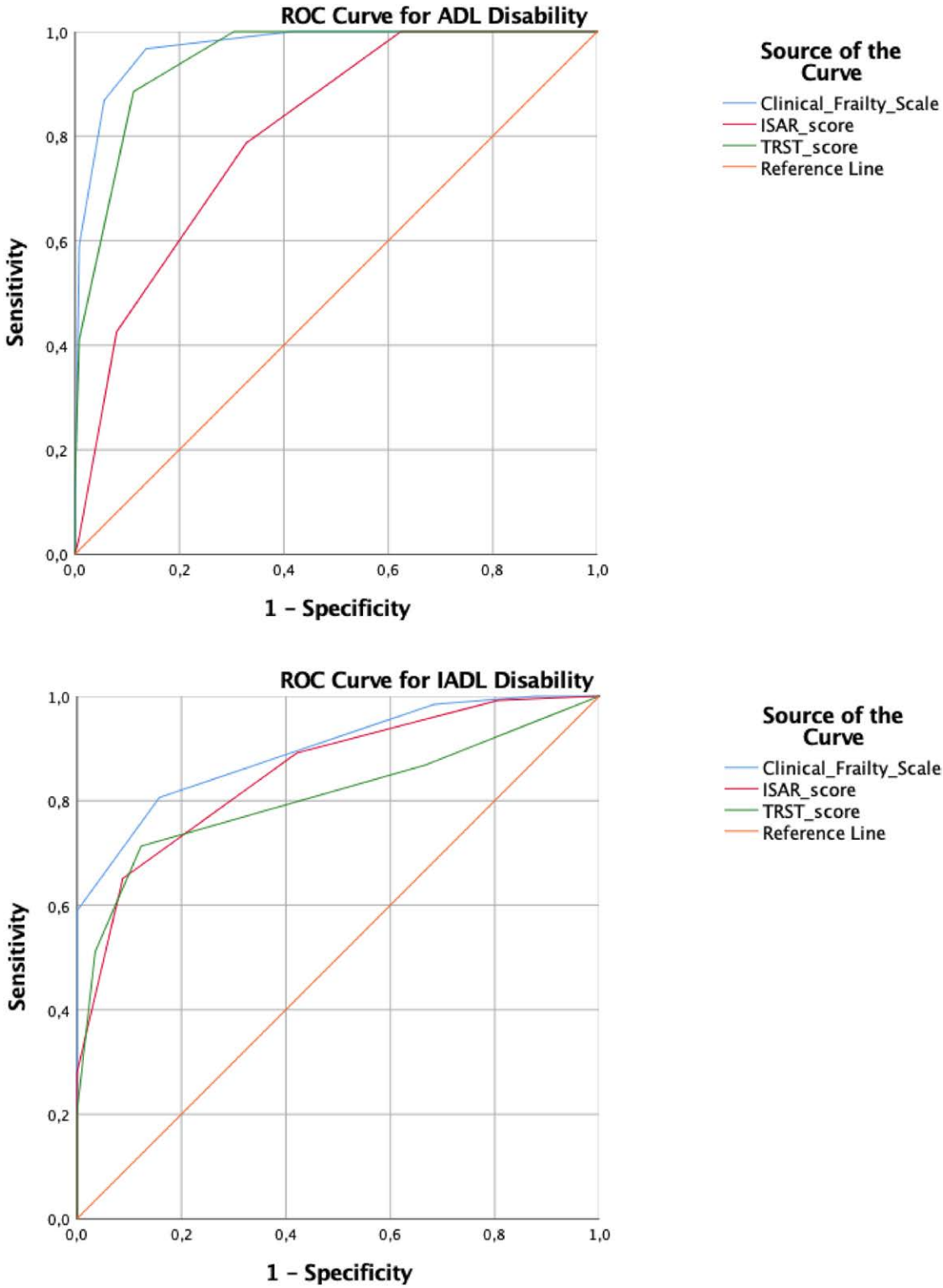

Figure 2. ROC Curves for disability by Triage Risk-Screening Tool (TRST), identification of seniors at risk (ISAR), and CFS in the A) ADL, B) IADL. ROC Curves for ADL and IADL disability by TRST, ISAR, and CFS in the patients are shown in Figure 2. The AUCs for TRST, ISAR, and CFS had good accuracy for predicting ADL and IADL disability. All frailty tools were statistically significant predictors. ADL = activities of daily living, CFS = the Clinical Frailty Scale, IADL = instrumental activities of daily living, ROC = receiver operating curve.

We found that there were significant associations between LOS and frailty as assessed by CSF and TRST. In contrast to our study, Chen et al found no association between LOS and frail patients as assessed by the CFS in the subacute geriatric ward.[16] On the other hand, Ehrlington et al found that older frail patients with CFS who were admitted to the ED had longer LOS as well as higher admission rates, and longer LOS in the ED.[17] It also showed that a 17% reduction in LOS was achieved by early intervention for frailty through CGA in older patients admitted to the ED, with no increase in hospital cost.[18] Frailty interventions can reduce progression of frailty and rehospitalization rates in hospitalized frail older adults.[19]

All frailty tools were statistically significant predictors for disability in terms of ADL and IADL. Frailty according to TRST was shown to be the most effective predictor of 90-day functional disability in older patients admitted to the ED with an urgent need for abdominal surgery.[20] In a study comparing TRST and CFS in surgical older patients, TRST and CFS showed the strongest association with major complications and mortality, while poor agreement with American Society of Anesthesiologists Classification, and no association with LOS were found.[21] Conversely, Dingley et al found that the ISAR score was associated with LOS and functional disability in older trauma patients.[22] In a recent study conducted in the ED, they found that the AUCs for CFS and ISAR had had fair accuracy in predicting institutionalization, hospitalization (30 days) and death.[23] On the other hand, CFS was a predictor of nonhome discharge in another study of post-acute inpatient rehabilitation.[24]

Although LOS and ADL disability were not found to be associated with rehospitalization, there was also evidence that longer LOS was associated with both disability and frailty.[25,26] In a recent study conducted in the acute general surgical inpatient service of a tertiary hospital, greater frailty severity as assessed by CFS was associated with longer hospital stay and disability in Katz ADL, malnutrition, recurrent falls, and cognitive impairment.[27] Furthermore, multimorbidity and frailty coexist and interact in older hospitalized patients, increasing the risk of adverse outcomes beyond their sum.[28] The older patients with poorer cognitive function, as assessed by the Abbreviated Mental Test Score, had a longer LOS than those with normal cognition.[29] A recent study showed that among hospitalized older adults with mild to moderate frailty, the presence of 2 mental domain items and one social domain item of the CGA was associated with the prolonged LOS.[30]

When considering which frailty test is most appropriate for use in emergency settings, the reason for admission to the ED can be considered as the most important factor influencing the choice of tool. The importance of identifying frailty is to recognize the patient's level of recovery. In practice, a delirious patient with acute renal failure due to food poisoning and an advanced dementia patient with acute renal failure due to dysphagia do not have the same level of frailty. However, they may be perceived as having the same level of frailty when they present to ED. Therefore, especially when using CFS, the patient's relatives should be asked about their condition before the ED visit and this scale should be used without bias.

Our study has limitations. Firstly, the recruitment of participants was carried out in a single center and the number of participants recruited was a small sample size. We also found limited concordance between frailty tools. This lack of agreement suggests that these scales may not be interchangeable, which may complicate the application of these findings in clinical practice. Low sensitivity and specificity indicate that these tools may have limited reliability and accuracy in predicting actual functional dependency. In addition, potential confounders affecting frailty status were not reported in this study. Also, the study was cross-sectional and this is not a follow-up study.

5. Conclusion

Frailty, as measured by the CFS, is associated with an increased risk of LOS and adverse health outcomes, including dependency. The CFS is a valuable tool for assessing levels of frailty in older adults and, in place of the ISAR and TRST, can help healthcare providers anticipate and manage especially dependency issues during hospitalization. Longitudinal follow-up is needed to assess the predictive value of frailty scales over time in relation to LOS or functional decline.

Author contributions

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