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ORIGINAL RESEARCH

PRISMA-7 (for frailty assessment) and SARC-F (for evaluation of sarcopenia risk) in predicting emergency department readmission and mortality

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Abstract

Background: Frailty scores can predict hospitalization and other related adversities. The frailty status determination is thus useful in clinical decisions regarding elderly patients. This study was aimed to evaluate the potential of PRISMA-7 (Program on Research for Integrating Services for the Maintenance of Autonomy 7 item questionnaire) and SARC-F (A Simple Questionnaire to Rapidly Diagnose Sarcopenia) scores in predicting hospitalization following the emergency department (ED) admission, readmission at 1, 3 and 6 months, and mortality within 6-month follow-up period. **Methods**: A total of 150 patients of over 65 years age and presented to the ED in 6-month period were included in this prospective study. The patients' SARC-F and PRISMA-7 scores were calculated at the first presentation to ED. Later, the same patients were evaluated via the electronic hospital system and called by phone. Their status was evaluated regarding the recurrent ED visits, hospitalization and mortality at 1, 3 and 6 months. **Results**: At the time of presentation, 72% patients had sarcopenia risk according to SARC-F score and 68.7% had frailty risk as per the PRISMA-7 score. ROC (Receiver Operating Characteristic) analysis exhibited the relationship between long-term mortality and PRISMA-7 and SARC-F scores. The best cut-off value of PRISMA-7 for predicting 6-month mortality was >3 in this study group. The best cut-off for long-term mortality was >7 in the ROC analysis of SARC-F score. **Conclusions**: PRISMA-7 and SARC-F were applicable at the initial presentation to ED as well as at the follow-up. Towards the end of study, positivity of single questionnaire predicted the readmission to ED, especially in the 1st month follow-up, while the positivity of both questionnaires predicted mortality in all the follow-ups. **Clinical Trial Registration**: NCT06525038.

Keywords

Emergency department; Mortality; PRISMA-7; SARC-F

1. Introduction

The elderly patients are approximately one-fifth (22%) of emergency department (ED) visits and this frequency increases with age [1]. The elderly patients are hospitalized more frequently and in higher numbers as they have multiple comorbidities compared to younger patients [2]. Frailty has an average prevalence of 9.9% in the elderly [3]. It is relatively higher in low- and middle-income countries [4]. In the longer run, elderly patients with frailty are at higher risk of hospitalization, repeated ED visits, functional impairments, falls, fractures and death [5–7].

Frailty scores can predict hospitalization and other related adversities. The frailty status determination is thus useful in clinical decisions regarding elderly patients [8]. Several studies have examined the diagnostic accuracy of screening scores for frailty. It is not recommended to employ a single frailty score as there are many frailty screening scores for applying in ED. The often used frailty screening tool is the "Program on Research for Integrating Services for the Maintenance of Autonomy 7 item questionnaire", PRISMA-7. The questionnaire was scored between 0 and 7 points where higher scores indicated higher severity of frailty. A score of $\geq$3 suggested the requirement of further assessment and that the patient had frailty risk [9, 10].

Sarcopenia is a widespread progressive skeletal muscle disorder which includes low muscle strength, muscle quantity or quality and physical performance [11, 12]. The associated adverse health outcomes include falls, functional loss, low life quality, low cognitive function and death. A recommended test for sarcopenia assessment and risk identification is the SARC-F (A Simple Questionnaire to Rapidly Diagnose Sarcopenia) questionnaire. The questionnaire was scored between 0 and 10 points. A score of $\geq$4 demonstrated possible sarcopenia risk

and indicated the need of patient's further examination [13–15].

These screening tools are validated and reported in the studies conducted for clinical settings including hospice, hemodialysis, inpatient and cancer care. However, most screening tools for frailty and sarcopenia are complex and thus impractical for emergency physicians. They require more time. Their administration to the patients in limited time and in emergencies is difficult as it requires most equipment. Among these methods, PRISMA-7 and SARC-F can be applied in ED as they are practical, fast, and convenient [16–18].

The ability of PRISMA-7 and SARC-F is evaluated in this prospective study to predict hospitalization after ED admission, readmission to the hospital ED at 1, 3 and 6 months, and mortality at 6-month follow-up.

2. Materials and methods

2.1 Study design and compliance criteria

A total of 150 patients aged ≥65 years and presented to the emergency department (ED) in 6-month period from January 2023 to July 2023 were included in this study. The patient's gender, comorbidities, and reasons for admission were examined. The admission dates to ED were recorded.

Patients meeting the inclusion criteria and providing written consent to participate in this study were included. The patients were consecutively included in the study. Patients with no spontaneous heartbeat or breathing at the time of ED arrival, the ones refusing to participate in study, and whose information could not be retrieved were excluded. The patients' SARC-F and PRISMA-7 scores were calculated at the first ED presentation. Later, the same patients were evaluated via the electronic hospital system and called by phone. Their status was evaluated regarding the recurrent ED visits, hospitalization, and mortality at 1, 3 and 6 months. Patients were divided into four groups. Group 1: risk of sarcopenia (−) and risk of frailty (−), Group 2: risk of sarcopenia (+) and risk of frailty (−), Group 3: risk of sarcopenia (−) and risk of frailty (+), and Group 4: risk of sarcopenia (+) and risk of frailty (+).

2.2 Frailty and sarcopenia assessment

PRISMA-7 assessment included seven yes/no questions. The questionnaire interrogated patients' demographic characteristics (age and gender), physical ability, limiting medical problems, and dependency on others. The questionnaire was scored between 0 and 7 points where higher scores indicated higher severity of frailty. A score of ≥3 suggested the requirement of further assessment and that the patient had frailty risk. Turkish validity and reliability studies of this questionnaire were conducted [19, 20].

The SARC-F for sarcopenia assessment had five questions. Each question was scored between 0 and 2. The questionnaire interrogated patients' strength, assistance in walking, climbing stairs, rising from chair, and falling status. The questionnaire was scored between 0 and 10 points. A score of ≥4 demonstrated possible sarcopenia risk and indicated the need of patient's further examination. It was highly sensitive for detecting sarcopenia risk in older adults. Bahat *et al.* [21] conducted the Turkish validity and reliability study of SARC-F [21–23].

2.3 Follow-up evaluation and outcome criteria

Patients or their immediate relatives were contacted at 1, 3 and 6 months for the follow-up interviews. The information included hospitalization, readmission to ED, and mortality status. The mortality and ED readmissions of patients with and without frailty and sarcopenia were compared.

2.4 Statistical analysis

The data analysis was carried out by SPSS Version 22 (IBM, Armonk, NY, USA). Kolmogorov-Smirnov test determined whether the numerical data were normally distributed. The numerical parameters exhibiting normal distributions were presented as mean ± standard deviation, while those without normal distribution were shown as median (minimum–maximum). Non-quantitative parameters were analyzed by Chi-square test and expressed as numbers and percentages. Student's *t*-test compared the numerical parameters with normal distribution between the groups, while Mann-Whitney U test compared the non-parametric groups. Kruskal-Wallis and Bonferroni-adjusted Mann-Whitney U tests were conducted for the *post hoc* analysis. ANOVA (Analysis Of Variance) and Tukey or Tamhane tests compared the means in more than two groups (according to the sarcopenia risk and frailty status). Spearman correlation test examined the relationship between numerical parameters. According to Spearman test, the rho coefficient <0.4 was considered a weak correlation, between 0.4 and 0.59 a moderate correlation, between 0.6 and 0.79 a strong correlation, and 0.80 and above a very strong correlation. ROC analyses examined the potential of PRISMA-7 and SARC-F scores in predicting long-term mortality. The cut-off points were assessed by the ROC curve analysis. The best points for both scores (PRISMA-7 and SARC-F) were calculated by Youden index. The significance level was considered as 0.05.

3. Results

Among 150 patients included in this study, 76 (50.7%) were female with mean age 78 ± 8 years. Common complaints at ED presentation were cardiovascular, pulmonary, and gastrointestinal. At the ED presentation time, 72% patients had sarcopenia risk according to SARC-F score and 68.7% had frailty risk as per the PRISMA-7 score. In 6-month follow-up period, 26% patients died and 49.3% readmitted to the ED. Detailed information about the general characteristics of patients are provided in Table 1.

Gender distribution between the groups was not different upon dividing the patients into 4 groups based on sarcopenia and frailty risks. The asthma frequency was higher in frailty risk groups and in the groups with sarcopenia and frailty risks compared to other groups ($p = 0.017$). The sarcopenia and frailty risk group together had higher mean age and more medication usage ($p < 0.001$ and 0.004, respectively). Detailed analysis results are given in Table 2.

TABLE 1. General characteristics of patients.

Parameters	n (%)
Gender	
- Male	74 (49.3)
- Female	76 (50.7)
Complaints	
- General condition disorder	13 (8.7)
- Infectious causes	13 (8.7)
- Cardiovascular causes	40 (26.7)
- Pulmonary causes	20 (13.3)
- Gastrointestinal causes	22 (14.7)
- Other	27 (18.0)
- Neurological causes	15 (10.0)
Comorbidities	
- Asthma	27 (18.0)
- CHD-CHF	77 (51.3)
- DM	43 (28.7)
- HT	83 (55.3)
- Dementia	6 (4.0)
- Malignancy	15 (10.0)
Sarcopenia-frailty Status	
- None	28 (18.7)
- Risk of sarcopenia only	19 (12.7)
- Risk of frailty only	14 (9.3)
- Both	89 (59.3)
PRISMA-7	
- Risk of frailty	103 (68.7)
SARC-F	
- Risk of sarcopenia	108 (72.0)
Outcome	
- Discharged	74 (49.3)
- Exitus	3 (2.0)
- Transfer to service	53 (35.3)
- Transfer to intensive care	20 (13.3)
Evaluation after 1 month	
- Re-admission to the emergency department	46 (30.7)
- No re-admission to the emergency department	77 (51.3)
- Exitus	27 (18.0)
Evaluation after 3 months	
- Re-application to the emergency department	37 (30.1)
- No re-admission to the emergency department	80 (65.0)
- Exitus	6 (4.9)
Evaluation after 6 months	
- Re-application to the emergency department	33 (28.2)
- No re-admission to the emergency department	78 (66.7)
- Exitus	6 (5.1)

TABLE 1. Continued.

Parameters	n (%)
Re-admission to the emergency department during the follow-up process	74 (49.3)
Latest status at the end of follow-up	
- Survivor	111 (74.0)
- Exitus	39 (26.0)
Age, yr, mean ± SD	78 ± 8
Number of medicines, median (min.–max.)	4 (0–14)
PRISMA-7 score, median (min.–max.)	4 (1–7)
SARC-F score, median (min.–max.)	6 (0–10)

CHD: Coronary Heart Disease; CHF: Chronic Heart Failure; DM: Diabetes Mellitus; HT: Hypertension; PRISMA-7: Program on Research for Integrating Services for the Maintenance of Autonomy 7 item questionnaire; SARC-F: A Simple Questionnaire to Rapidly Diagnose Sarcopenia; SD: Standard Deviation; min.: Minimum; max.: Maximum.

At the end of 6-month period, patients were divided into two groups based on at least one visit to the ED and no visit. They were further divided into two groups as who died and survived. Detailed results are presented in Table 3. The mortality rate was higher in patients requiring re-admission to ED (10.8% *vs.* 40.8%, $p < 0.001$). The hypertension (HT) frequency was lower ($p = 0.037$), and malignancy frequency was higher ($p = 0.004$) in patients who died. Mortality rate was higher in the group with both sarcopenia and frailty risks (92.3% *vs.* 47.7%, $p < 0.001$). Upon comparing the deceased patients with survivors, the deceased patients were older ($p = 0.002$), number of medications was higher ($p = 0.002$), and rate of ED visits was lower ($p < 0.001$).

PRISMA-7 score was positively, weakly, and significantly correlated with age (rho: 0.341, $p < 0.001$) and number of medications (rho: 0.214, $p = 0.009$). The SARC-F score depicted statistically significant correlations with age at low positive level (rho: 0.284, $p < 0.001$), number of medications at low positive level (rho: 0.211, $p = 0.010$) and PRISMA-7 score at strong positive level (rho: 0.619, $p < 0.001$).

ROC analysis exhibited the relationship between PRISMA-7 and SARC-F scores with long-term mortality. AUCs (Area Under Curve) in ROC curve analysis were similar between SARC-F and PRISMA-7 scores in predicting the long-term mortality ($p = 0.968$). In the study group herein, the best cut-off value of PRISMA-7 in predicting 6-month mortality was >3 (AUC 0.746, p-value < 0.001, sensitivity 92.31%, specificity 52.25%, negative predictive value 95.1%, and positive predictive value 40%). In ROC analysis of SARC-F score, the best cut-off for long-term mortality was >7 (AUC 0.748, p-value < 0.001, sensitivity 64.10%, specificity 75.68%, negative predictive value 85.7%, and positive predictive value 48.10%) (Fig. 1).

4. Discussion

Several studies had examined the ED usage by elderly patients from various perspectives. These studies focused on the increase in patients over 65 years age instead of explaining the development of age-specific burden over time. Elderly patients often suffered from the illnesses of psychosocial problems linked with functional and cognitive impairments. They increased the risk of ED usage. These patients also had greater risk of side effects after hospitalization. A study found that ED stay, hospitalization rate, and hospital mortality were increased with the age [24–27].

SARC-F and PRISMA-7 scores used in this study were simple. Short questionnaires were filled out by the person himself or relatives. They had good sensitivity and specificity. A study using these scores in EDs reported that PRISMA-7 was the most reliable and accurate among older people in the ED. Another study reported that it had sensitivity of 88% and specificity of 78% among older people living in the ED [28, 29].

The literature studies reported that different scores were used for frailty and sarcopenia of elderly patients in emergency and inpatient departments. The predictive value and superiority of these scores for adverse outcomes like mortality, readmission, and prolonged hospital stay had been discussed [30–33].

The increases in rates of frail and sarcopenic patients visiting the ED could be attributed to the lack of knowledge about evaluation and treatment of these conditions in primary health care systems. The concepts of frailty and sarcopenia should thus be included in medical school education of countries with aging populations [34, 35].

In this study, PRISMA-7 and SARC-F scores were compared for screening the frailty and sarcopenia in elderly patients visiting ED in Turkey to predict readmission to the ED and mortality. Results revealed that 72% patients had sarcopenia and 68.7% had frailty and were consistent with the literature [36, 37]. More than half patients (n = 89, 59.3%) had both scores and were different from the literature [38].

In this study, only one of PRISMA-7 and SARC-F questionnaires had positive predicted mortality in elderly patients. These predictive effects were similar, and the two questionnaires had no superiority over each other ($p = 0.968$). A positive correlation existed between the two questionnaires. Both scores were valid for predicting mortality at 1-month follow-up, especially in patients with positive scores. In some literature studies, the predictive value of scores in predicting adverse outcomes like mortality was poor, while in some

TABLE 2. Comparisons by sarcopenia and frailty risk status.

Parameters	Group 1	Group 2	Group 3	Group 4	*p*-value
Gender					
- Male	18 (64.3)	11 (57.9)	7 (50.0)	38 (42.7)	0.201
- Female	10 (35.7)	8 (42.1)	7 (50.0)	51 (57.3)	
Complaints					
- General condition disorder	1 (3.6)	2 (10.5)	0 (0.0)	10 (11.2)	
- Infectious causes	4 (14.3)	3 (15.8)	1 (7.1)	5 (5.6)	
- Cardiovascular causes	15 (53.6)	3 (15.8)	5 (35.7)	17 (19.1)	
- Pulmonary causes	1 (3.6)	2 (10.5)	2 (14.3)	15 (16.9)	0.090
- Gastrointestinal causes	3 (10.7)	2 (10.5)	1 (7.1)	16 (18.0)	
- Other	2 (7.1)	5 (26.3)	2 (14.3)	18 (20.2)	
- Neurological causes	2 (7.1)	2 (10.5)	3 (21.4)	8 (9.0)	
Comorbidities					
- Asthma	1 (3.6)	1 (5.3)	5 (35.7)	20 (22.5)	0.017
- CHD-CHF	12 (42.9)	12 (63.2)	3 (21.4)	50 (56.2)	0.052
- DM	6 (21.4)	8 (42.1)	0 (0.0)	29 (32.6)	0.034
- HT	16 (57.1)	12 (63.2)	9 (64.3)	46 (51.7)	0.696
- Dementia	0 (0.0)	0 (0.0)	0 (0.0)	6 (6.7)	0.232
- Malignancy	1 (3.6)	3 (15.8)	2 (14.3)	9 (10.1)	0.516
Outcome					
- Discharged	17 (60.7)	7 (36.8)	10 (71.4)	40 (44.9)	
- Exitus	0 (0.0)	0 (0.0)	0 (0.0)	3 (3.4)	0.090
- Transfer to service	7 (25.0)	10 (52.6)	3 (21.4)	33 (37.1)	
- Transfer to intensive care	4 (14.3)	2 (10.5)	1 (7.1)	13 (14.6)	
Evaluation after 1 month					
- Re-admission to the emergency department	5 (17.9)	9 (47.4)	6 (42.9)	26 (29.2)	
- No re-admission to the emergency department	22 (78.6)	10 (52.6)	7 (50.0)	38 (42.7)	0.001
- Exitus	1 (3.6)	0 (0.0)	1 (7.1)	25 (28.1)	
Evaluation after 3 months					
- Re-application to the emergency department	9 (33.3)	7 (36.8)	2 (15.4)	19 (29.7)	
- No re-admission to the emergency department	0 (0.0)	0 (0.0)	0 (0.0)	6 (9.4)	0.253
- Exitus	18 (66.7)	12 (63.2)	11 (84.6)	39 (60.9)	
Evaluation after 6 months					
- Re-application to the emergency department	11 (40.7)	5 (26.3)	4 (30.8)	13 (22.4)	
- No re-admission to the emergency department	0 (0.0)	1 (5.3)	0 (0.0)	5 (8.6)	0.427
- Exitus	16 (59.3)	13 (68.4)	9 (69.2)	40 (69.0)	
Re-admission to the emergency department during the follow-up process	15 (53.6)	12 (63.2)	9 (64.3)	38 (42.7)	0.215
Latest status at the end of follow-up					
- Survivor	27 (96.4)	18 (94.7)	13 (92.9)	53 (59.6)	<0.001
- Exitus	1 (3.6)	1 (5.3)	1 (7.1)	36 (40.4)	
Age, yr, mean ± SD	74 ± 5	75 ± 6	80 ± 9	80 ± 8	<0.001
Number of medicines, median (min.–max.)	4 (0–14)	4 (1–10)	4 (1–12)	5 (0–14)	0.004
PRISMA-7 score, median (min.–max.)	2 (1–2)	2 (1–2)	4 (3–6)	5 (3–7)	<0.001
SARC-F score, median (min.–max.)	0 (0–3)	6 (4–9)	3 (0–3)	8 (4–10)	<0.001

CHD: Coronary Heart Disease; CHF: Chronic Heart Failure; DM: Diabetes Mellitus; HT: Hypertension; PRISMA-7: Program on Research for Integrating Services for the Maintenance of Autonomy 7 item questionnaire; SARC-F: A Simple Questionnaire to Rapidly Diagnose Sarcopenia; SD: Standard Deviation; min.: Minimum; max.: Maximum.

TABLE 3. Comparison of deceased and surviving patients with and without emergency department visits during a six-month follow-up period.

Parameters	Re-admission to the ED n = 76	No re-admission to the ED n = 74	*p*-value	Survivor n = 111	Deceased n = 39	*p*-value
Gender						
- Male	33 (43.4)	41 (55.4)	0.142	59 (53.2)	15 (38.5)	0.114
- Female	43 (56.6)	33 (44.6)		52 (46.8)	24 (61.5)	
Complaints						
- General condition disorder	8 (10.5)	5 (6.8)		7 (6.3)	6 (15.4)	
- Infectious causes	2 (2.6)	11 (14.9)		12 (10.8)	1 (2.6)	
- Cardiovascular causes	20 (26.3)	20 (27.0)		34 (30.6)	6 (15.4)	
- Pulmonary causes	9 (11.8)	11 (14.9)	0.188	13 (11.7)	7 (17.9)	0.174
- Gastrointestinal causes	13 (17.1)	9 (12.2)		16 (14.4)	6 (15.4)	
- Other	15 (19.7)	12 (16.2)		19 (17.1)	8 (20.5)	
- Neurological causes	9 (11.8)	6 (8.1)		10 (9.0)	5 (12.8)	
Comorbidities						
- Asthma	12 (15.8)	15 (20.3)	0.475	19 (17.1)	8 (20.8)	0.635
- CHD-CHF	41 (53.9)	36 (48.6)	0.516	55 (49.5)	22 (56.4)	0.461
- DM	24 (31.6)	19 (25.7)	0.424	30 (27.0)	13 (33.3)	0.454
- HT	36 (47.4)	47 (63.5)	0.047	67 (60.4)	16 (41.0)	0.037
- Dementia	4 (5.3)	2 (2.7)	0.681	3 (2.7)	3 (7.7)	0.182
- Malignancy	9 (11.8)	6 (8.1)	0.446	6 (5.4)	9 (23.1)	0.004
Sarcopenia-frailty Status						
- None	13 (17.1)	15 (20.3)		27 (24.3)	1 (2.6)	
- Risk of sarcopenia only	7 (9.2)	12 (16.2)	0.215	18 (16.2)	1 (2.6)	<0.001
- Risk of frailty only	5 (6.6)	9 (12.2)		13 (11.7)	1 (2.6)	
- Both	51 (67.1)	38 (51.4)		53 (47.7)	36 (92.3)	
PRISMA-7						
- Risk of frailty	56 (73.7)	47 (63.5)	0.179	66 (59.5)	37 (94.9)	<0.001
SARC-F						
- Risk of sarcopenia	58 (76.3)	50 (67.6)	0.233	71 (64.0)	37 (94.9)	<0.001
Latest status at the end of follow-up						
- Survivor	45 (59.2)	66 (89.2)	<0.001			
- Exitus	31 (40.8)	8 (10.8)				
Re-admission to the emergency department during the follow-up				66 (59.5)	8 (20.5)	<0.001
Age, yr, mean ± SD	79 ± 8	77 ± 7	0.135	77 ± 7	82 ± 8	0.002
Number of medicines, median (min.–max.)	5 (0–14)	4 (0–12)	0.155	4 (0–14)	5 (0–14)	0.002
PRISMA-7 score, median (min.–max.)	5 (1–7)	4 (1–7)	0.084	3 (1–7)	5 (1–7)	<0.001
SARC-F score, median (min.–max.)	7 (0–10)	6 (0–10)	0.248	5 (0–10)	8 (1–10)	<0.001

CHD: Coronary Heart Disease; CHF: Chronic Heart Failure; DM: Diabetes Mellitus; HT: Hypertension; PRISMA-7: Program on Research for Integrating Services for the Maintenance of Autonomy 7 item questionnaire; SARC-F: A Simple Questionnaire to Rapidly Diagnose Sarcopenia; SD: Standard Deviation; min.: Minimum; max.: Maximum.

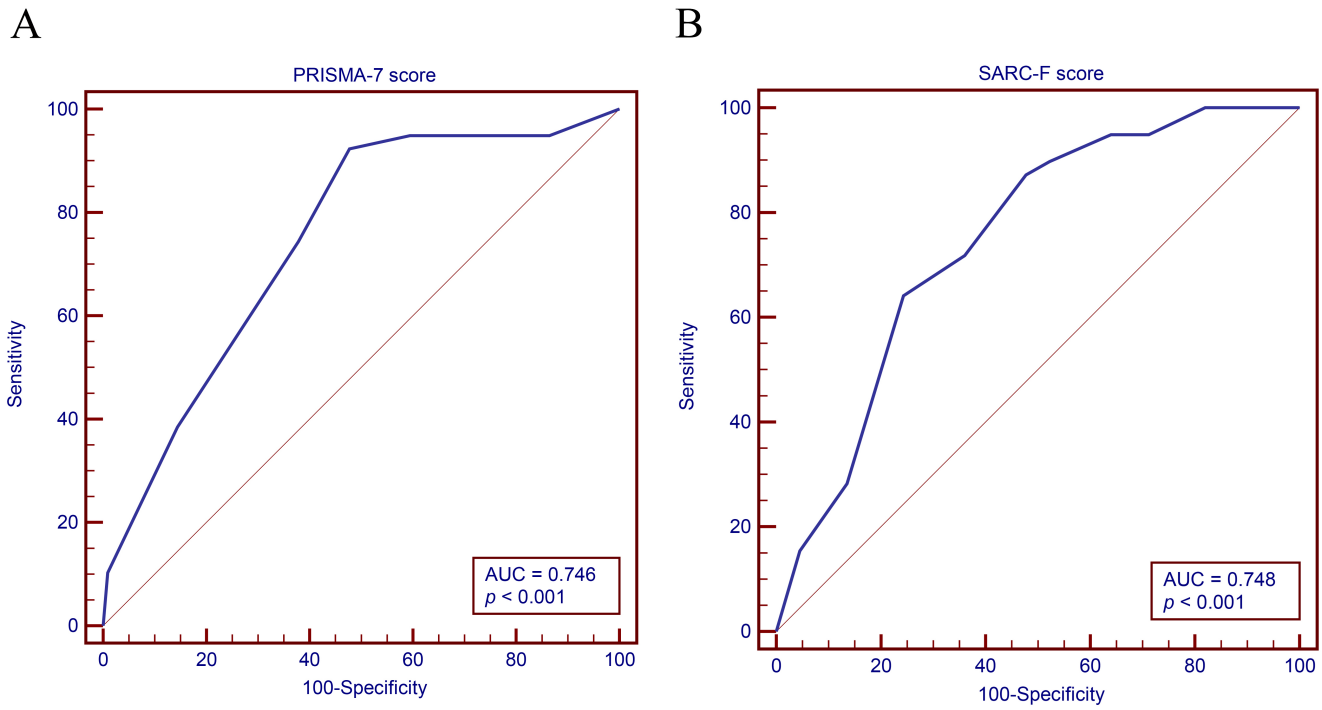

FIGURE 1. ROC analysis of PRISMA-7 and SARC-F scores in predicting long-term mortality (6 months). (A) ROC analysis for PRISMA-7 score. (B) ROC analysis for SARC-F score. PRISMA-7: Program on Research for Integrating Services for the Maintenance of Autonomy 7 item questionnaire; SARC-F: A Simple Questionnaire to Rapidly Diagnose Sarcopenia; AUC: Area Under Curve.

studies, it had been reported to predict mortality. In this study, ROC analysis depicted the relationship of long-term mortality with PRISMA-7 and SARC-F scores. Both had significance in predicting 6-month mortality. The mortality rate was higher in those who were readmitted to the ED than those who did not (10.8% *vs.* 40.8%, $p < 0.001$). This situation may derive from the reason that the patients who are needed to recurrence for ED admission had high disease burden and poor prognosis, indicating frailty and vulnerability [30–32, 39].

The positivity of both scores had an impact in predicting mortality, wherein the survival rates were decreased in subsequent follow-ups. The positivity of both scores was thus effective in predicting readmission to ED at 1-, 3- and 6-month follow-up. Between the PRISMA-7 and SARC-F scores, only one being positive was more predictive of readmission to ED at 1-month follow-up. Literature studies with different scoring methods of frailty and sarcopenia had been poor in predicting readmission to hospital or ED [31, 32, 39].

Aprahamian I. *et al.* [33] applied FRAIL and SARC-F as the accurate methods to predict sarcopenia and frailty. It was reported that these two scores were moderately correlated with each other, and the sarcopenia was a cornerstone in the phenotypic biological model of physical frailty. Similarly, a positive correlation was found between SARC-F and PRISMA-7 in this study.

This study had certain limitations and strengths. The study had limitations like it was single-centered, and number of people trained to respond questionnaires was low. Furthermore, the causes of death and ED re-admission were not examined in detail. Strengths included the demographic information of all the patients, and information on re-admission to ED and mortality. Moreover, the hospital records were accurate. They provided information pertaining to the long-term prognosis via simple, short, and rapid tests that could be applied in ED.

5. Conclusions

In this study, it was demonstrated that PRISMA-7 and SARC-F questionnaires were applicable at initial presentation to ED and at follow-up. ROC analysis exhibited the relationship between long-term mortality and PRISMA-7 and SARC-F scores. The best cut-off value of PRISMA-7 for predicting 6-month mortality was >3 in this study group. The best cut-off for long-term mortality was >7 in the ROC analysis of SARC-F score. Towards the end of study, it was found that the positivity of single questionnaire was predictive of readmission to ED, especially in the first month follow-up, while positivity of both questionnaires was predictive of mortality in all the follow-ups.

AVAILABILITY OF DATA AND MATERIALS

The data presented in this study are available on reasonable request from the corresponding author.

AUTHOR CONTRIBUTIONS

MCG—is responsible in concept and design of the study, acquisition of data, analysis and interpretation of the data, and drafting of the manuscript. EG and FA—is responsible for

analysis and interpretation of the data and critical revision for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication and take responsibility for its accuracy and integrity.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The research was carried out in compliance with the Declaration of Helsinki. The study protocol was approved by the Non-Interventional Research Ethics Committee of Firat University (approval number: 2022/12-13) and the study was registered in the ClinicalTrials.gov (NCT06525038). Patients and their relatives were informed about the study to obtain written informed consent.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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