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Frailty screening of older patients in emergency departments in Norway

SHORT REPORT

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Background

Frail older patients admitted to a hospital emergency department have a heightened risk of delirium, falls and death. No data exists on the prevalence of frailty in this patient group. The aim of this study was to map the incidence of frailty in older patients in two emergency departments in Norway.

Material and method

All patients aged ≥ 75 years who were admitted to an emergency department at the hospitals in Tønsberg and Tromsø in week 47 (20 November to 26 November) of 2023 were consecutively screened using the Clinical Frailty Scale (CFS). CFS scores indicate the level of frailty on a scale from 1 to 9. The patients were also assessed using the 4AT tool, where a score of ≥ 4 may indicate delirium.

Results

Among the 289 patients included (mean age 83 years; 54 % women), 66 % had a CFS score of ≥ 4 (frail), 54 % had a score of 4–6 (very mild to moderate frailty) and 12 % had a score above 7 (severe frailty). Among those classified as frail (CFS score 4–9), 35 % had a 4AT score ≥ 4, compared to 7 % among robust patients (CFS score 1–3).

Interpretation

A high proportion of patients aged ≥ 75 years admitted to two hospital emergency departments in Norway were categorised as frail. This is an important observation for the future optimisation of care pathways for older patients in emergency departments.

Main findings

Sixty-six per cent of patients aged ≥ 75 years admitted to a hospital emergency department had a CFS (Clinical Frailty Scale) score of ≥ 4 and some degree of frailty.

Fifty-four per cent of patients aged ≥ 75 years admitted to a hospital emergency department had mild to moderate frailty (CFS score 4–6).

Patients with frailty were admitted to various hospital departments.

Adults over the age of 75 constitute a heterogeneous group, ranging from those who are robust and active to those with varying levels of frailty. Frailty is a medical condition characterised by loss of reserves, which gives rise to vulnerability to negative outcomes when faced with acute illness or external stressors (1).

Adults with frailty are at risk of disproportionate health loss from minor stressors, as well as complications such as delirium, prolonged hospital stays and death following an emergency hospital admission (2, 3).

Data from the population-based Trøndelag Health Study (HUNT) showed a 10–35 % prevalence of frailty among adults aged ≥ 70 (4). However, the prevalence of frailty in older patients admitted to hospital emergency departments in Norway is unknown.

Frailty can be assessed using various methods. The Clinical Frailty Scale (CFS) is a screening tool with a scale from 1 to 9, where a score of ≥ 4 reflects increasing levels of frailty (1). Scoring is based on clinical assessments of observations and medical history. The CFS has proven to be a robust and easy-to-use screening tool that can be completed in just a few minutes in emergency departments (5). In the case of acute illness, CFS scores are based on the level of frailty two weeks prior to admission (6). The 4AT (4 'A's Test) is a recognised screening tool for delirium, consisting of four items that give a total score from 0 to 12. A score of ≥ 4 should raise suspicion of delirium (7).

The primary aim of the study was to assess the prevalence of frailty in emergency admission patients aged ≥ 75 years at two hospitals in Norway. We also examined demographic data and signs of delirium using the 4AT.

Material and method

A prospective quality improvement project was conducted in the emergency department at Vestfold Hospital Trust in Tønsberg, and the emergency department at the University Hospital of North Norway in Tromsø. Approval was obtained from the data protection officer at Vestfold Hospital Trust (case 22/05027) and at the University Hospital of North Norway (case 23/03180). The project entailed screening all patients aged ≥ 75 years admitted to the emergency departments using the CFS and 4AT, with a view to bringing the quality of care up to international standards.

Data collection was in week 47 (20 November to 26 November) of 2023, chosen as a random week without public holidays. Demographic variables were recorded, and the National Early Warning Score 2 (NEWS2) was used as a standard triage tool. Admission was defined as an emergency admission with a stay of more than five hours, and patients aged ≥ 75 years were included as they arrived at the respective emergency departments. CFS screening was performed by the attending doctor, nurse or non-licensed medical student (only in Tromsø). In Tromsø, some patients were screened using CFS by a medical student the day after admission. The CFS score was based on the level of frailty two weeks before admission. An international clinical screening test for signs of delirium (4AT) was also used.

Nurses and doctors in the emergency department at the University Hospital of North Norway received internal training and access to an instructional video on CFS scoring and 4AT scoring before the project started. At Vestfold Hospital Trust, clinical staff, under the supervision of project staff, routinely assessed patients aged ≥ 75 years using the CFS and the 4AT tool. This practice was implemented in spring 2022.

Frailty was defined as a CFS score of ≥ 4, where 4–6 was classified as very mild to moderate frailty, and 7–9 as severe frailty. Patients with a CFS score of < 4 were classified as robust. A 4AT score of ≥ 4 was considered a possible sign of delirium.

Statistics

All data were de-identified before processing and analysis. The data were entered into the REDCap database (Tromsø) and Excel (Tønsberg), and analysed using STATA 16 (StataCorp 2019, College Station, Texas, USA) and SPSS 29 (IBM Corp, Armonk, NY). Continuous variables are presented as the median with interquartile range and dispersion, while categorical variables are presented as absolute numbers and percentages.

Results

A total of 289 patients aged ≥ 75 years were included in the study. A description of the patients, demographic variables and admission departments for each hospital is provided in Table 1.

Table 1

Clinical demographic variables and results from CFS scoring (1) and the 4AT tool for identifying delirium (7) in hospital patients aged ≥ 75 years at the University Hospital of North Norway in Tromsø and Vestfold Hospital Trust in Tønsberg, in week 47 of 2023. Continuous variables are presented as the median (interquartile range; IQR). NEWS2 = National Early Warning Score 2

	Vestfold Hospital Trust	University Hospital of North Norway
	N = 203	*N* = 86
Median age, years (IQR)	82 (9)	80 (8)
Sex		
Female, n (%)	112 (56)	45 (52)
Male, n (%)	91 (44)	41 (48)
CFS score (IQR)	5 (3)	4 (3)
CFS score ≥ 4, n (%)	144 (70)	51 (59)
Fall in last 14 days,[1] n (%)	78 (38)	22 (26)
4AT score ≥ 4[2] n/N (%)	51/177 (29)	9/63 (14)
NEWS2 score (IQR)	2 (5)	1 (4)
Admission department with CFS score ≥ 4		
Medical department, *n* (%)	79 (55)	32 (63)
Surgical department, *n* (%)	18 (13)	9 (18)
Orthopaedic department, *n* (%)	33 (23)	7 (14)
Other department, *n* (%)	14 (10)	3 (6)

[1]Defined as a fall indoors in the last 14 days.

[2]4AT score ≥ 4 defined as a sign of delirium; applies to 177 patients at Vestfold Hospital Trust and 63 at the University Hospital of North Norway.

Of the emergency admission patients aged ≥ 75 years, 192/289 (66 %) had a CFS score ≥ 4, 157/289 (54 %) had mild to moderate frailty (CFS score 4–6) and 35/289 (12 %) had severe frailty (CFS score 7–9). See Figure 1.

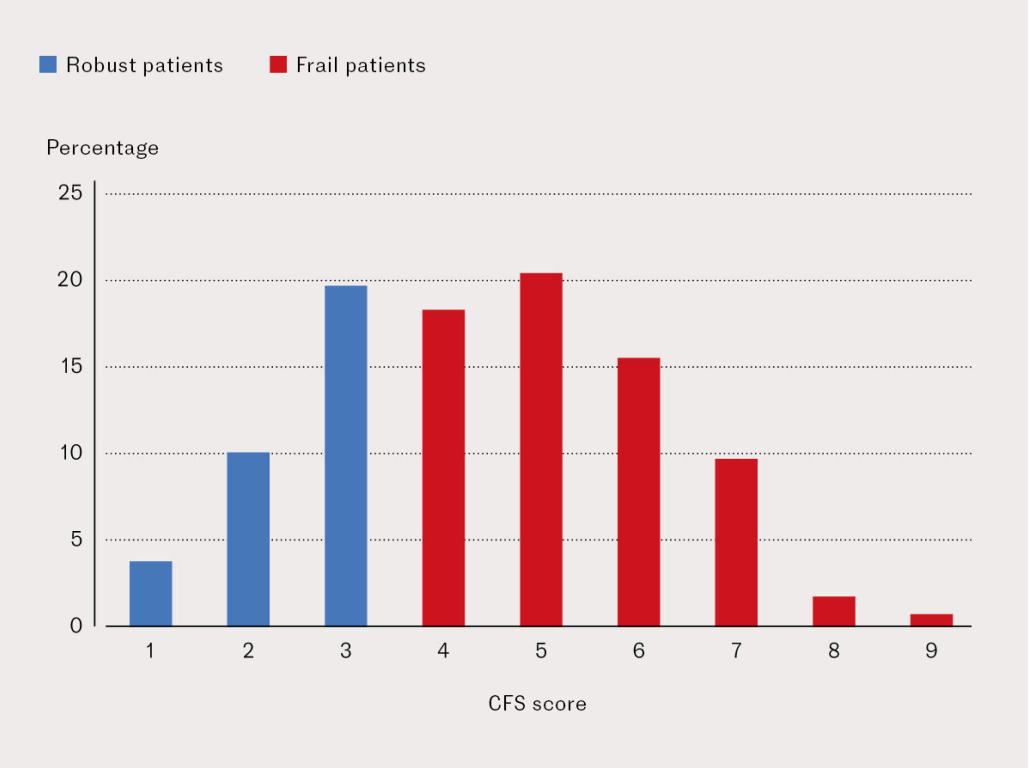

Figure 1 CFS scores (1) for emergency admission patients aged ≥ 75 years combined for the University Hospital of North Norway, Tromsø and Vestfold Hospital Trust, Tønsberg, in week 47 of 2023. The CFS score indicates the level of frailty on a scale from 1–9. Blue = robust patients (CFS scores 1–3), red = frail patients (CFS scores 4–9).

A total of 240/289 patients (83 %) were assessed using the 4AT test. Of these, 60/240 (25 %) had a 4AT score ≥ 4, which may indicate delirium. Among patients with frailty (CFS score ≥ 4), 54/155 (35 %) had a 4AT score ≥ 4. Among robust patients (CFS score < 4), 6/85 (7 %) had a 4AT score ≥ 4.

Discussion

We found that 66 % of the patients included had some degree of frailty. This is a high proportion compared to findings from a European multi-centre study (8) but aligns well with data from Sweden (9). As far as we are aware, no other studies in Norway have systematically assessed frailty in emergency departments using the CFS.

The high proportion of frail patients with an elevated 4AT score, indicating a risk of delirium, is consistent with previous literature (3). This can partly be explained by the fact that dementia, which is associated with an increased risk of delirium, is covered in the CFS. The overall proportion of patients with an elevated 4AT score is in line with earlier Norwegian data (7).

Assessing frailty in emergency departments has several advantages. Patients with a high level of frailty are at increased risk during, for example, surgery and other interventions. A high CFS score should trigger an assessment of which treatment is most appropriate, in order to avoid overtreatment. Meanwhile, accurately identifying robust patients – those who can tolerate stressors – can help prevent age-related undertreatment. Furthermore, frailty assessments can serve as a gateway to optimising factors such as polypharmacy, nutrition and delirium prevention. Failing to consider these elements in the emergency department can lead to unnecessary examinations, inefficient use of resources and inadequate tailoring of treatment based on the patient's level of vulnerability (2).

Strengths and weaknesses of the study

We have reported prospective findings from hospitals in two different regions of Norway, using validated screening tools.

A smaller proportion of patients were assessed with the 4AT test compared to the CFS. This is partly because some patients were in such critical condition upon admission that it was not medically justifiable to prioritise 4AT scoring. Additionally, project staff were not present around the clock in Tromsø to ensure that all scores were obtained. CFS screening can be undertaken the day after admission, whereas the 4AT test must be administered in the emergency department in order to be representative.

Conclusion

The proportion of older people in Norway is expected to rise in the coming years, leading to an increase in the number of patients who are frail at the time of hospitalisation. Early identification of frailty will enable tailored care pathways and make healthcare personnel aware of this important risk factor for negative outcomes. We believe that systematic frailty assessments should be implemented in emergency departments in Norway.

The article has been peer-reviewed.

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