Complexity and Care Needs of Elderly Patients in Internal Medicine Wards: A Prevalence Study

Sofia Pomarè, Gaia Dussi, Stefania Chiappinotto, Alessia Scudeler, Renzo Moreale, Chiara Moreal, Alvisa Palese, Gaia Magro

University of Udine, Department of Medicine, Udine, Italy
pomare.sofia@spes.uniud.it, dussi.gaia@spes.uniud.it, stefania.chiappinotto@uniud.it, alessia.scudeler@studenti.units.it, renzo.moreale@uniud.it moreal.chiara@spes.uniud.it, alvisa.palese@uniud.it, magro.gaia@spes.uniud.it

The progressive ageing of the population increases the clinical and functional complexity of elderly patients admitted to internal medicine wards. This study aims to describe the complexity of elderly patients in internal medicine wards, focusing on their clinical and functional characteristics. A prevalence study was conducted in 19 internal medicine wards in a north-eastern region of Italy, including 700 elderly patients. The assessment covered demographic characteristics, clinical status, comorbidities, Activities of Daily Living, fall risk through Conley scale, pressure injury risk through Norton scale and medical devices. Hospitalised elderly patients present complex clinical and functional profiles, with high comorbidity and moderate risks of falls and pressure injuries. The findings support the need for comprehensive, multidisciplinary care approaches that address patient complexity, maintain autonomy, and integrate hospital-community continuity of care through healthcare team collaboration.

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1 Introduction

Population ageing is one of the challenges facing healthcare systems. Increased life expectancy, combined with the growing prevalence of chronic diseases, has resulted in a progressive rise in the number of elderly patients admitted to hospital, especially in internal medicine wards. These patients often present with complex clinical characteristics, including multimorbidity, reduced physiological capacity, functional impairment, and high vulnerability to adverse events during hospitalisation (Brown et al., 2004; Berger et al., 2025).

Hospitalisation for acute medical illness is a crucial event in the process of functional decline in elderly and frail people (Creditor, 1993). Hospitalisation may represent an additional stressor due to environmental risks, reduced caloric intake, low physical activity or prolonged bed rest, depressed phycological state, and social isolation. In addition, the hospitalisation of older patients could make geriatric syndromes worse and exacerbate existing illnesses. Health status decline during hospitalisation could significantly affect quality of life and in elderly patients it is associated with an increased risk of a longer hospital recovery (Volpato et al., 2016). Older people often experience a loss of physical function, which negatively affects their ability to regain their pre-illness or pre-admission functional status. Consequently, functional decline can lead to a loss of independence and an increased risk of hospital readmission. Patients who are already frail are particularly vulnerable, as their ability to respond to an acute stressor is impaired. Patients in a frail state who are admitted to hospital are more likely to experience poorer health outcomes and longer lengths of stay. Although hospitalisation aims to diagnose and treat illnesses and thereby improve patients' health, returning to pre-admission physical and function could be compromised (O'Brien et al., 2023). In this scenario, internal medicine wards play a central role in caring for older adults, often admitting patients with acute exacerbations of chronic conditions, frailty, and functional limitations. Functional decline and reduced mobility are highly prevalent and critical aspects of patient complexity. Several studies have shown that elderly patients in hospital spend most of their stay in bed, even when their clinical condition would allow them to move around. This contributes to hospital-acquired disability, prolonged length of stay, and increased risk of institutionalisation (Brown et al., 2004; Pedersen et al., 2013). Despite increasing awareness of these issues, there are limited data on the prevalence of functional impairment, immobilisation, and related care needs among elderly

patients admitted to internal medicine wards in Italy. Understanding the extent and characteristics of this complexity is essential to inform multidisciplinary care models aimed at preserving mobility, preventing complications, and improving outcomes.

1.1 Aim

The aim of this study was to describe the clinical and functional complexity and care needs of elderly patients admitted to internal medicine wards, focusing on multimorbidity, functional status, immobilization, and associated risks.

2 Methods

2.1 Study Design

A prevalence study was conducted to describe the clinical and functional characteristics and care needs among elderly patients hospitalized in internal medicine wards. Prevalence studies are particularly suitable for assessing the burden of health conditions and care-related phenomena at a specific point in time, especially in complex hospital populations (Schrank et al., 2013).

2.2 Setting

The study was carried out in 19 internal medicine wards across hospitals belonging to three healthcare authorities in a Northeast region of Italy. These wards represent typical acute care settings for elderly patients with medical complexity.

2.2 Population

The population consisted adult patients hospitalized during the data collection period. Inclusion criteria were age ≥18 years, hospitalization in an internal medicine ward, and provision of informed consent. Patients were excluded if they were in palliative sedation, not present in the ward at the time of data collection.

2.3 Data Collection and Instruments

Data were collected from June to September 2025, using a tool specifically developed for the study, as no single validated instrument was able to capture simultaneously the clinical and functional dimensions of patient complexity. The development of the tool was informed by existing literature on mobility, functional assessment, and hospitalization-related risks (Brown et al., 2004; Mani et al., 2022).

Prior to data collection, the tool underwent content validation by nursing experts and pilot testing in one medical ward to ensure feasibility, clarity, and consistency of data recording. Data were collected through review of medical and nursing records and patient observation. Brief interviews were conducted with the reference nurse of the patients, allowing the integration of documented and experiential information related to patient mobility and care needs.

The patient-related variables included demographic, clinical, and social data such as: date of admission, age, gender, main diagnosis for admission, main comorbidities, presence of caregivers at the time of data collection, invasive devices, oxygen therapy, pressure injuries at admission and at the time of assessment, the patient's anthropometric measurements (weight, height, and body mass index), the use of any mobility aids both at home and during hospitalization, and the type of hospitalization (scheduled, emergency room, or transfer from another ward).

In addition, data were collected using validated assessment scales, calculated upon the patient's admission to the hospital and at the time of detection, so that any changes during the hospital stay could be observed. The patient's pain was recorded using the Numerical Rating Scale (NRS), a one-dimensional verbal scale that assesses pain intensity in adults on a rising scale from 0 to 10 (Downie et al., 1978). Risk of falls was evaluated using the Conley scale, which assesses both patient-reported and clinician-observed risk factors and supports the identification of patients requiring preventive interventions (Guzzo et al., 2015). Risk of pressure injuries was assessed using the Norton scale, which evaluates physical condition, mental status, activity, mobility, and continence, and is commonly used in acute care settings for elderly patients (Halek & Mayer, 2002). Functional autonomy was assessed using the Katz Index of Activities of Daily Living (ADL), a widely used and validated tool for evaluating independence in six basic activities: bathing, dressing, toileting,

transferring, continence, and feeding (Katz et al., 1963). Functional impairment is a recognized marker of complexity and a strong predictor of adverse outcomes in hospitalized elderly patients (Brown et al., 2004).

2.4 Statistical Analysis

Descriptive statistical analyses were performed using SPSS version 28. Continuous variables were summarized as means and 95% confidence intervals, while categorical variables were reported as frequencies and percentages.

2.5 Ethical Considerations

The study was approved by the Institutional Review Boards of the Department of Medicine of the University of Udine (protocol no. 190/2025 of 12/06/2025).

The directors of the healthcare authorities were involved and their consent was obtained. The data were collected after adequate information was provided and the informed consent form was signed. All data were processed in a manner that guaranteed complete anonymity.

3 Results

The study sample comprised 700 patients, with a mean age of approximately 79.5 years (95% CI 78.5–80.4), and no significant difference in gender (346 males and 354 females). Patients had a mean body mass index (BMI) of 25 kg/m² (95% CI 24.36–26.09) and a mean body weight of 69 kg (95% CI 67.04–71.36). At hospital admission, 22.6% of patients (n = 158) presented pressure injuries; this proportion remained stable, with a slight increase to 23.6% (n = 165). Approximately for half of the study sample an anti-pressure ulcer mattress was used during hospitalisation (n = 338; 48.3%) and a physical restraint device at the time of observation (n = 348; 49.7%). Among restraint devices, about half used bed rails (n = 327; 46.7%). Some used bed rails combined with a belt (n = 6; 0.9%) or wrist restraints (n = 4; 0.6%), and only one patient used bed rails combined with mittens (0.1%). A restraint belt was applied to one patient (0.1%), while the combination of belt, wrist restraints, and bed rails was used in three patients (0.3%). Caregivers were present for 93 patients, corresponding to 13.3%. Almost all patients (n = 687; 98.1%) had at least

one device in place (mean 1.34; 95% CI 1.34–1.43), most commonly a venous access device; each patient had on average one venous access (95% CI 0.96–0.99). Furthermore, 215 patients (30.7%) had a urinary catheter, 16 (2.3%) a nasogastric tube, 15 (2.1%) a percutaneous endoscopic gastrostomy (PEG), and two patients had drains (hepatic and peritoneal). In addition, 30 patients (4.2%) had a stoma; the most frequent was nephrostomy (n = 9; 1.3%), followed by tracheostomy (n = 8; 1.1%). Other types of devices were present in six patients (0.8%), specifically subcutaneous venous ports (n = 3; 0.4%), negative pressure wound therapy devices (n = 2; 0.3%), and dialysis catheters (n = 1; 0.1%). Moreover, 168 patients (24% of the total sample) were receiving oxygen therapy at the time of observation.

Regarding the NRS, on average 95% of patients reported no pain, with a mean score of 1 at admission (0.57; 95% CI 0.46–0.68) and 0 at the time of observation (0.16; 95% CI 0.10–0.22). The Norton scale remained stable between admission and data collection, with a mean score in 95% of the study population of 13.04 (95% CI 12.71–13.38) at admission and 12.92 (95% CI 12.58–13.26) at the time of observation. Similarly, the Conley scale showed relative stability between admission and observation, with a mean score of 3.21 (95% CI 2.98–3.44) at admission and 2.98 (95% CI 2.80–3.16) at the time of observation. The Katz Index of ADL also remained stable between admission (2.98; 95% CI 2.80–3.16) and data collection (2.67; 95% CI 2.31–3.04), with an mean score of approximately 3. Overall, 94.4% of patients had one or more relevant comorbidities, with a mean of approximately three comorbid conditions per patient (3.15; 95% CI 3.03–3.28). Based on the collected data, most hospitalised patients were admitted through the emergency department (n = 632; 90.3%), while the remaining 68 patients were admitted via transfer from another facility (n = 52; 7.4%) or through planned admission (n = 16; 2.3%). The mean length of stay for 95% of the study sample was approximately 10 days (9.96; 95% CI 9.00–10.91). Findings for each variable relating to the patients' characteristics are reported in Table 1.

Table 1: Variables relating to the patients' clinical and care data (n=700)

Variables	700 (100%)
Age, mean (95% CI)	79.5 (78.54–80.40)
Sex, n (%)	
Male	346 (49.4)
Female	354 (50.6)
Weight (kg), mean (95% CI)	69.2 (67.04–71.36)
BMI (kg/m²), mean (95% CI)	25.2 (24.36–26.09)
Pressure injuries at admission, n (%)	
Yes	158 (22.6)
Pressure injuries at observation, n (%)	
Yes	165 (23.6)
Anti-pressure ulcer mattress, n (%)	
Yes	338 (48.3)
Physical restraints at observation, n (%)	
Yes	348 (49.7)
Restraints per patient, mean (95% CI)	0.5 (0.49–0.57)
Type of restraint, n (%)	
Bed rails	327 (46.7)
Bed rails + belt	6 (0.9)
Bed rails + wrist restraints	4 (0.6)
Bed rails + mittens	1 (0.1)
Belt	1 (0.1)
Wrist restraints + belt + bed rails	3 (0.3)
Over-bed table	4 (0.6)
Over-bed table + belt + bed rails	1 (0.1)
Caregiver present at observation, n (%)	
Yes	93 (13.3)
Any medical device in place, n (%)	
Yes	687 (98.1)
Devices per patient, mean (95% CI)	1.4 (1.34–1.43)
Venous access, mean (95% CI)	1.0 (0.96–0.99)
Urinary catheter, n (%)	
Yes	215 (30.7)
Nasogastric tube, n (%)	
Yes	16 (2.3)
Percutaneous endoscopic gastrostomy (PEG), n (%)	
Yes	15 (2.1)
Drains, mean (95% CI)	0.0 (0.00–0.01)
Type of drain, n (%)	
Hepatic	1 (0.1)
Peritoneal	1 (0.1)
Stomas, mean (95% CI)	0.05 (0.03–0.06)
Type of stoma, n (%)	30 (4.2)
Nephrostomy	9 (1.3)
Tracheostomy	8 (1.1)
Ureterostomy	5 (0.5)
Colostomy	4 (0.4)
Pyelostomy	4 (0.4)

Variables	700 (100%)
Other devices, n (%)	
Yes	6 (0.8)
Type of other devices, n (%)	
Subcutaneous venous port	3 (0.4)
Negative pressure wound therapy	2 (0.3)
Dialysis catheter	1 (0.1)
Oxygen therapy, n (%)	
Yes	168 (24.0)
Pain at admission (NRS), mean (95% CI)	0.6 (0.46–0.68)
Pain at observation (NRS), mean (95% CI)	0.2 (0.10–0.22)
Norton scale at admission, mean (95% CI)	13.0 (12.71–13.38)
Norton scale at observation, mean (95% CI)	12.9 (12.58–13.26)
Conley scale at admission, mean (95% CI)	3.2 (2.98–3.44)
Conley scale at observation, mean (95% CI)	3.0 (2.80–3.16)
Katz Index of ADL at admission, mean (95% CI)	3.0 (2.80–3.16)
Katz Index of ADL at observation, mean (95% CI)	2.7 (2.31–3.04)
Comorbidities, n (%)	
Yes	661 (94.4)
Number of comorbidities, mean (95% CI)	3.2 (3.03–3.28)
Type of admission, n (%)	
Emergency department	632 (90.3)
Transfer from another facility	52 (7.4)
Planned admission	16 (2.3)
Length of stay (days), mean (95% CI)	10.0 (9.00–10.91)

4 Discussion

A total of 700 patients hospitalised in Internal Medicine wards in hospitals in Friuli-Venezia Giulia were included. The sample did not shown differences in terms of gender and had a high mean age, confirming that most patients admitted to Internal Medicine wards are older adults, as previously reported in the literature (Sonnenblick et al., 2007). Anthropometric measurements were within the normal range, with a mean BMI of 25 kg/m² and a mean body weight of 69 kg. Height was often missing from clinical records, as it is not routinely documented in clinical practice. This finding is consistent with previous studies showing low rates of height documentation in hospital settings (McFall et al., 2019; Therre et al., 2025). About half of the patients were subjected to mechanical restraints, mainly bed rails, which limit mobility and often confine patients to bed. This finding aligns with previous evidence indicating that bed rails are frequently used inappropriately, especially in patients with agitation or cognitive impairment (Atee et al., 2024). Most patients were unaccompanied by a caregiver at the time of observation. Given the advanced

age of the sample, caregiver presence could support patients during their recovery, as reported by Mani et al. (2022).

Norton scores at admission and observation indicate a moderate risk of pressure injuries; the prevalence of pressure injuries did not increase during hospitalisation, likely reflecting the preventive strategies adopted by healthcare staff. The prevalence of pressure ulcers already present at admission suggests that many patients experience prolonged periods of reduced mobility before hospitalisation, reinforcing the need for continuity of preventive strategies across care settings. The risk of falls, assessed by the Conley scale, remained stable, indicating a persistent fall risk, which is consistent with the association between advanced age and falls reported in the literature (Li et al., 2022). The moderate-to-high risk of falls and pressure injuries identified in this study underscores the importance of systematic risk assessment using validated tools such as the Conley and Norton scales (Guzzo et al., 2015; Halek & Mayer, 2002). Pain was not a significant limiting factor, as 95% of patients reported no or well-controlled pain at both admission and observation. The Katz Index of ADL indicated partial dependence in 95% of the sample, with a mean score of 3, highlighting the need for support in daily activities, including mobilisation. Overall, 94.4% of patients were classified as frail, with a mean of three comorbidities per patient. Almost all patients (98.1%) had at least one medical device in place; most had venous access and 30.7% had a urinary catheter. The widespread use of medical devices reflects clinical severity but may also contribute to reduced mobility and increased dependency. Previous studies have shown that devices such as urinary catheters and intravenous lines are frequently perceived as barriers to mobilisation by healthcare professionals, even when not strictly contraindicating movement (Mani et al., 2022; Kirk et al., 2019). Most admissions occurred through the emergency department (90.3%), followed by transfers and planned admissions. The mean length of hospital stay was approximately 10 days, reflecting the clinical complexity of this population. This value is higher than that reported in other contexts, such as Iranian hospitals and South Korean surgical units (Cho et al., 2018; Khammarnia et al., 2023). As reported in literature, length of stay is influenced by admission diagnosis, patient complexity, problems during hospitalisation, and organisational factors; moreover, nursing-related complications and the number of nursing diagnoses have been identified as independent predictors of prolonged hospitalisation (D'Agostino et al., 2019).

4.1 Limitations

This study has several limitations that should be considered when interpreting the findings. First, the study design does not permit causal inferences or evaluation of temporal relationships between clinical complexity and patient outcomes. Second, data were collected in a single Italian region, which may limit the generalisability of the results to other healthcare systems or hospital settings. Third, height was often missing from clinical records, resulting in incomplete anthropometric data and calculation of BMI for only a subset of patients. Therefore, BMI values should be interpreted with caution. Finally, although validated instruments were used, the assessment of functional status and risks at only two time points (admission and observation) may not fully capture the dynamic evolution of patient complexity during hospitalisation.

5 Conclusion

This prevalence study offers a comprehensive overview of clinical and functional complexity, as well as care needs, of elderly patients admitted to internal medicine wards. Findings reveal a population characterized by high age and levels of multimorbidity and frailty, widespread functional dependence and moderate risk of falls and pressure injuries. These findings confirm that, in internal medicine wards, care is primarily directed towards patients with high vulnerability and limited functional reserve. For these patients, hospitalisation is a critical period, and healthcare professionals should pay careful attention in these situations. The prevalence of restraints, low caregiver presence, and extensive device use highlight significant barriers to mobility and autonomy. Overall, the study supports the need for comprehensive, multidisciplinary, and proactive care models focused on early functional assessment, promotion of mobility, prevention of complications, and continuity of care between hospital and community settings. Addressing the complex needs of this population is essential to improve clinical outcomes, preserve functional independence, and optimise the quality of care for hospitalised older adults.

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