

# Prevalence of Care Problems in Older Adults in Turkish Hospitals

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## Abstract

**Objective:** Malnutrition, pressure ulcers, falls, pain, and restraints are important quality of care indicators in healthcare settings. The Landelijke Prevalentiemeting Zorgkwaliteit-National Care Indicators Prevalence Study is an annual international multicenter cross-sectional prevalence measurement of care problems in the institution, department, and patient-level across Europe. This study aimed to measure the prevalence of care problems among older adults in Turkish hospitals.

**Materials and Methods:** A multicenter, cross-sectional study was performed using a standardized and tested questionnaire. Data were collected from older adult patients (65 years and over) in the hospitals. The study was conducted in 12 centers from 6 big cities of the country in November 2017 and 2018.

**Results:** Data from 12 Turkish hospitals were collected in 2017 and 2018. In 2017, pressure ulcer prevalence was 6.4%, malnutrition risk was 30.2%, falls was 9.1%, pain was 53%, and restraint was 22.1%. The prevalence of malnutrition risk, falls, and restraints increased to 32.1%, 10.8%, and 31.1% in 2018, respectively. Completely care-dependent patients' rate in 2017 and 2018 was 17.4% and 12.8%, respectively. Protocol/guideline usage for pressure ulcers, malnutrition, and falls were 100%, which were 68.6% and 16.9% for pain and restraints, respectively. The main interventions for pressure ulcer prevention or treatment are pressure-relieving support surfaces and hydration or nutrition; for malnutrition are referral to a dietician and oral nutritional supplements; and for falls are patients or relative education, drug lists evaluation, bedside mattress utilization, and pharmacological pain treatments.

**Conclusion:** Annual measurement of risk or prevalence, preventive measures, and treatment interventions of geriatric syndromes will provide better care plans for older adults.

**Keywords:** Older people, quality of care, screening

## Introduction

The increase in longevity is associated with a higher burden of quality of life issues and health care expenses at the global level (1). However, increase in healthcare burden is not merely related

to aging, but the chronic diseases that lead to impairment constitute the most significant part of the expenditures, particularly in vulnerable older individuals (2). Although most figures vary across countries, the sum of inpatient and outpatient

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**Received:** 09.12.2020 **Accepted:** 08.01.2021

**Cite this article as:** Soysal T, Akın S, Taşçı İ, Tosun Taşar P, Savaş S, Tufan Çiçin A, Yavuzer H, Erdiñler DS, Balcı C, Eşme M, Öztürk ZA, Sezgin G, Nalbant S, Varlı M, Karan MA, Saka B. Prevalence of Care Problems in Older Adults in Turkish Hospitals.

**Publication Date:** 21.09.2021

care costs accounts for half or more of total health expenditures in European countries (3), including Turkey (4). In this context, to establish more effective care models and interventions, it is fundamental to determine the extent of major care issues and comorbidities encountered in the hospitals and long-term care settings.

The National Prevalence Measurement of Quality of Care (LPZ) (In Dutch: Landelijke Prevalentiemeting Zorgproblemen) is an annual, cross-sectional, independent assessment of the quality of care in health care institutions. It was initiated in 1998 with a pressure ulcer survey in the Netherlands (5,6). In the following years, five more countries participated in the LPZ surveys, and its content was expanded to additional care indicators, including incontinence, malnutrition, falls, restraints, and pain (5,6). In addition to the provision of multicomponent information about these care indicators, the LPZ tool allows identification of the types of interventional measures taken for each of them on an institution base. The ultimate goal of the LPZ surveys has been to provide the participating institutions and countries with insight into the quality of care they provide, prompting them as well as policymakers to take necessary measures.

Nevertheless, nationwide prevalence data of above mentioned care issues is scarce in Turkey. This study aimed to examine the results of two consecutive years using the LPZ tool in Turkish older inpatients.

## Materials and Methods

Under the coordination of the Maastricht University, Netherlands, the Turkish Academic Geriatrics Society, Turkey, was the national collaborator for the two surveys in November 2017 and 2018. One country coordinator and additional coordinators in each participating site underwent training sessions each year. At least two health-care professionals enrolled the participants at each site, and site coordinator was responsible for the training of these interviewers. Data collection was carried out in a single day using a standardized questionnaire. Upon completion of the measurement, collected data was entered online using the LPZ web tool.

The participating institutions were encouraged to perform measurements in all departments on the day of the measurement. To be eligible, patients had to be hospitalized before the day of enrollment. The main exclusion criterion was rejecting participation in the study of the participant, or their legal representatives. Additional exclusion criteria were not specified. The present two surveys were performed in twelve institutions (university hospitals and general hospitals from six large cities across the country).

In the present study, we used the latest version "LPZ 2.0" (2016), which was developed for adults aged 18 years or older. LPZ 2.0 included three questionnaires; Questionnaire 1 and 2

for institutional and departmental information, respectively, and questionnaires 3 for patient information that included age, gender, comorbidities, surgical history, degree of care dependency and outcome indicators.

Istanbul University, Istanbul Faculty of Medicine Ethical Committee approved the protocol, and all patients or their relatives gave written, informed consent to participate in the surveys.

## Statistics

Frequencies of care indicators were expressed as percentages of occurrence in the analyzed sample for categorical variables. Data regarding pressure ulcer, malnutrition, pain, restraints, comorbidities and interventions were described as categorical variables. The results of the Shapiro-Wilks test, histogram, and q-q plots were examined to assess data normality. Continuous variables with normal distribution were expressed as mean  $\pm$  standard deviation, abnormally distributed data were expressed as median and interquartile ranges. Age and length of hospital stay were described as continuous variables. Statistical analysis was done by using SPSS 21.0 (IBM SPSS statistics. version 21).

## Outcome Indicators

For this study, we evaluated five care problems in LPZ 2.0: pressure ulcers, malnutrition, falls, restraints, and pain. Care dependency of the participants was assessed by the care dependency scale (7).

## Pressure ulcers

We identified nosocomial pressure ulcers by direct skin inspection. In the LPZ 2.0 version, pressure ulcers are subdivided into categories, described by the international guidelines of the NPUAP/EPUAP/PPPIA-2014 (8,9) as follows: Category I: Non-blanchable erythema; category II: Partial thickness; category III: Full thickness skin loss; category IV: Full thickness tissue loss; unstageable: Depth unknown; and suspected deep tissue injury: Depth unknown. In addition, the LPZ 2.0 assesses the risk of developing a pressure ulcer using the Braden scale for predicting pressure ulcer risk (10).

The rates of following six interventional measures taken to prevent and/or treat pressure ulcers were determined: reactive support surface (mattress/bed), active support surface (mattress/bed), seating support surface, scheduled repositioning in bed, prevention or treatment of hydration and/or nutrition deficits, and education on the prevention and/or management of pressure ulcers.

## Malnutrition risk

We determined current body weight in kilograms, which was preferably measured without shoes and in light clothing, at a fixed time, and after having gone to the bathroom. If the

participant could not be weighed on a standing scale, a chair scale or bed scale was used. Height was recorded in centimeters. In case direct measurement was not possible, knee height was measured to estimate the height using the following formulas: men: height (cm) =  $64.19 - [(0.04 \times \text{age (yrs.)}] + [(2.02 \times \text{knee height (cm)}]$ ; women: height (cm) =  $84.88 - [(0.24 \times \text{age (yrs.)}] + [(1.83 \times \text{knee height (cm)}]$ . Body mass index was calculated by dividing body weight by height squared (kg/m<sup>2</sup>).

Unintentional weight loss in the last 1, 3, and 6 months in kilograms, decreased appetite over the last month and poor oral intake in the last five days were recorded. Finally, malnutrition universal screening test (11) was used to assess the presence of malnutrition risk. All nutritional interventions were recorded. These included referral to a dietitian, an energy (protein)-enriched diet plan, oral nutrition supplements, and monitoring of fluid intake.

### Falls

Falls in the last 30 days inside the institution, or in the last 12-months in or outside the institution were recorded. The level of injury were also noted for most severe falls. The use of following interventional measures to prevent falling and/or related injury was examined: Evaluation of current medications, one-to-one supervision, mattress on the floor and/or beside, and education of the participant.

### Restraints

Restraint measures applied to the participant in the last 30 days in the institution were recorded. These were mechanical restraints as a safety belt, physical restraints to keep the participant restrained with physical force, medical/chemical restraints, psychological restraints (coercive talking), electronic restraints (alarm or video), and seclusion in a room or locked ward. Reasons for restraints were noted.

### Pain

We recorded any history of pain episodes over the last seven days. Any intervention to reduce pain have been recorded for the participants: Non-pharmacological interventions (e.g., physiotherapy, spinal manipulation, manual therapy, transcutaneous electric neurostimulation, pharmacological interventions including the non-opioid and opioid classes.

## Results

### Basic Characteristics

The surveys in 2017 and 2018 included 298 and 296 hospitalized older adults, respectively. Table 1 shows the clinical characteristics of participants on admission. The mean age of the participants were 76.81 in 2017 and 75.32 in 2018, and there was a slight male predominance [2017: 151 (50.7%) in 2017; 2018: 149

(50.3%)] in both surveys. Cardiovascular disease, diabetes mellitus, respiratory disease, and cancer were among the most frequent diagnoses on admission. Infectious etiology was recorded by 27.5% in 2017 and 17.2% in 2018. The percentages of mainly or completely dependent patients were 52% and 38%, whereas 32.6% and 44.9% were found independent in the two consecutive surveys, respectively. Overall, more than half of hospitalized older adults in the two samples were somehow care dependent (Table 1).

### Outcome Indicators

Table 2 shows the five outcome indicators. Pressure ulcer risk according to Braden scale was 73.5% in 2017 and 58.8% in 2018. Nosocomial pressure ulcer prevalences were 6.4 % and 4.4 % in 2017 and 2018, respectively. Malnutrition risk rates were 30.2% and 32.1% in 2017 and 2018, and besides, 25.5% and 24.3% of the participants had swallowing problems in these consecutive surveys. Prevalences of falls in the hospitals were 9.1% in 2017, 10.8% in 2018. Restraints were used in 22.1% and 31.1% of the patients in the two consecutive surveys. These restraints included mechanical (bed rails, belt fixation, special blankets/sheets, bed/chair table and others) (17.8-28.7%), physical (keeping someone restrained with physical force) (4.7-3%), pharmacological (5.4-4.1%), psychological (1.7%-0), electronic (alarm or video) (1%-0) restraints, one-to-one supervision (0.7-0.3%), seclusion in a room (2%-0), locked ward or building (0.7%), and other measures (0.7-1%). Pain was the most frequent outcome among the care indicators by 53% in 2017 and 50% in 2018.

### Availability of Specific Protocols/Guidelines and Multidisciplinary Teams (MDTs)

The use of institutional protocol/guidelines on care problems was presented in Table 3. Regarding pressure ulcers, malnutrition, falls, and pain, protocols were available in 69% to 100% of hospitals. However, local protocols/guidelines for restrains were not available in most hospitals. Among the participating hospitals, MDTs were available for pressure ulcers by 25% and for malnutrition in 65%. Only one center had MDTs for falls,

	2017	2018
<b>Infectious diseases</b>	27.5	17.2
<b>Cancer</b>	17.8	20.6
<b>Diabetes mellitus</b>	28.9	29.1
<b>Dementia</b>	16.4	8.4
<b>Central nervous system diseases</b>	11.4	3.7
<b>Cardiovascular diseases</b>	30.2	39.5
<b>Stroke</b>	8.4	5.4
<b>Respiratory diseases</b>	30.5	20.9
<b>Gastrointestinal diseases</b>	18.5	16.9

restraints, and pain. All hospitals had regular risk assessment schedules for pressure ulcers, malnutrition, and falls. They had staff training programs for pressure ulcer, malnutrition, and falls. 50% had staff training programs for restraints and 80% for pain.

**Interventional/Preventive Measures Taken for Patients**

Nutrition treatment and education were the two most frequent interventions to prevent/treat pressure ulcers in 2017, but

active support surface and Scheduled repositioning in bed were more frequently recorded in 2018 (Table 4). Referral to a dietician and planning an energy (protein)-enriched diet were the most frequent interventions to correct malnutrition in the two surveys. To prevent falls, education of the patients/relatives, and evaluation of current medications were the main measures in both surveys. Concerning restraints, mechanical interventions

**Table 2. Participant characteristics and prevalence of care problems**

	2017	2018
<b>Gender</b>		
Female	151 (50.7)	149 (50.3)
Male	147 (49.3)	147 (49.7)
<b>Age groups</b>		
65-74	129 (43.3)	145 (49.0)
75-84	112(37.6)	120 (40.5)
>85	57 (19.1)	31 (10.5)
<b>Hospital stay</b>	7.0 (1.0-20)	7.0 (4.0-18.0)
<b>Dependency</b>		
Completely dependent	52 (17.4)	38 (12.8)
To a great extent dependent	48 (16.1)	42 (14.2)
Partially dependent	58 (19.5)	41 (13.9)
To a limited extent dependent	43 (14.4)	42 (14.2)
Almost independent	97 (32.6)	133 (44.9)
<b>Chronic diseases</b>		
Respiratory	91 (30.5)	62 (20.9)
Diabetes	86 (28.9)	86 (29.1)
Cardiovascular	90 (30.2)	117 (39.5)
Infection	82 (27.5)	51 (17.2)
Cancer	53 (17.8)	61 (20.6)
Other	7 (2.3)	8 (2.7)
<b>Pressure ulcer</b>	38 (12.8)	35 (11.8)
<b>Nosocomial pressure ulcer</b>	19 (6.4)	13 (4.4)
<b>Braden</b>	219 (73.5)	174 (58.8)
<b>Malnutrition</b>	62 (20.8)	76 (25.7)
<b>Malnutrition risk (MUST)</b>	90 (30.2)	95 (32.1)
<b>Dysphagia</b>	76 (25.5)	72 (24.3)
<b>Falls</b>	78 (26.2)	97 (32.8)
<b>Nosocomial falls</b>	27 (9.1)	32 (10.8)
<b>Restraints</b>	66 (22.1)	92 (31.1)
<b>Pain</b>	158 (53)	148 (50)

MUST: Malnutrition universal screening test

**Table 3. Protocol usage for pain, pressure ulcers, malnutrition, falls and restraints**

	2017	2018
<b>Pressure ulcers</b>	100	100
<b>Malnutrition</b>	100	100
<b>Falls</b>	93.3	100
<b>Restraints</b>	33.9	16.9
<b>Pain</b>	75.5	68.6

**Table 4. Main interventions to treat pain, pressure ulcers, malnutrition, falls and restraints**

	2017	2018
<b>Pain</b>		
Non-pharmacologic	14.4	7.1
Pharmacologic	47.3	44.9
Nonopioid	43.3	40.2
Opioid	11.4	11.8
Weak opioids	9.1	10.8
Strong opioids	2.7	2.0
Acetaminophen	32.6	30.7
NSAID	10.1	13.5
Antidepressants	2.0	1.7
Antiepileptic drugs	5.7	2.4
<b>Pressure ulcers</b>		
Reactive surface	21.8	13.9
Active surface	24.8	19.3
Seating support	6.7	5.7
Repositioning	27.2	17.6
Prevention of dehydration and/or malnutrition	34.9	11.5
Education	29.5	13.5
<b>Malnutrition</b>		
Dietician referral	59	51
Energy (protein)-enriched diet	37.2	21.6
Supplementary oral nutrition	26.8	20.3
Fluid monitoring	30.9	9.8
<b>Falls</b>		
Evaluate/adapt medication	35.6	21.3
Observation	15.8	12.2
Supervision	17.8	12.2
Bedside mattresses	27.2	14.5
Education	46	17.2
<b>Restraints</b>		
Mechanical	17.8	28.7
Physical	4.7	3
Pharmacologic	5.4	4.1
Psychological	1.7	0
Locking the room	2.0	0
Electronical monitoring	1	0

NSAID: Non-steroidal anti-inflammatory drug

were frequently used than any other. Non-opioid analgesics were preferred to treat pain.

## Discussion

The results of the two annual multicenter surveys suggested a high burden of care problems in older inpatients in Turkish hospitals. Except for the use of restraints and pain, institutional protocols or guidelines were available for the care indicators we evaluated. Also, regular risk assessment was provided for most indicators we evaluated. However, MDTs were not available in most of the hospitals. Multicomponent intervention measures for each care problem were accessible, although the figures were somewhat different in 2017 and 2018 surveys. To the best of our knowledge, we provide the first, multicomponent data set that reveals the magnitude of foremost care problems of older inpatients at the national level.

The growing number of older patients with pressure ulcers, particularly those suffering from chronic diseases, resulted with a significant burden on the health care system (12). In this study, we detected nosocomial pressure ulcers in more than 4% of the participants in both surveys. Similar to our findings, pressure ulcers were found in 8 to 14% of hospitalized older adults in the International pressure ulcer prevalence survey (13). A European international registry revealed that 18.1% of 5947 inpatients were suffering from pressure ulcers (14). Nevertheless, there is limited data on the prevalence of pressure ulcers in hospitalized Turkish older adults. A retrospective analysis of patient records between 2010 and 2014 in a university hospital identified pressure ulcer diagnosis in 3.3% of 20,175 patients (mean age 66.7 years) in the internal medicine wards (15). Concerning the measures taken to prevent/treat pressure ulcers, we observed heterogeneity in the selection of interventional options between the 2017 and 2018 surveys. Overall, none of the interventional measures were consistently taken in the majority of the participants. Indeed, the level of evidence is low to favor any of existing interventions over other in the prevention and/or treatment of pressure ulcers (16). Thus, our study suggests that participating hospitals' preferences on interventions were dependent more on local conditions and resources of the facility.

Previous studies have reported mixed results about the prevalence of malnutrition among hospitalized older adults in European countries, ranging between 3.4% and 44% (17). Divergent figures are likely resultant from the type of screening tool as well as from the definition of malnutrition (18). Given the similarities in sample characteristics, our results are consistent with the findings of Meijers et al., who observed 19.2% to 23.8% malnutrition among older inpatients in various health care settings (19). Besides, a later meta-analysis has shown 22%

of malnutrition prevalence among inpatient older adults (20). At the national level, the results of the screening of inpatients between 2005 and 2006 were consistent with a frequency of 25% malnutrition risk in individuals aged 60 years or older (21). Thus, our study suggests that local figures have not significantly changed over ten years. Among the potential interventions to correct malnutrition, referral to the dietitian was found 50% or more in both surveys, which is in accordance with the latest recommendations (22,23).

Inpatient falls, a significant concern in the care of hospitalized older adults, were related with increased length of hospital stay, institutionalizations, and costs. While falls have previously been recorded in 13% to 16% of inpatients in different settings (24), more than a quarter of our participants had fallen in the previous 30 days in both surveys. Of note, previous data at the national level is scant. A retrospective analysis of hospital registries has shown that falls were coded in less than 1% of older inpatients (25). On the contrary, our findings indicate a serious burden of falls among hospitalized Turkish older adults. Regarding fall prevention interventions, despite some discrepant findings from well-conducted studies, available guidelines typically stress the adoption of multicomponent interventions to prevent falls (26). In both surveys we evaluated, prioritization of interventions to prevent falls (e.g., review of medications, mobility supervision, walkway arrangements, education) was in line with earlier investigations in different populations (27). Nevertheless, heterogeneity across preferred interventional measures by the participating hospitals and the overall low rates of any intervention suggest the need for further improvements to prevent inpatient falls.

The use of restraints is sometimes unavoidable for geriatric inpatients. In the present study, we recorded at least one type of restraint in more than 20% of our participants. While this is the first report from the Turkish health system in the available literature, the use of restraints among older inpatients has been recorded up to 51.4% in different countries (28,29). Similar to other populations, the use of mechanical restraints was more common in our hospitals (28). These figures indicate a significant care issue for older people in everyday practice. While physical restraints are not recommended to manage behavioral symptoms in hospitalized older adults (30), yet there is no convincing evidence of a successful alternative.

Nearly 50% of the participants in our study mentioned any type of pain in the past seven days, which was the most frequent care problem and consistent with the previous reports (24,31-33). The primary interventions to treat pain were pharmacological treatments, predominantly paracetamol. Despite some concerns related to the widespread use of acetaminophen in older people, it is currently the most commonly prescribed drug alongside NSAIDs in the treatment of mild and moderate pain (34). On the

other hand, treatment with opioid analgesics were lower than non-opioid drugs in both surveys. The use of opioid analgesics was previously reported as high as 80% in hospitalized older adults in well-conducted studies (32). Although not harmless; however, given intractable pain is also associated with worse outcomes in older people; physicians often need to prescribe opioid analgesics in moderate to severe pain (34). Non-opioid options partially worked in pain relief; 23.2% of patients indicated that the medication given for pain was effective and that our participants did not need opioid analgesics at all.

### Study Limitations

This study has several limitations. First, both surveys were conducted to measure point prevalence, which did not allow discrimination of new cases during hospitalization or identification of diagnoses at discharge. Our focus was the burden of common care problems in a multicenter design at the national level. Second, we displayed crude prevalence results in the entire study samples; thus, no inferences could be made about confounding of the results by unmeasured variables. Finally, as the LPZ 2.0 was developed for use internationally, system differences across countries might have caused missing some data. To overcome this residual issue, we have performed targeted workshops and training sessions each year before the survey was conducted and maintained active communication at all stages of protocol implementation. Despite these limitations, this study provides original data on major care indicators in older inpatients. To our knowledge, this is the single largest, multicenter, national study of multiple care problems of older inpatients in Turkey.

### Conclusion

This study showed that pressure ulcers, malnutrition, falls, restraints, and pain are substantial problems in hospitals in Turkey. Key areas of improvement identified were, though not limited to five indicators here, establishment of local protocols/guidelines for all care indicators, MDTs, and internal training programs. Our results have the potential to encourage institutions and policymakers to take the necessary measures, including enhanced screening methods and interventions to improve outcomes. Nonetheless, as the population of older adults with multimorbidity grows, it is fundamental to follow these figures dynamically in future surveys.

### Acknowledgments

Institutions are required to pay a participating fee per institution and per patient within the LPZ program. Both surveys in 2017 and 2018 years were supported by grant from Nutricia Turkey. The funding organization did not have any role in data collection, analysis or reporting, the latter two were performed centrally in the Maastricht University.

### Ethics

**Ethics Committee Approval:** Istanbul University, Istanbul Faculty of Medicine Ethical Committee approved the protocol (decision no: 02, date: 22.01.2016/no: 153).

**Informed Consent:** Informed consent was obtained.

**Peer-review:** Externally and internally peer-reviewed.

### Authorship Contributions

Concept: B.S., S.A., Design: B.S., S.A., İ.T., Data Collection or Processing: B.S., T.S., S.A., P.T.T., S.S., A.T.Ç., H.Y., D.S.E., C.B., M.E., Z.A.Ö., G.S., S.N., M.V., M.A.K., Analysis or Interpretation: B.S., T.S., S.A., Literature Search: T.S., B.S., İ.T., S.A., Writing: T.S., İ.T., B.S., S.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** Institutions are required to pay a participating fee per institution and per patient within the LPZ program. Both surveys in 2017 and 2018 years were supported by grant from Nutricia Turkey (241-242).

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