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Original Article

Prevalence of Chronic Cancer and No-Cancer Pain in Elderly Hospitalized Patients: Elements for the Early Assessment of Palliative Care Needs

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SUMMARY

Background: We studied prevalence of chronic pain, related or not to cancer, in elderly patients, its correlation with socio-clinical factors, and its effects on daily living, to estimate feasibility of an early assessment of palliative care needs in a non-specialist hospital setting.
Methods: In this prospective study, a questionnaire concerning pain and multidimensional assessment tools were administered to patients consecutively admitted to a Department of Internal Medicine comprising a Stroke Unit.
Results: One hundred patients were recruited, 38 of whom experiencing pain, chronic in 26 patients (68%). A total of 34.3% of patients with pain and 12.5% of patients without pain suffered from depression ($P = 0.013$). Depressed patients showed significantly higher median values in all Brief Pain Inventory (BPI) scores and items. Depressed patients also obtained less pain relief from therapies. Patients with mild dementia showed, significantly or as a trend, a higher median least, average and "pain right now" pain values. Worst pain values in the previous 24 h increased with age. Only 42% of patients reported to be on pain therapy upon admission to hospital, whereas 62% were undergoing treatment at the time of discharge. A correlation was found between the pain value and the level of interference with daily activities. Pain was mentioned in the discharge letter in 36% of cases.
Conclusion: Pain is a critical underestimated problem in elderly patients. A timely systematic evaluation of the pain would call attention to palliative care needs and reduce the negative effects of uncontrolled pain on the quality of life.
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1. Introduction

Pain has been defined as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage".[1] It has been acknowledged as a complex phenomenon derived from sensory stimuli and modified by memory, expectations and emotions.[2] Little is known about the incidence of pain in elderly patients, despite being a serious problem for many people in their later years, due to a lack of systematic epidemiological surveys considering pain as a physiological problem in the elderly. Thus, health care professionals are likely to underestimate the problem, even though pain is not an integral part of physiological aging in the absence of disease.[3]

A large-scale study by Breivik et al using telephone interviewing to explore prevalence, severity, treatment and impact of chronic pain in 15 European countries showed that chronic pain was present in 19% of European adults with seriously compromised quality of life.[4] In a recent review of 64 studies carried out worldwide, mostly in Europe and North America, the prevalence of pain of any type ranged from a minimum of 0% to a maximum of 93%, showing that variations in the population, methods and definitions substantially influence the way pain is perceived and reported.[5]

Although Palliative Care (PC) has been traditionally regarded as "end-of-life PC services", the concept of "early PC" (or "simultaneous PC", as it is provided at the same time as antiblastic treatments) has been recently introduced.[6]

Early PC is divided into two complementary groups: early generalist PC and early specialist PC.

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Early generalist PC is provided by healthcare professionals that have neither specific training in PC nor specialty in palliative medicine, such as GPs, oncologists and geriatricians, that can identify, refer and initially manage a variety of patients with a basic level of PC needs.[7]

Early generalist PC entails:

- Early identification and referral of the patients nearing the end of life;
- Systematic screening of the needs;
- Systematic screening of the quality and intensity of symptoms;
- Participation in the advanced care planning;
- Collaboration with PC specialists;
- Training in PC.

On the other hand, early specialist PC is provided by PC specialists that have had a specific training in PC and dedicate 100% of their professional time to PC services.

The impact of early PC is difficult to assess, as it includes various "models of intervention"[8] at different levels of intensity: sporadic and during consultation, or actual and systematic mono- or multiprofessional healthcare assistance.

Healthcare assistance too can be of a diverse nature. As end-of-life PC is usually dispensed at the hospice, early specialist PC covers both clinic service (more often) and home PC programs, which may be considered as an intermediate stage between early and end-of-life PC.[9]

The efficacy of early PC has been tested and proven for a variety of outcomes relating to three categories: quality of life, quality of care, and costs.[10]

Quality-of-life-related outcomes (i.e., quality of life, overall intensity of symptoms, anxiety and depression, care satisfaction of patients, awareness of disease and prognosis) can often be appreciated as soon as early PC is administered.[11,12] Two recent meta-analyses have confirmed statistically significant improvements of overall intensity of symptoms and disease-related quality of life.[13,14]

Quality-of-care-related outcomes (i.e., reduced treatment aggressiveness) can be observed during end-of-life PC, as a result of the decisions made during early PC.[12,15]

Ultimately, a review of 46 studies comparing different PC services using some kind of comparing system has shown that PC interventions were often statistically significantly less expensive, regardless of the variety of the type and quality of the studies.[16]

The main aim of this study was to assess prevalence of pain among elderly patients hospitalized in an Internal Medicine Unit and to obtain an early evaluation of their PC needs for cancer/non-cancer-related pain. The secondary objectives were to evaluate the correlation between pain and socio-clinical factors, impact on daily living.

2. Materials and methods

2.1. Data collection and measurements

We screened patients consecutively admitted to the Department of Internal Medicine and Stroke Unit of the Sant'Orsola-Malpighi University Hospital (Bologna, Italy) from 14th January to 9th March 2016. Patients were required to be $\geq$75 years old and able to give informed consent to take part in the study. Study was approved by ethical committee of the Institutional board.

Within 48 h of admission, this information was collected through a standardized interview: personal details, level of education, living status and cognitive impairment and/or depression.

In this study patients were considered depressed if they had been admitted with an anamnestic history of depression and/or if they had been taking antidepressant drugs. The medical conditions considered were: hypertension, cardiovascular disease, cerebrovascular disease, peripheral vascular disease, diabetes, chronic lung disease, primary or metastatic cancer, hematological malignancy, dementia, chronic renal failure, and severe liver failure. Any clinical information was retrieved from the remote and recent history of the personal medical records. A specific questionnaire (Charlson Comorbidity Index) was used to evaluate comorbidities.[17]

The reason for hospital admission were: surgical diagnosis, cardiovascular disease, infectious disease, non-infectious respiratory disease, neurological/vascular disease, solid tumor, hematological malignancy, diseases of the genitourinary or gastrointestinal tract, and other.

Pain-related diseases were classed into the following groups: bedsores, chronic peripheral arterial disease, generalized arthritis, osteoarthritis, cardiogenic pain, infection, low-back pain, psychosomatic conditions, and fibromyalgia.

Pain was assessed by directly asking the patient with validated rating scales and whether the pain had been present for longer than 12 weeks because it was considered chronic.

The Italian version of the Brief Pain Inventory (BPI) was administered to the patients capable of answering simple questions (cognitively intact or mild-to-moderate cognitively impaired patients).[18] The BPI is a tool that uses an 11-point numerical rating scale (0–10) to measure intensity and interference of pain with patient's life. For the patients unable to answer the questions, pain presence was assessed with the Italian version of the PAINAD (Pain Assessment in Advanced Dementia) scale.[19]

Finally, the number and type of pain medications reported upon admission and in the discharge letter (classified as acetaminophen, non steroidal anti-inflammatory drugs [NSAIDs], opioids, and adjuvants) were evaluated and recorded in writing. . As the study had a descriptive-epidemiological primary aim, we did not impose any specific pain treatment policy on the clinical healthcare providers.

2.2. Statistical analysis

The variables are presented as mean ± standard deviation (SD) and/or median (range) (continuous variables) or number and percentage (categorical variables). The T-test and χ-square test were used for comparisons between groups. The nonparametric Mann-Whitney test was used to evaluate comparative hypotheses on the median. All statistical analyses were performed with SYSTAT10 (SPSS Inc, Chicago, Il, USA). All tests were performed two-tailed, and $P < 0.05$ was considered as significant.

3. Results

We screened 112 patients consecutively admitted to the Department of Internal Medicine and Stroke Unit of the Sant'Orsola-Malpighi University Hospital (Bologna, Italy) from 14th January to 9th March 2016. Our study included 100 patients; the remaining 12 patients had either been discharged or transferred to another hospital, or had died before the assessment could be made. Patient characteristics are reported in Table 1. The mean age was 83.6 years (±5.5). The population included 63 (63%) females and 37 (37%) males. Average schooling was 8.9 years (range 3–22). Twenty-two patients lived alone, while 12 lived in nursing homes or sheltered housing. Thirty-four patients had clinically confirmed cognitive impairment and 19 suffered from depression. Pain assessment was not possible in 8 patients because they either went into a coma or had a life expectancy of a few hours. A total of 92 patients were thus evaluable for pain. Of the 35 (38%) who reported to have pain, 24 (68%) suffered from chronic pain and 11 (32%) from acute pain.

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Table 1
Patient characteristics upon hospital admission.

Total number of recruited patients	100 (%)
Mean age, years (SD)	83.6 (±5.5)
Gender (%)	
Male	37 (37)
Female	63 (63)
Living alone (%)	
Yes	22 (22)
No	78 (78)
Living in nursing homes or similar settings	
Yes	12 (12)
No	88 (88)
Years of schooling (range)	8.9 (3–22)
Dementia	
Yes	34 (34)
No	66 (66)
Depression	
Yes	19 (19)
No	81 (91)
Pain not evaluable[a]	8
Pain evaluable	92
Presence of pain	
No	57 (62)
Yes	35 (38)
Type of pain	
Chronic	24 (26% of evaluable patients, 68% of patients with pain)
Acute	11 (12% of evaluable patients, 32% of patients with pain)

SD: standard deviation.
[a] Pain not evaluable because the patient had gone into a coma or had a life expectancy of a few hours.

A stroke was the most frequent cause of hospitalization (especially due to the presence of a Stroke Unit within the Internal Medicine Department) (26 patients, 28.3%), followed by cardiovascular disease and respiratory tract infections (both 11 patients, 12.0%) (Fig. 1). Concomitant pain was present in patients with neurological and cardiovascular conditions (data not shown).

The most common cause of pain was low back pain (Fig. 2) with osteoarticular and musculoskeletal pain present in both chronic and acute forms, accounting for 75% of all chronic pain and 64% of all acute pain, respectively. Chronic pain was reported by 72% of cases with osteoarticular and musculoskeletal pain and 60% of cases with other types of pain. Chronic pain was caused by cancer in 12.5% of patients. Patient characteristics (age, gender, education, marital status, living status, presence of dementia, depression, Charlson Comorbidity Index) were evaluated in relation to the presence or absence of pain (Table 2). The average age of the patients without pain was 84 years ± 5, while that of the patients with pain was 83 ± 6. Thirty-six (63.2%) women in the population had no pain and 21 (60%) had pain. Mean schooling was 8 years (range 3–22) in the no-pain group and 6 years (5–13) in the pain group.

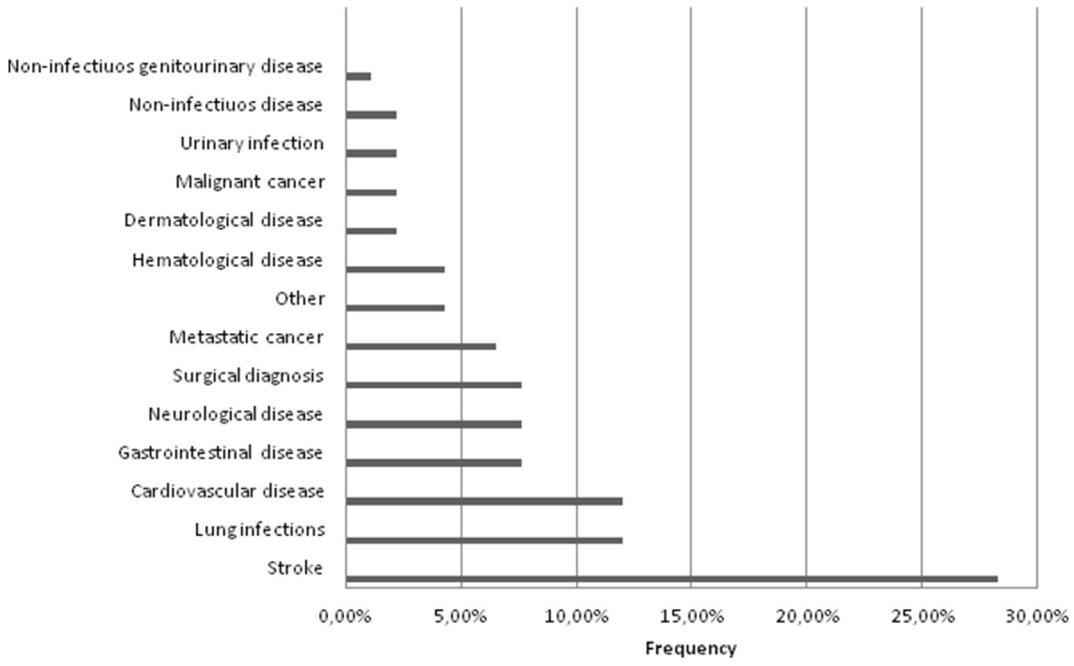

Fig. 1. Reason for hospital admission (% of admissions).

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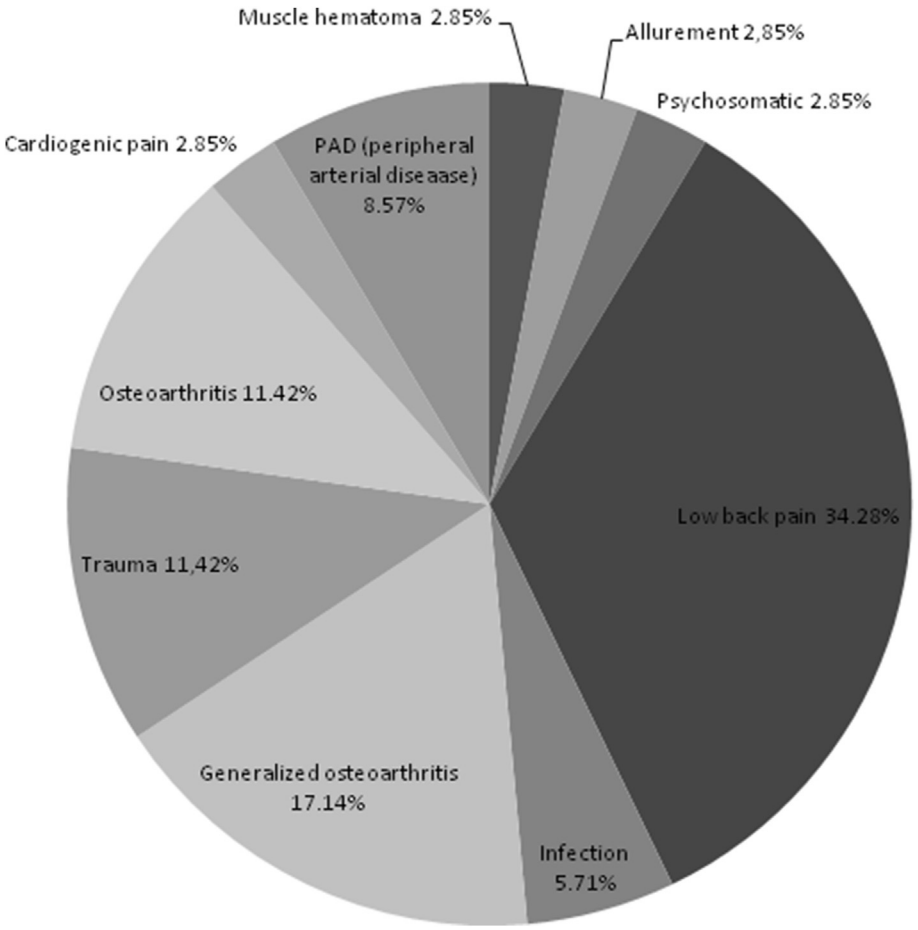

Fig. 2. Causes of pain at admission.

Eleven (19.3%) patients with pain and 9 (25.7%) patients with no pain lived alone. Patients in both groups had a median Charlson Comorbidity Index score of 3 (range 2–6 for the no-pain group and 2–4 for the pain group). Twenty (35.1%) patients with no pain and 10 (28.6%) with pain had dementia. A significant correlation was found only between pain and depression. In fact, 34.3% of the patients with pain and only 12.5% of the patients with no pain also suffered from depression ($P = 0.013$).

With regard to BPI scores, 29 depressed patients showed significantly higher median values than non-depressed patients for all 4 BPI items (worst, least, and average pain in the last 24 h, and 'pain right now'). Patients with mild dementia showed significantly higher median least pain values than those not suffering from dementia, and generally higher values with regard to average pain and 'pain right now'. Median values for the worst pain in the previous 24 h were higher in women than in men. Scores for this item increased with age. Conversely, no correlation was found between age and least pain, average pain and 'pain right now'. Non-depressed patients reported greater relief from treatment (50%) than depressed patients (30%), although the difference was not significant.

The presence of pain interfered with daily activities to a moderate/severe degree. The various items (zest for life, activities in general, mood, walking, relationships, sleep) showed values ranging between 4 (interference with walking) and 7 (interference with relationships) (Fig. 3).

Table 2
Comparison of different characteristics between patients with pain and without pain.

Evaluable patients (n = 92)	No pain (n = 57) (%)	Pain (n = 35) (%)	*P*
Age, years: mean (SD)	84 ± 5	83 ± 6	0.797
Female	36 (63.2)	21 (60.0)	0.762
Years of schooling [range]	8 [3–22]	6 [5–13]	0.109
Married	24 (42.1)	16 (45.7)	0.735
Living Alone	11 (19.3)	9 (25.7)	0.469
Charlson Comorbidity Index score [range]	3 [2–6]	3 [2–4]	0.264
Dementia	20 (35.1)	10 (28.6)	0.517
Depression	7 (12.5)	12 (34.3)	**0.013**[a]

SD, standard deviation.
Presence or absence of pain according to certain characteristics. A statistically significant correlation was found with the presence of depression.
[a] Statistically significant.

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Upon hospital admission, only 42% of the patients with pain (15 patients) reported to be taking some form of pain treatment; acetaminophen (5), acetaminophen + NSAID (2), opioid (2), acetaminophen + adjuvant (1), opioid + adjuvant (1), NSAID (2), NSAID + adjuvant (1) and opioid + adjuvant (1). When discharged, 62% of the patients with pain (21) were undergoing some form of treatment; acetaminophen (4), acetaminophen + opioid (3), opioid + adjuvant + acetaminophen (2), NSAID (1), opioid (1), and adjuvant (10). Although none of the patients had been admitted for pain problems, the symptom was nonetheless evaluated, and eventually reported as a problem in the discharge letters of 36% of patients.

4. Discussion

The main aims of this study were to determine prevalence of pain in elderly population (≥75 years of age) hospitalized in an internal medicine setting, to investigate its relation to socio-clinical factors and impact on daily activities. We also wanted to verify whether an early assessment of palliative care needs is possible in a non −palliative care settings.

However, one of the limitations of our study was the relatively small number of recruited people representing a mixed population, which prevented us from drawing any definitive conclusions, and only allowed for preliminary suggestions.

Changes in the perception of pain in the elderly are often a result of the aging process that alters cell function, tissues, organs and systems, increasing pain threshold, but decreasing tolerance to it.[20]

Many elderly patients may not be able to report the presence of pain creating a communication barrier, making it more challenging for the healthcare professional to recognize the problem and take action to resolve it.[21] Physicians, on the other hand, are known for often using language that may be difficult to understand for older people. Moreover, sometimes patient is reluctant to communicate pain because it tends to be regarded as an integral part of the aging process or of the illness itself.[22] Consequently, chronic pain, especially non-cancer pain, is often underassessed and undertreated.[23]

The presence of multiple diseases, often subjected to polypharmacy, may be a reason to not taking pain therapies or to no prescribing them, especially in the case of opioids.[22] The prescribing of analgesics is also influenced by changes in pharmacokinetics and pharmacodynamics in geriatric patients, *e.g.* reduced total body water volume, increased body fat or loss of body fat due to malnutrition, decrease in serum albumin, reduced hepatic or renal function.

From an epidemiological point of view, the effect of age on the prevalence of pain in the elderly seems variable. In fact, osteomuscular pain, is known to increase with aging.[24,25] Other pain, tends to be more common in adulthood, especially up to the age of 55, and then gradually decrease in successive decades.[26] The prevalence of pain, is almost always higher in older people living in nursing homes, regardless of the definition of pain used. One Italian study showed that more than 40% of elderly patients living in the community experienced pain on a daily basis, more in women, but only a quarter were taking an analgesic of any kind.[27] Depression in the elderly is twice common among patients with pain, with closely correlated risk of developing it with high frequency and intensity. Such findings take on even more importance if we consider that depression among the elderly living in institutional settings remains undiagnosed in the majority of cases and, when diagnosed, is often undertreated.[28–30]

Chronic pain has negative impact on many aspects of the patient's health, leading to a decrease in the quality of life. Early assessment is thus useful to minimize or avoid associated long-term sequelae. The use of effective multimodal treatment strategies can also help to restore previous quality of life and normal levels of functioning in patients.[31,32]

Our study showed that 38% of patients had pain, of whom 68% had chronic pain and 32% acute pain. This prevalence is consistent with findings from other Italian-based prevalence studies in which chronic pain affected 25–60% of patients and was caused by musculoskeletal diseases in two-thirds of cases.[4]

Our data confirm the significant correlation between chronic pain and depression. In fact, one third of patients also had depression, while only 12% of patients without pain were depressed. Moreover, depressed patients showed significantly higher median values for 'pain right now', and worst, least, and average pain in the previous 24 h. Less relief from pain therapies was observed in depressed patients (30%). Patients with mild dementia showed significantly higher median least pain values than those without dementia, and generally higher median values for average pain and 'pain right now'.

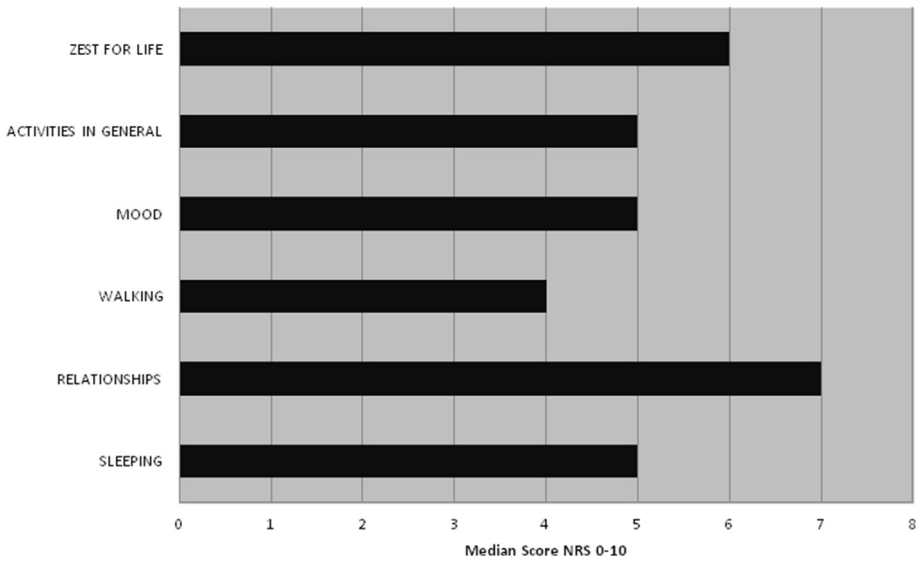

Fig. 3. Interference of pain with daily activities.

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Pain detection instruments in patients with dementia permit an indirect measurement of the pain intensity by detecting the severity or frequency of certain behaviors. In such situations, caregiver and healthcare professional are essential to be able to distinguish between a normal behavior disorder and a disorder through which the patient is trying to communicate the presence of pain.

Only 42% of the patients with pain upon hospital admission were taking specifical treatment compared to 62% at the time of discharge.

Pain interfered consistently with daily activities, with interference-item values distributed between 4 and 7. As the lack of diagnoses and treatment for chronic pain led to a reduction in the degree of self-sufficiency in patients, we believe that it would be reasonable to systematically include pain assessment scales among the tools designed for multidimensional geriatric evaluation. The objectives of the study did not include the assessment of the "result" of the pain treatment, but just the estimation of the "pain problem" and its correlation with the other items on the scale, and the description of the "spontaneous" clinical non-specialist attempts to address such problem. So, this paper gives preliminary information on the intensity and compliance to pain treatment.

In conclusion, our data serve to highlight the extent of the problem of pain in the elderly and the issues related to its diagnosis and treatment. Underdiagnosed and undertreated pain in later years is also associated with mood disorders and a reduction in self-sufficiency. A timely systematic assessment and management of the pain could help to reduce suffering, bring to light the patient's PC needs, and improve the quality of life.

Ethical

It is confirmed that all patients were required to be able to give informed consent to take part in the study.

Author contributions

All authors contributed equally to the paper and all approved the final version of the paper for submission.

Competing interests

The authors have declared no competing interests.

Conflict of interest

All authors declare no conflicts of interest, financial or otherwise, related to the submitted work.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ijge.2017.11.005.

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