



Predictors of non-analgesia in nursing home residents with pain: results from the INCUR study.

Vanessa Nunziata^{1*} MD, Edoardo Saporiti^{1*} MD, Laura Calcaterra ^{1*} MD, Yves Rolland² MD, Philippe Barreto de Souto² MD, Bruno Vellas^{2,3} MD PhD, Marco Proietti^{1,4,5†} MD PhD, Matteo Cesari^{1,4†} MD PhD

¹Geriatric Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy; ²Gérontopôle de Toulouse, Institut du Vieillissement, Centre Hospitalo-Universitaire de Toulouse, France; ³UMR INSERM, Toulouse, France; ⁴Department of Clinical Sciences and Community Health, University of Milan, Italy; ⁵Liverpool Centre for Cardiovascular Science, University of Liverpool, and Liverpool Heart & Chest Hospital, United Kingdom.

*these authors contributed equally to the paper; †joint senior authors.



BACKGROUND

- The number of people using nursing facilities is projected to steadily increase up to 27 million in 2050¹;
- It is estimated that 45% to 80% of nursing home residents suffer from pain²;
- One-quarter of older adults with pain does not receive any analgesic drugs³.

1. Harris-Kojetin L et al, (2016) Long-Term Care Providers and services users in the United States: data from the National Study of Long-Term Care Providers, 2013-2014. *Vital Health Stat 3*. 2016 Feb;(38):x-xii; 1-105.
2. Lukas A. et al (2013) Pain Characteristics and Pain Control in European Nursing Homes: Cross-sectional and Longitudinal Results From the Services and Health for Elderly in Long TERM care (SHELTER) Study. *J Am Med Dir Assoc*. 2013 Jun;14(6):421-8. doi: 10.1016/j.jamda.2012.12.010. Epub 2013 Feb 1.
3. Landi F, Onder G, Cesari M et al (2001) Pain management in frail, community-living elderly patients. *Arch Intern Med*. 2001 Dec 10-24;161(22):2721-4.



AIMS OF THE STUDY

- ▶ Measure the absence of pain treatment in nursing home residents presenting severe pain symptoms;
- ▶ Identify the main predictors of non-analgesia.



METHODS AND MATERIALS

Study design and participants

- ▶ We used data derived from a longitudinal cohort study (**'Incidence of pneumonia and related Consequences in nursing home Residents' [INCUR] study**) of 800 older persons living in 13 French nursing homes¹.

- ▶ **INCLUSION CRITERIA:**
 1. pain that affects the Activities of Daily Living (ADL)
 2. daily pain
 3. severe pain measured with a visual analog scale (ie, possible range of 0 to 100, with 0 scoring for the maximum pain; cut-point for severe pain: ≤ 30).

1. Demougeot, Rolland, Gérard, Pannetier, Duboué & Vellas and Cesari (2013).



METHODS AND MATERIALS

Study design and participants

- ▶ We have evaluated the following characteristics of the population: Abbreviated Mental Test Score (AMTS), Geriatric Depression scale (GDS), and the Activities of daily living and Instrumental activities of daily living (ADL/IADL);
- ▶ A **Frailty Index (FI)** was computed according to the model proposed by Rockwood and Mitnitski¹. It's the proportion of deficits present in an individual out of the total number of age-related health variables considered;
- ▶ For each patient was calculated the **number of drugs** assumed at the baseline assessment;
- ▶ The outcome of interest was the prescription of **analgesic medications**.

1. Rockwood K, Mitnitski A (2007) Frailty in Relation to the Accumulation of Deficits. Journals Gerontol Ser A Biol Sci Med Sci 62:722–727. <https://doi.org/10.1093/gerona/62.7.722>.



METHODS AND MATERIALS

Statistical analysis

- Unadjusted and adjusted logistic regression models were performed to predict analgesic drug prescription;
- The following ones were considered as possible predictors of non-analgesia: age, sex, education, Frailty Index, number of medications prescribed at the baseline.

RESULTS

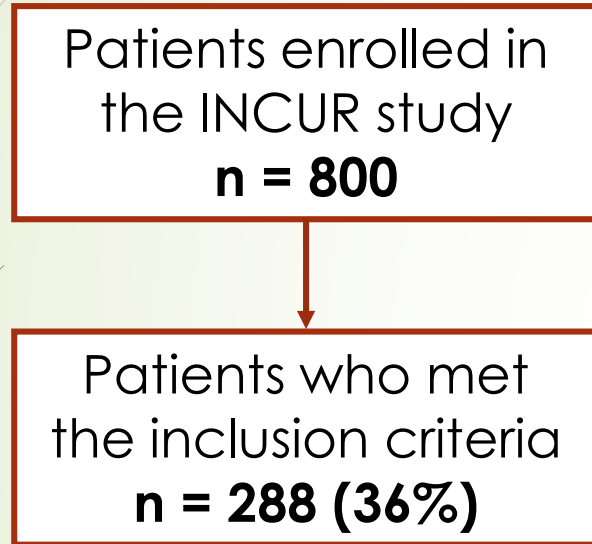
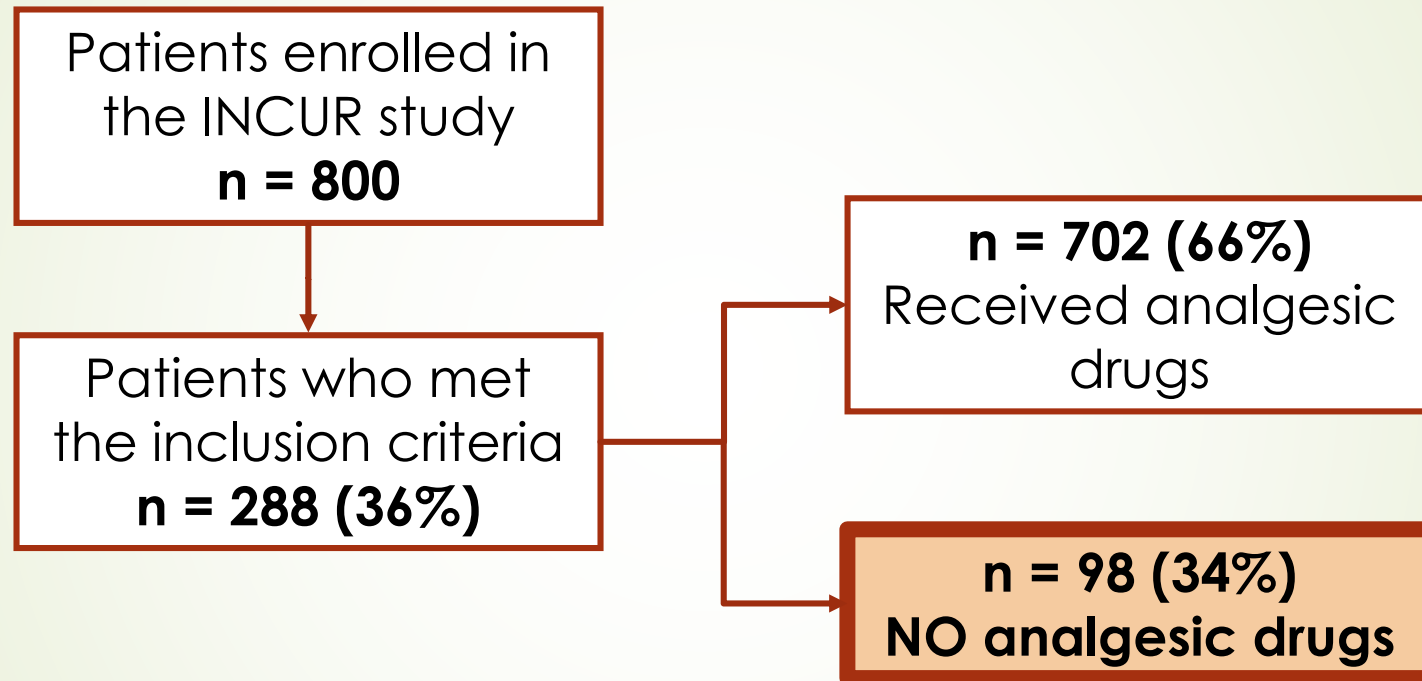


Table 1: Baseline Characteristics of Patients included in the Study

	N= 288
Age , years mean (SD)	86.9 (7.2)
Female Sex , n (%)	220 (76.4)
Education , years mean (SD)	7.8 (3.2)
AMTS , mean (SD)	6.8 (2.9)
GDS , mean (SD)	3.2 (2.4)
ADL , mean (SD)	3.5 (1.8)
IADL , mean (SD)	3.2 (0.8)
Drugs , n mean (SD)	9.5 (4.2)
Frailty Index , mean (SD)	0.40 (0.10)

Legend: Italic numbers are referred to the non-missing values for each variable; ADL= Activities of Daily Living; AMTS= Abbreviated Mental Test Score; GDS= Geriatric Depression Scale; IADL= Instrumental Activities of Daily Living; SD= standard deviation.

RESULTS



RESULTS



Table 2: Logistic Regression Analysis

	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	p	OR (95% CI)	p
Age (<i>per year</i>)	0.98 (0.95-1.01)	0.353	0.99 (0.95-1.04)	0.776
Female Sex	1.61 (0.91-2.85)	0.098	1.85 (0.92-3.70)	0.084
Education (<i>per year</i>)	0.93 (0.85-1.02)	0.125	0.84 (0.85-1.04)	0.227
Frailty Index (<i>continuous</i>)	0.42 (0.04-4.38)	0.464	0.88 (0.04-17.62)	0.935
Drugs (<i>per each</i>)	0.84 (0.78-0.90)	<0.001	0.82 (0.75-0.90)	<0.001

Legend: CI= confidence interval; OR= odds ratio.



LIMITATIONS

- ▶ INCUR was an observational study which was not designed to identify the determinants of the pain undertreatment;
- ▶ the population covered by the study are elderly patients residents in 13 nursing homes in the Midi-Pyrenees region of France, somewhat limiting the generalizability of our results.



CONCLUSIONS

- ▶ Pain management in elderly living in nursing homes is still a relevant issue; in our study 66% of patients suffering from pain were not adequately treated, while 34% did not receive any analgesic treatment;
- ▶ Regarding the possible predictors of pain undertreatment, scarce data are available. We identified **polypharmacy**, defined as the concomitant use of multiple drug therapies, as a major predictor in analgesic drugs prescription;
- ▶ our findings document the importance of reviewing prescriptions in nursing home residents, with the aim of possibly **deprescribing**, which may potentially lead to an improvement in pain treatment.