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Original Article

Epidemiology of Chronic Pain in the Latium Region, Italy: A Cross-Sectional Study on the Clinical Characteristics of Patients Attending Pain Clinics

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ABSTRACT

In Italy, chronic pain affects more than a quarter of the population, whereas the average European prevalence is 21%. This high prevalence might be due to the high percentage of Italian people who do not receive treatment, even after the passing of law 38/2010 (the right to access pain management in Italy), which created a regional network for the diagnosis and treatment of noncancer chronic pain. Italian epidemiologic studies on chronic pain are scanty, and this observational, multicenter, cross-sectional study is the first to investigate the clinical characteristics of patients who attended the pain management clinics in the Latium Region, Italy, for the management of their noncancer chronic pain. A total of 1,606 patients (mean age 56.8 years, standard deviation ± 11.4), 67% women, were analyzed. Severe pain was present in 54% of the sample. Women experienced pain and had it in two or more sites more often than men (57% vs. 50%, $p = .02$; and 55.2% vs. 45.9%, $p < .001$, respectively). Chronic pain was musculoskeletal (45%), mixed (34%), and neuropathic (21%). In more than 60% of the cases, chronic pain was continuous, and in 20% it had lasted for more than 48 months; long-lasting pain was often neuropathic.

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Low back (33.4%) and lower limbs (28.2%) were the main locations. Severe intensity of pain was statistically significantly associated with female gender (odds ratio [OR] 1.39; 95% confidence interval [CI] 1.06-1.84); with *International Classification of Diseases, Ninth Revision,* codes for chronic pain syndrome (OR 2.14; 95% CI 1.55-2.95); and with continuous pain (OR 2.02; 95% CI 1.54-2.66). Neuropathic pain and mixed pain were significantly associated with number of sites, and a trend seemed to be present (OR 2.11 and 3.02 for 2 and 3 + sites; 95% CI 1.59-2.79 and 2.00-4.55, respectively).

Key Practice Points

What do we already know about this subject?
- Chronic pain is a distressing condition that affects more than a quarter of the Italian population, who should be treated in specialized pain management clinics. In Italy there is little information on the epidemiologic and clinical characteristics of these patients and their pain.

What does our study add to the already existing information
- This study is the first to provide epidemiologic and clinical information about patients who attended the pain management clinics in the Latium region, Italy.
- Its multivariate analysis describes the risk factors associated with both the intensity and the nature of pain, controlling for confounders.

In Italy, chronic pain (CP) is defined by the International Association for the Study of Pain (IASP, 2011a) as "an unpleasant sensory and emotional experience which lasts or recurs for more than 3 to 6 months," affects more than a quarter of the population. Indeed, in a European survey, Italy ranked third with a prevalence of 27% (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006), and an Italian study found a prevalence of 28% (Del Giorno, Frumento, Varrassi, Paladini, & Coaccioli, 2017). These figures are higher than the average European prevalence (21%), and they might be explained considering the high percentage of Italian people who do not receive any treatment for their pain: 33% for acute pain and CP (Koleva, Krulichova, Bertolini, Caimi, & Garattini, 2005) and about 19% for CP (Del Giorno et al., 2017).

CP is an important public health issue because it has a great impact on the quality of life, it negatively affects daily activities (Henderson et al., 2013), and it is a common reason for missing working days (Patel et al., 2012). International studies report that CP prevalence increases with age (Kurita, Sjøgren, Juel, Højsted, & Ekholm, 2012) and among widows and widowers and divorced and unemployed people, whereas it seems to be inversely related to education (Raftery et al., 2011; Yu, Tang, Kuo, & Yu, 2006). CP has an average duration of 7.6 years (Raftery et al., 2011) and mainly involves the back and lower back, neck, limbs, and joints (Langley, Ruiz-Iban, Molina, De Andres, & Castellon, 2011) and in more than 80% of the cases is located in more than one site (Raftery et al., 2011). It is more common among women (Damico et al., 2018; Johannes, Le, Zhou, Johnston, & Dworkin, 2010), who experience pain in more sites and with a greater intensity than men (Mogil, 2012), and it is mainly musculoskeletal rather than of neuropathic and mixed nature (Mailis-Gagnon et al., 2007).

In 2010, Italy enacted a law to ensure citizens have access and treatment for pain (Law n. 38/2010), especially for CP, which needs to be considered as a "chronic condition in itself" and not as a symptom of other diseases. This has implications, not only for the physical conditions of people but also for psychological and spiritual consequences. However, only 38% of the general population is aware of this law (Del Giorno et al., 2017); thus it should be better implemented given that adequate pain treatment is considered a human right (IASP, 2011b) and is often overlooked and undertreated, as reported in a recent Italian survey, where more than 70% of CP patients were not treated at the time of hospital admission and about 50% still remained undertreated at discharge (Corsi et al., 2018).

Given that CP is a complex clinical condition, pain management clinics (PMCs) could offer multidisciplinary treatment that neither general practitioners (GPs) nor orthopedic units (Fielding & Wong, 2012) or rheumatology centers (Hurst et al., 2000) can fully provide. In Italy, however, the organization of the PMCs is highly variable (Latina et al., 2014) and very little epidemiologic and clinical information is available about patients referred and managed at PMCs (Koleva et al., 2005; Leuter, Piroli, Paladini, Tudini, & Varrassi, 2017).

This study intends to fill this information gap by describing the clinical characteristics of male and female patients (age range 18-70 years) suffering from CP who attended a PMC.

Methods

This was an observational, multicenter, cross-sectional study involving retrospectively reviewed clinical records. Patients who attended a PMC in the Latium region (Central Italy) at least once in 2011 (either as a first visit or successive visit) were the target population. The data were collected between January 2012 and February 2014.

According to the IASP (2011a) recommendations, for research purposes, CP was defined as "an unpleasant sensory and emotional experience which lasts or recurs for more than 6 months."

The study was approved by the Ethical Committee of each PMC involved in the study. Data of treatment observed fundamental rights and liberties (article 13 Italian Law 196/2003; guidelines for data processing Ministerial Decree July 5, 1997, and Law Decree 200/2007) and the Helsinki Declaration (Ethical Guidelines for Observational Studies).

Sample

A total of 1,606 patients were included in the study. The patients were selected from the 26 PMCs (81.2%) participating in the study out of 32 PMCs that were active in 2011 in the Latium region (Latina et al., 2014). A stratified random sample with variable sampling fraction from each of the 26 PMCs yielded a total of 1,606 clinical records completed by physicians or nurses. Information was extracted from PMCs' clinical records using a structured template because of the different assessment tools used by the PMCs.

Inclusion and Exclusion Criteria

Male and female adults aged between 18 and 70 who attended a PMC in the Latium region January 1, 2011, to December 31, 2011, and whose medical records reported a CP diagnosis were included. Patients who accessed PMC during the study period but had not yet

received a diagnosis of CP but were suffering with pain over a 6-month period were also included. Only patients with pain not caused by cancer were included. Patients with migraine and headache were excluded. Patients with incomplete or unclear medical records were also excluded.

Data Collection

Sociodemographic variables (age, gender, education, marital, and employment status) were extracted from the records, where they were available. The following clinical variables about pain were considered: intensity, number of sites, body locations, time course (continuous or intermittent), duration, classification, and diagnosis of pain. Information was also collected about the patient's referral to PMCs (i.e., from a GP's advice, request by a specialist physician other than a pain doctor, by one's choice, by word of mouth). Data were collected by two researchers who independently verified the inclusion and exclusion criteria.

Classification of Intensity of Pain

Pain intensity was classified according to the Numeric Rating Scale (scores ranging from 0-10) and categorized in four distinct classes: absent (0), mild (1-3), moderate (4-6), and severe (7-10) (World Health Organization, 2009).

Classification of Chronic Pain (Nature)

Following the IASP (2011a) Task Force, we used the following classification of CP: Musculoskeletal—persistent or recurrent pain that arose as part of a disease process directly affecting bone, joint, muscle, or soft tissue; neuropathic—pain caused by a lesion or disease of the somatosensory nervous system; visceral—persistent or recurrent pain that originated from the internal organs of the head and neck region and the thoracic, abdominal, and pelvic cavities (Treede et al., 2015). When CP had more than one component, it was classified as mixed; when CP was present in different sites, each with different cause, it was classified as multiple; and when it was not possible to classify or when it was still being diagnosed, it was classified as undefined.

Classification of Diagnosis

CP was classified according to *International Classification of Diseases, Ninth Revision (ICD-9)*, because this is the current classification in use in Italy.

Statistical Analysis

We adhered to the recommendations issued by the Strengthening the Reporting of Observational Studies Initiative (von Elm et al., 2007).

A simple random sample of 1,600 patients (considering a 5% significance level and a power of 80%) was calculated to identify a quantitative effect size ($\delta = |\mu A - \mu B|/\sigma$) equal to about 0.15 (Student *t* test) and an odds ratio (OR) of about 1.35 using the χ^2 test for the analyses of qualitative data. In the study the sample was stratified by PMC and thus the power was probably increased.

The descriptive analysis used arithmetic mean, standard deviation (SD), median, and mode for quantitative variables, whereas for qualitative variables absolute and relative frequencies were used. Associations between qualitative variables were assessed with χ^2 tests. The Student *t* test was used for the difference in the mean values of different groups.

Multivariate analysis was applied to investigate which variables were associated with CP, controlling for confounding. Two logistic regression models were used because two different endpoints were evaluated: intensity and nature of pain. ORs were calculated for the demographic and clinical characteristics of the patients. In particular, the first model was used to study the variables associated with severe intensity of pain (vs. mild or moderate). The second model was used to study the variables associated with the neuropathic and mixed pain (vs. musculoskeletal). Statistical significance was set at a value of $p = .05$. SPSS Version 22.0 (IBM Corp., Armonk, NY, USA) software was used.

Results

The study examined 1,606 patients, 74 of whom (4.6%) were cancer patients suffering from CP unrelated to their cancer conditions.

Sociodemographic Data

The patients had a mean age of 56.8 years (SD ± 11.4) and were mainly women (66.9%). Female patients were on average a little older (mean age 57.6 years, SD ± 11.0) than male patients (mean age 55.3 years, SD ± 12.0; $p < .01$). Sociodemographic data (marital status, education and employment status) in the medical records were very incomplete (66.4%, 56.7%, and 54.0%, respectively) and therefore they were not included in this analysis.

Age Distribution

CP seems to be predominantly a condition of the elderly. The median age was 60 years. On average the female patients were about 2 years older than the male patients. The age group mode was 65-70 years (33%). Only about 10% of the patients were aged <40 (Table 1).

Intensity of Pain

Pain intensity was severe in more than 50% of the sample (Fig. 1). Severe CP was more common in women (57%) than in men (50%), and the difference was statistically significant ($p = .022$) (Fig. 2). All age groups experienced severe pain (52%-60%) without statistically significant differences related to age (Fig. 2). In about 25% of clinical records the intensity of pain was not reported.

Number of Sites, Time Course, Duration of Pain

Women seemed to experience pain in more sites than men: 55.2% of women complained of CP in two or more sites, whereas in men this percentage was 45.9% ($p < .001$) (Table 2). The number of sites did not increase with age ($p = .659$, data not shown).

Pain was continuous in 63.5% of cases (n = 691) and intermittent in 36.5% (n = 397); there was no significant difference in percentage distribution between men and women ($p = .895$) (Table 2). More than 20% of the patients had been experiencing CP for longer

Table 1
Distribution of Age and Sex Among Chronic Pain Patients

Age (years)	Men	Women	Total
	n (%)	n (%)	n (%)
<40	62 (11.7)	91 (8.5)	153 (9.5)
40-44	45 (8.5)	54 (5.0)	99 (6.2)
45-49	60 (11.3)	100 (9.3)	160 (10.0)
50-54	61 (11.5)	125 (11.6)	186 (11.6)
55-59	64 (12.0)	152 (14.2)	216 (13.4)
60-64	76 (14.3)	184 (17.1)	260 (16.2)
65-70	164 (30.8)	368 (34.3)	532 (33.1)
Total	532 (100)	1,074 (100)	1,606 (100)

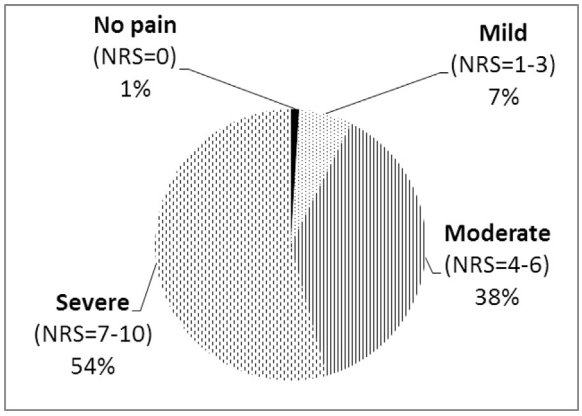

Figure 1. Intensity of pain. NRS = Numeric Rating Scale.

than 48 months, and this long-lasting pain seemed to be more often present in patients with neuropathic pain (30.1%) compared with other types (mixed: 23.9%; musculoskeletal: 17.5%; data not shown) ($p < .001$).

Classification and Clinical Diagnosis of Pain

CP was mostly musculoskeletal (44%), mixed (29.9%), neuropathic (21%), and visceral (1%). Less than 1% of patients suffered from multiple pain, and in 3.1% of patients CP was undefined (Table 2), especially in patients aged younger than 40 years (data not shown). Classification of CP was not statistically significantly different between men and women (Table 2) and between age groups (data not shown).

Table 3 reports the clinical diagnoses described in the medical records according to *ICD-9*. For the majority of patients, CP was caused by musculoskeletal conditions such as lumbago, lumbosciatica, and arthritis. Neuropathic pain was mainly reported in the case of lumbosacral root lesions, trigeminal neuralgia, and fibromyalgia. Visceral pain was very seldom reported. More than half of patients (53.5%) reported CP as a result of one single diagnosis based on *ICD-9* code. For all the other patients, either there was more than one diagnosis (16.1%) or no specific pathologic condition was identified as the cause of CP (30.4%).

Body Locations

The areas in pain more often reported by patients are shown in Table 4. The most common locations were low back (33.4%), legs (28.2%), unspecified lumbar area (26.0%), and neck (18.1%). No significant differences were found between men and women.

Access to PMCs

Patients were referred to PMCs by their GP (38%); by a specialist (e.g., orthopedist, neurologist, rheumatologist) (34%); and by family members or friends or autonomously (28%). Access to PMCs was not related to sex ($p = .167$).

Multivariable Analysis: Patient Clinical Characteristics that May Influence the Intensity and Nature of CP

In the first multivariate logistic regression we evaluated the variables associated with severe intensity of pain versus mild and moderate. Severe pain was significantly associated with female sex, with an overall 40% higher risk (OR 1.39; 95% confidence interval [CI] 1.06-1.84), with *ICD-9* codes for CP or CP syndrome (OR 2.14; 95% CI 1.55-2.95), which implies a failure to identify specific pathologic conditions as the cause of CP; and with continuous pain (OR 2.02; 95% CI 1.54-2.66). On the other hand, age, number of sites, and duration of pain did not influence pain intensity significantly (Table 5).

In the second multivariate logistic regression we evaluated the variables associated with neuropathic and mixed versus musculoskeletal pain. Neuropathic and mixed pain were significantly associated with number of sites, and a trend seemed to be present (OR 2.11 and 3.02, respectively, for two and three or more sites). Neuropathic and mixed pain were also significantly associated with *ICD-9* codes for CP or CP syndrome (OR 2.70; 95% CI 2.02-3.62), which implies a failure to identify a specific pathologic condition as the cause of CP, and with a long duration of pain, 48 months or more (OR 1.75; 95% CI 1.25-2.44). Sex, age, and time course of pain

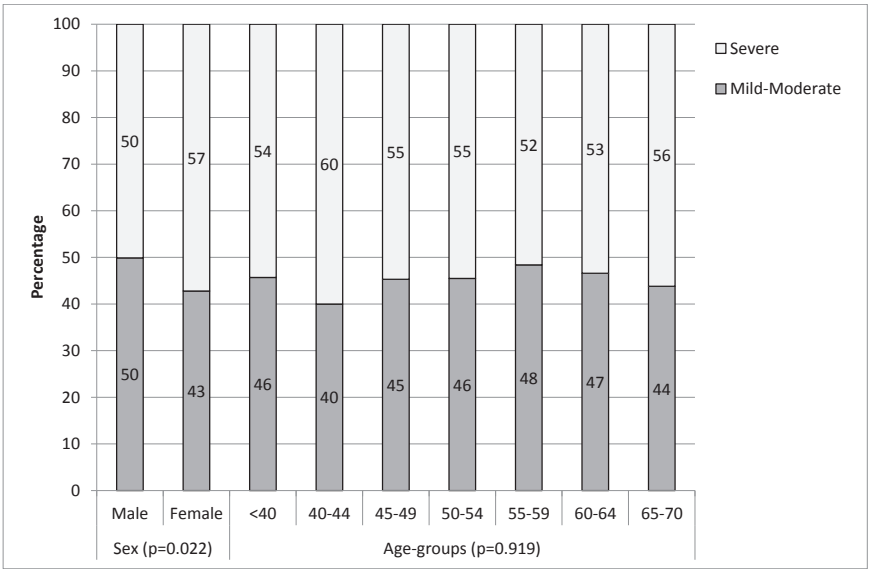

Figure 2. Intensity of pain according to sex and age groups.

Table 2
Clinical Characteristics of Chronic Pain

	Men (N = 532)		Women (N = 1,074)		Total (N = 1,606)		*p*
	n	(%)	n	(%)	n	(%)	
No. of sites							*<.001*
1	288	54.1	481	44.8	769	47.9	
2	184	34.6	401	37.3	585	36.4	
3	60	11.3	192	17.9	252	15.7	
Time course							.895
Continuous	237	63.2	454	63.7	691	63.5	
Intermittent	138	36.8	259	36.3	397	36.5	
Duration							.401
<48 months	420	78.9	828	77.1	1,248	77.7	
48 + months	112	21.1	246	22.9	358	22.3	
Classification							.127
Musculoskeletal and Visceral	235	44.2	487	45.3	722	45.0	
Neuropathic	126	23.7	209	19.5	335	20.9	
Mixed, Multiple, and Undefined	171	32.1	378	35.2	549	34.2	

Italicized values represents the *P*-value <.05 is significant.

(continuous or intermittent) did not seem to be associated with neuropathic and mixed pain (Table 6).

Discussion

This study was the first in Italy, to our knowledge, to investigate the clinical characteristics of patients who attended PMCs for the management of their noncancer CP. This study sheds light on its management after the Italian Law 38/2010 was enacted and the Regional Network for the Diagnosis and Treatment of Noncancer Chronic Pain was created.

We found that women are more likely than men to suffer from CP, as has been reported by others (Azevedo, Costa-Pereira, Mendonca, Dias, & Castro-Lopes, 2012; Henderson, Harrison, Britt, Bayram, & Miller, 2013) and to experience pain in significantly more sites than men (Langley et al., 2011). Attempts have been made to explain these results, looking at social, cultural, hormonal, and genetic differences (Mogil, 2012) or the longer survival of women. Also, women are more at risk of developing central hypersensitivity, implying lower threshold perception of pain and also a stronger degree of sensitization in CP (Schliessbach et al., 2013).

Table 3
Classification and Clinical Diagnoses of Chronic Pain According to *ICD-9*

Classification and Diagnosis of Chronic Pain*	Men (N = 532)		Women (N = 1,074)		Total (N = 1,606)	
	n	%	n	%	n	%
Chronic Musculoskeletal Pain (MSK)						
Lumbago	98	18.4	160	14.9	258	16.1
Sciatica/low back pain	69	13.0	116	10.8	185	11.5
Osteoarthrosis, unspecified generalized or localized	53	10.0	129	12.0	182	11.3
Cervicalgia	22	4.1	63	5.9	85	5.3
Lumbosacral spondylosis without myelopathy	18	3.4	61	5.7	79	4.9
Displacement of cervical intervertebral disc without myelopathy	37	7.0	38	3.5	75	4.7
Displacement of intervertebral disc, site unspecified, without myelopathy	27	5.1	44	4.1	71	4.4
Spondylosis of unspecified site, without mention of myelopathy	18	3.4	45	4.2	63	3.9
Pain in joint, lower leg	9	1.7	35	3.3	44	2.7
Sacroiliitis, not elsewhere classified	6	1.1	29	2.7	35	2.2
Pain in joint, shoulder region	10	1.9	24	2.2	34	2.1
Spinal stenosis, unspecified region	7	1.3	19	1.8	26	1.6
Backache, unspecified	6	1.1	15	1.4	21	1.3
Pain in limbs	5	0.9	14	1.3	19	1.2
Disorders of bursae and tendons in the shoulder region, unspecified	5	0.9	13	1.2	18	1.1
Osteoarthrosis, localized, not specified whether primary or secondary, hand	6	1.1	11	1.0	17	1.1
Groin	4	0.8	13	1.2	17	1.1
Osteoporosis, unspecified	5	0.9	12	1.1	17	1.1
Other MSK	69	13.0	139	12.9	208	13.0
Chronic Neuropathic Pain (NP)						
Lumbosacral root lesions, not classified elsewhere	67	12.6	148	13.8	215	13.4
Neuralgia, neuritis, and radiculitis, unspecified	59	11.1	103	9.6	162	10.1
Myalgia and myositis, unspecified (fibromyalgia)	11	2.1	36	3.4	47	2.9
Herpes zoster dermatitis of eyelid	14	2.6	30	2.8	44	2.7
Postlaminectomy syndrome (failed back surgery syndrome), unspecified region	11	2.1	31	2.9	42	2.6
Brachial neuritis or radiculitis NOS	4	0.8	27	2.5	31	1.9
Other NP	6	1.1	20	1.9	26	1.6
Chronic Visceral Pain and Other Origin						
Migraine and headache	1	0.2	15	1.4	16	1.0
Colic, chronic maxillary sinusitis, endometriosis, and others	5	0.9	14	1.3	19	1.2
Undefined Chronic Pain						
Chronic pain and chronic pain syndrome*	194	36.5	341	31.8	535	33.3

ICD-9 = International Classification of Diseases, Ninth Revision; NOS = not otherwise specified.
* Percentages do not add up to 100% because categories are not mutually exclusive.

Table 4
Body Locations of Pain According to Sex

Body Locations	Men (N = 532)		Women (N = 1,074)		Total (N = 1,606)	
	n	(%)	n	(%)	n	(%)
Low back	197	37.0	339	31.6	536	33.4
Legs	146	27.4	307	28.6	453	28.2
Lumbar, unspecific	120	22.6	297	27.7	417	26.0
Neck	85	16.0	205	19.1	290	18.1
Shoulder	41	7.7	114	10.6	155	9.7
Knee	35	6.6	103	9.6	138	8.6
Feet	28	5.3	60	5.6	88	5.5
Arms	24	4.5	64	6.0	88	5.5
Torso	25	4.7	57	5.3	82	5.1
Hand	21	3.9	49	4.6	70	4.4
Face	22	4.1	47	4.4	69	4.3
Joint, unspecific	19	3.6	49	4.6	68	4.2
Head	11	2.1	51	4.7	62	3.9
Chest	18	3.4	39	3.6	57	3.5
Hip	15	2.8	39	3.6	54	3.4
Pelvis	12	2.3	22	2.0	34	2.1
Abdomen	11	2.1	10	0.9	20	1.2

There are no statistically significant differences by sex.
Percentages do not add up to 100% because categories are not mutually exclusive.

As described in the literature and also in this study, CP was found more often in patients aged older than 60 years (Flüß, Bond, Jones, & Macfarlane, 2015; Raftery et al., 2011; Yu et al., 2006), especially because chronic and degenerative conditions may be associated with noncancer CP (Barry, Parsons, Passmore, & Hughes, 2016; Langley et al., 2010; Patel, Guralnik, Dansie, & Turk, 2013). At 18-40 years, we have found that CP is less common, agreeing with two studies on the general Italian population (Breivik et al., 2006; Del Giorno et al., 2017). It may be that young people often are referred to centers other than PMCs. However, pain in young people is important (Marti, Paladini, Varrassi, & Latina, 2018; Varrassi et al., 2010). Indeed, a recent study reported that one out of six adult patients treated in PMCs had suffered from CP since childhood or adolescence (Hassett et al., 2013). Sociodemographic characteristics were very incomplete for our patients, and this was also found by the Active Citizen Network (Cittadinanzattiva, 2013). Italy does not have a standard method to collect information in the medical records of pain patients, although a process is ongoing with the goal of accrediting the PMCs (Council of Ministers, 2012).

Table 5
Multivariate Logistic Regression for Intensity of Pain (Severe vs. Mild and Moderate)

Variables	OR (95% CI)	*p*
Sex		
Male	—	
Female	1.39 (1.06-1.84)	*.019*
Age (years)		
<60	—	
60+	0.98 (0.76-1.28)	.901
No. of sites		
One	—	
Two or more	1.03 (0.79-1.35)	.815
ICD-9 Diagnosis		
Other codes	—	
CP/CPS codes	2.14 (1.55-2.95)	*<.001*
Time course of pain		
Intermittent	—	
Continuous	2.02 (1.54-2.66)	*<.001*
Duration of pain (months)		
<48	—	
48+	0.87 (0.63-1.20)	.386

OR = odds ratio; CI = confidence interval; *ICD-9* = *International Classification of Diseases, Ninth Revision*; CP/CPS = chronic pain and chronic pain syndrome.
Italicized values represents the *P*-value <.05 is significant.

Table 6
Multivariate Logistic Regression for Nature of Pain (Neuropathic and Mixed vs. Musculoskeletal)

Variables	OR (95%CI)	*p*
Sex		
Male	—	
Female	0.83 (0.63-1.09)	.183
Age (years)		
<60	—	
60+	1.06 (0.82-1.38)	.642
No. of sites		
One	—	
Two	2.11 (1.59-2.79)	*<.001*
Three or more	3.02 (2.00-4.55)	*<.001*
ICD-9 Diagnosis		
Other codes	—	
CP/CPS codes	2.70 (2.02-3.62)	<.001
Time course of pain		
Intermittent	—	
Continuous	0.97 (0.74-1.28)	.842
Duration of pain (months)		
<48	—	
48+	1.75 (1.25-2.44)	*.001*

OR = odds ratio; CI = confidence interval; *ICD-9* = *International Classification of Diseases, Ninth Revision*; CP/CPS = chronic pain and chronic pain syndrome.
Italicized values represents the *P*-value < .05 is significant.

We could not estimate the prevalence of CP in the Latium region because we analyzed all patients with CP attending PMCs; however, we have investigated the patients with severe pain. This was quite common, experienced by about 50% of the patients in all age groups, and these results are similar to those in a recent Italian study on the general population (Del Giorno et al., 2017), implying that this condition is unfortunately very common and pain relief is not well treated. Furthermore, pain intensity was not reported in about 25% of medical records. Indeed, in clinical practice there is a tendency to not register the pain intensity when it is reported as "mild," because it does not influence the choice of the pain treatment.

In this study, more than 20% had pain lasting up to or more than 48 months and two thirds had continuous CP. The intensity (severe, moderate, or mild), duration, time course, and multisite localization of pain can have a devastating effect on a patient's quality of life and may also cause disabilities (Kamaleri, Natvig, Ihlebaek, & Bruusgäärd, 2009) or other secondary diseases (heart condition, high blood pressure); also, uncontrolled pain has an important negative socioeconomic impact. The main costs associated with pain are loss of productivity, health care use (Grimby-Ekman, Gerdle, Björk, & Larsson, 2015), absenteeism (Gouveia et al., 2016), presenteeism (Hemp, 2004), and social costs. In Germany, Langley (2012) estimated that direct medical costs are more than €500 for a patients with CP and raise to more than €1,000 if pain is severe.

We also found that musculoskeletal pain is more common than neuropathic pain, as found by other authors (Abu-Saad, 2010). Furthermore, about 30% of patients suffered from mixed CP, a higher percentage than that reported in a previous Italian study (Koleva et al., 2005) conducted among general practice clinics and not PMCs. The different setting could explain this high percentage because patients referring to PMCs probably have more complex pain than those who seek their GP's advice. The most common pain sites were the back/lower back, lower limbs, unspecified lumbar area, and neck, which is similar to the results found by other studies (Hardt, Jacobsen, Goldberg, Nickel, & Buchwald, 2008; Quintana et al., 2016). We found that CP is characterized by several different *ICD-9* diagnoses. As reported in literature (Gouveia et al., 2016; Henderson et al., 2013), we found that CP is mainly caused by musculoskeletal conditions (lumbago, sciatica, arthritis),

whereas neuropathic pain is mainly caused by lumbosacral radicular lesions, trigeminal neuralgia, and fibromyalgia. The very low numbers of patients with visceral pain may be because, in Italy, these patients are usually referred to specialist clinics, rather than to PMCs—for example, to gynecologists when suffering from endometriosis or to orthopedic surgeons for low-back pain.

We found only one *ICD-9* diagnosis in about 50% of patients, whereas in 16% the pain was due to more than one condition. One third of the participants had pain that was not matched with a specific diagnosis and was *ICD-9* coded as CP or CP syndrome. CP is not easily classifiable because there are many factors that determine the condition. Also, the Italian version of *ICD-9* is not ideal for classifying CP because it does not properly reflect the epidemiologic and etiologic characteristics or the pathophysiologic mechanisms and site, all necessary to match a painful condition to its proper code. Thus the IASP Task Force decided to give first priority to these issues in the future *ICD-11* by using "multiple parenting" to obtain a unique classification of pain (Treede et al., 2015). This should improve the accuracy of epidemiologic data, simplify the estimation of health care costs associated with CP, and promote new pain management treatments (Finnerup et al., 2013; Manchikanti, Falco, Kaye, & Hirsch, 2014).

More than 50% of patients are referred to PMCs by specialists or by their family or friends rather than after seeking their GP's advice through the Regional Network for the Diagnosis and Treatment of Noncancer Chronic Pain. This is similar in other countries (Neville, Peleg, Singer, Sherf, & Shvartzman, 2008). In 2010 the Italian Ministry of Health promoted an educational project to make GPs aware that CP should be identified not as a symptom of disease but as "a disease in its own right" (Niv & Devor, 2004). The creation of a network (Law 38/2010) outlined specific pathways for CP patients and was intended to provide adequate treatment and limit access to emergency departments in Italian hospitals.

This study investigated, for the first time in Italy to our knowledge, the clinical factors associated with CP in terms of intensity and nature of pain. Severe intensity and neuropathic and mixed pain were associated with ICD-9 CP or CP syndrome codes, which implies the difficulty of identifying a specific diagnosis, thus limiting the possibility of receiving proper care and adequate treatment for pain relief. Moreover, severe intensity was associated with female sex and with continuous pain, whereas neuropathic and mixed pain were associated with multiple sites (with a trend) and longer duration of pain. Although the association of severe pain with female sex and with long duration was previously reported, the association of neuropathic and mixed pain with multiple sites was not, and the presence of a trend gives even greater importance to this finding.

Strengths and Limitations

A strength of this study is that all clinical information was provided by the medical records filled in by the medical and nursing staff working in the PMCs, contrary to most epidemiologic studies available in the literature, which used self-reported questionnaires (Hassett et al., 2013) or telephone interviews (Breivik et al., 2006). Indeed, use of medical records, limiting or avoiding errors caused by patients' self-reporting and recall bias, may improve the quality of data and reliability of inferences (Elzahaf, Tashani, Unsworth, & Johnson, 2012).

Another strength is that this study is that it is the first, in Italy, to report clinical information on CP investigating not the general population but the patients who attended PMCs.

On the other hand, there are also some limitations about this survey. First, the investigation was restricted to only one Italian region (Latium), which is clearly not representative of all Italy; second, as a result of missing data, sociodemographic characteristics could not be evaluated and compared with what has been reported in the literature; and third, intensity of pain also could not be fully assessed because of missing data in about 25% of the clinical records.

Last, the PMCs did not necessarily all use the same assessment tools and it was not possible to describe any form of disability associated with CP because of the infrequent use of multidimensional pain scales (which are usually used for research purposes rather than for clinical practice).

Implications for Nursing Education, Practice, and Research

In general, epidemiologic studies are important because they give a global view to field workers, which they may otherwise miss, and epidemiologic studies on CP in particular, especially those reporting clinical characteristics of patients, are important because they can give feedback to pain management workers, especially to those working in PMCs. Moreover, they can be an incentive toward advanced nursing approaches and planning of new care delivery, improving both access to the Italian pain network of care and the measurement of the outcomes, as in palliative care (D'Angelo et al., 2013).

From this study it emerged, first, that CP is still considered as a symptom and not as a chronic condition in itself, with implications on the physical, psychological, and spiritual conditions of people, and second, that the evaluation of the intensity of pain and other clinical characteristics are not adequate to take care of CP patients from a holistic and interdisciplinary approach.

The use of multidimensional pain scales should be recommended to understand the impact of pain on the quality of life and on autonomy to improve patient-oriented care and to help PMCs improving their service and offering a better holistic, patient-centered, multimodal pain treatment provided by an interdisciplinary team, as widely recommended (Kress et al., 2015). Also, for comparison purposes, it would be very important to standardize the way of measuring pain across general practice and PMCs, and a national investigation would help to understand better the complex phenomenon of CP and to plan an effective pain management policy to meet the underestimated needs of people living with CP.

The role of advanced practice in pain management is essential to ensure the rapid expansion of knowledge underlying clinical practice, designing and implementing innovative solutions to address patient pain care, understanding the increasing complexity of care, and developing new pain research questions (Czarnecki & Turner, 2018).

Pain education courses are not given priority in the Italian bachelor and postdegree nursing academic curricula, and Italy only established a master's degree in pain management for all health professions in 2012 (Latina et al., 2018); thus some time will be required to have nurses with advanced clinical skills in a multidisciplinary team in PMCs.

Conclusions

Overall, our study highlights the complexity of collecting and analyzing data on CP. It also indicates that CP is far from being considered "a disease in its own right." More efforts are required to implement Italian Law 38/2010 to achieve better control of CP and its relief. In particular, this law set up a regional network for the diagnosis and treatment of CP, where PMCs are the specialized health care centers; thus the access of CP patients to PMCs should be improved, making people more aware of them, and multidisciplinary treatment should also be pursued.

This requires a "cultural transformation" about the approach with which physicians and nurses look at CP and manage it (Slomski, 2011). The first step in this direction should be to implement the training courses on pain assessment and management, aimed to develop self-awareness and to deepen knowledge and skill in pain management. These courses should be organized to allow the cultural transformation to take place, CP to be treated, and pain relief to be achieved.

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