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ORIGINAL ARTICLE

Opioid misuse in community pharmacy patients with chronic non-cancer pain

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Aims: Community pharmacists could contribute to identify people misusing prescription opioids, which may be associated with hospitalizations, substance use disorders and death. This study investigated prescription opioid misuse in community pharmacy patients and the factors potentially associated with high Prescription Opioid Misuse Index (POMI) scores.

Methods: In this cross-sectional study, pharmacy students asked patients with opioid prescriptions to fill in a questionnaire (including the POMI) in community pharmacies in a French region, in April 2019. Eligible patients were adults with chronic non-cancer pain who consented to participate.

Results: In total, 414 patients (62.4% women; mean age: 58.00 years ± 16.00) were included. The prescribed opioids were mainly weak opioids (73.2%; paracetamol/tramadol: 35%). Strong opioids (32.6%) included oxycodone (11.95%), fentanyl (9%) and morphine (9%). The median morphine milligram equivalent (MME) was 40 mg/day (IQR_{25-75}: 20–80). The POMI score (0 to 6) was ≥4 in 16% of patients who were younger ($P < .01$), more urban ($P = .03$), with higher pain visual analogue scale (VAS) score ($P < .01$) and MME ($P < .01$), and treated more frequently with strong opioids ($P = .04$). In multivariate analysis, age ($OR_{for\ 10y}$: 0.68 (95% CI: 0.56–0.82, $P < .0001$)), VAS (OR_{2units}: 1.78 (95% CI: 1.26–2.40, $P = .0008$)), and MME (>100 mg, OR: 2.65 (95% CI: 1.14–4.41, $P = .0194$)) were significantly associated with POMI scores ≥4.

Conclusions: The high proportion of patients with high POMI scores underlines the interest of prescription opioid misuse screening in community pharmacies, in order to help these patients and refer them to pain specialists, if needed.

KEYWORDS
chronic non-cancer pain, misuse, opioids, pharmacists, POMI

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The authors confirm that the Principal Investigator for this paper is Hélène Peyrière and that she had direct clinical responsibility for patients.

1 | INTRODUCTION

The consumption of opioids in France has almost doubled over the last 10 years, especially for the treatment of chronic non-cancer pain (CNCP). Each year, 12 million French people consume opioid analgesics. In Europe, the UK and France are the first and fourth largest consumers of opioid analgesics, respectively.[1,2] In France, in primary care, tramadol is the most widely consumed weak opioid with an increase of 68% between 2006 and 2017, whereas oxycodone is the strong opioid with the highest consumption increase (+1950% between 2004 and 2017).[1,2] The harmful consequences of this increase are substance use disorders, overdose and deaths.[1] In France, the health authorities and the Addictovigilance Network monitor and evaluate the abuse of and dependence on psychoactive substances, including prescription opioids.[3,4] The number of reports of opioid analgesic misuse to the French Addictovigilance Network has increased six-fold in the last 10 years.[1] This concerns both weak (particularly tramadol) and strong opioids. Moreover, the number of opioid overdose cases, recorded in the French national pharmacovigilance database, have increased from 44 per 10000 to 87 per 10000 individuals between 2005 and 2016.[1] Similarly, between 2000 and 2017, the number of hospitalizations and deaths related to prescription opioid analgesics has increased by 167% (from 15 to 40 hospitalizations per million inhabitants) and by 146% (from 1.3 to 3.2 deaths per million population; i.e., at least four deaths per week), respectively.[2]

Several definitions of drug misuse have been proposed.[5] According to the French public health code, misuse is "the intentional and inappropriate use of a drug or product, not in accordance with the marketing authorization and the recommendations of good practice". Several American studies have highlighted the community pharmacist's role in preventing prescription opioid misuse and in identifying patients at risk because of their ubiquitous presence across the country and their intermediary role between patients and prescribers.[6,7] In France, where the conditions for prescribing and dispensing opioids are more restrictive, the situation does not seems as worrying as in the US.[8] However, health authorities and healthcare professionals need to be very attentive, and preventive actions must be taken to avoid a health crisis of the same magnitude as observed in the US. In this context, community pharmacists could play a key role in identifying and addressing people with problematic use of prescription opioid analgesics. Several tools have been developed to identify such patients, for instance the Prescription Opioid Misuse Index (POMI).[6] Some studies investigated the use of these tools by community pharmacists, mainly in the US.[7,9–11] To our knowledge, no data is available on this approach in French community pharmacies. Therefore, the aim of our study was to investigate prescription opioid misuse in patients with CNCP using the POMI, and the factors potentially associated with high POMI scores in community pharmacies.

What is already known about this subject?

- In France, the misuse of prescription opioids is monitored by the health authorities.
- Although the pharmacists' role in the therapeutic education of patients is recognized, no study has been carried out in France to assess opioid misuse in community pharmacy patients.

What this study adds?

- The high proportion of patients with high Prescribed Opioid Misuse Index (POMI) scores underlines the interest of detecting opioid misuse in community pharmacy patients.
- POMI is a rapid test that allows patients who misuse prescription opioids to be identified, and may be used by community pharmacists.

2 | METHODS

2.1 | Study design and data sources

This cross-sectional study was carried out in April 2019 in 86 of the 991 community pharmacies of the Languedoc-Roussillon, an administrative region in the south of France. Data were collected by pharmacy students during their end-of-study internship ($n = 86$ students, one student per pharmacy). During the study period, each student gave a self-administered questionnaire to patients who went to one of the 86 participant community pharmacies. Each student interviewed the first five patients who met the study inclusion criteria. Patients who agreed to fill in the questionnaire had to sign a consent form. Questionnaires and prescriptions were completely anonymized for the analysis.

2.2 | Inclusion and exclusion criteria

Inclusion criteria were:

- Filling in the questionnaire in a community pharmacy in the study area
- Patient older than 18 years of age
- Patient with CNCP (pain for >3 months)
- Patients with a prescription for weak (opium powder, codeine, tramadol) or strong opioids (morphine, oxycodone, fentanyl, hydrocodone).

Exclusion criteria were:

- Filling in the questionnaire in a community pharmacy outside the study area
- Patient younger than 18 years of age
- Patient with acute pain (<3 months) or cancer pain
- Patients who do not understand the French language sufficiently.

2.3 | Measures

The questionnaire was submitted for opinion to a pilot group made up of addictology specialists, pharmacologists and pharmacists (teachers and community pharmacists). The questionnaire included questions on:

- Age, sex, education level and domicile location (urban or rural).
- Pain characteristics: duration, type (open question), and severity evaluated with a Visual Analog Scale (VAS). The pain VAS consisted of a graduated line from 0 to 10 (0 indicated "no pain at all", and 10 indicated "pain as bad as it could be"). This scale is one of the pain assessment tools validated by the French national health authorities.[12,13]
- The six-item POMI questionnaire to assess prescription opioid misuse in patients with pain. Questions concerned the quantities consumed, frequency of consumption and prescription renewal, "medical nomadism", and psychoactive effects of opioids. One point is given to each "Yes" answer. A score of ≥2 indicates potential opioid misuse, and high scores have been associated with higher misuse.[14]
- Comorbidities (open question) and consumption of alcohol and other psychoactive substances.
- Current analgesic medications, including weak and strong opioids, non-opioid analgesics (paracetamol, non-steroidal anti-inflammatory drugs [NSAIDs], nefopam), and other drugs prescribed with the analgesic drug(s) (i.e., co-analgesics, such as antidepressants, anticonvulsants, muscle relaxants), via open questions and collection of medical prescriptions.
- Opioid prescribers.

2.4 | Data analysis

Opioids (NO2A code in the Anatomical, Therapeutic, Chemical Classification System) were classified according to the World Health Organization into strong opioids (buprenorphine, fentanyl, hydromorphone, methadone, morphine, oxycodone and pethidine) and weak opioids (codeine, dihydrocodeine, opium and tramadol).[15]

Each patient's opioid intake was converted into total daily morphine milligram equivalents (MME) to account for the different potencies of opioids.

First, the patient characteristics were described using means or medians, interquartile ranges (IQR_{25-75}) and extreme values for continuous variables; frequencies and proportions for categorical variables. Then, the association between several variables and the POMI score, divided into two classes (<4 and ≥4), was analysed.

The Chi-square or Fisher's exact test was used to compare qualitative variables in patients with POMI scores of <4 and ≥4. The association between quantitative variables was studied with the Wilcoxon and Mann–Whitney test. Multivariate analysis using logistic regression was performed. All variables with *P*-value <0.15 in the univariate analysis were included in the initial model. Variables were selected through a step-by-step procedure using the likelihood ratio. Age and total daily MME were entered in the model as continuous variables and pain VAS score as discrete variable. Odds ratios (OR) and their confidence intervals (CI) were calculated. The alpha-to-enter and alpha-to-exit values were set at 0.15 and 0.10, respectively. The goodness-of-fit of the logistic regression model was assessed using the concordance rate between predicted and observed responses, likelihood ratio test, and Hosmer–Lemeshow test.

The bilateral significance threshold was set at 5%. Statistical analyses were performed with SAS version 7.12 HF4 (SAS Institute, Cary, NC).

2.5 | Ethics procedures

The study protocol was approved by the local ethics committee (Approval Number by the Institutional Review Board [IRB], Montpellier University Hospital: IRB-MTP_2020_10_202000622). All participants signed an informed consent before inclusion in the study.

3 | RESULTS

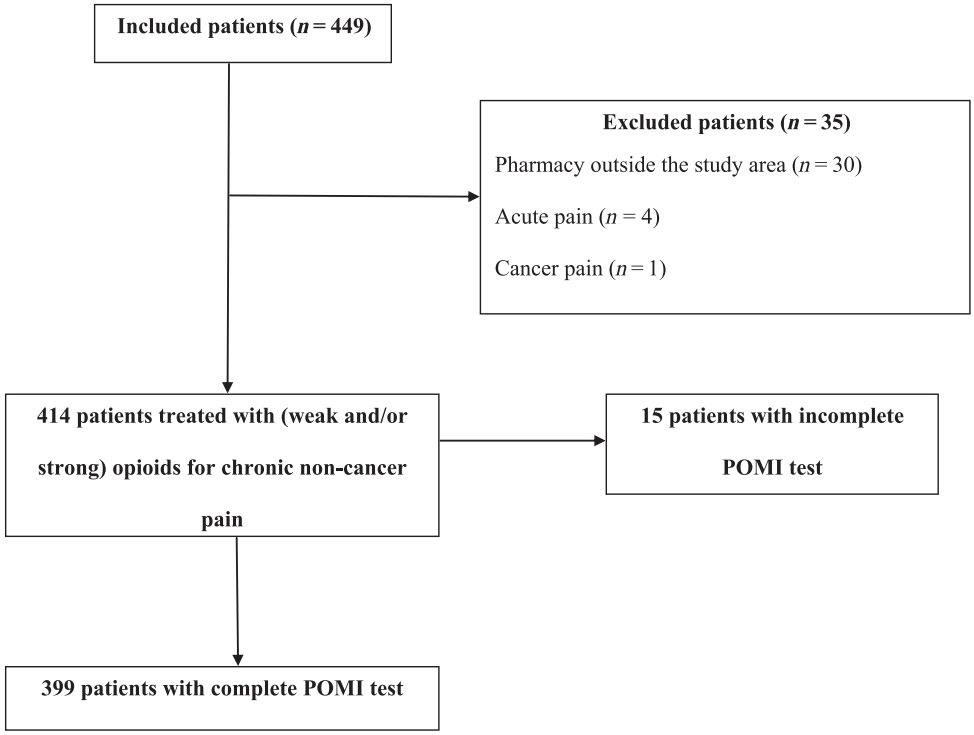
The survey was carried out in approximately 9% ($n = 86/991$) of all community pharmacies in the study region. Among these 86 pharmacies, 61 were in an urban or suburban area, and 25 in a rural area. In total, 414 patients receiving prescription opioids for CNCP were included (Figure 1). Their socio-demographic characteristics are detailed in Table 1.

3.1 | Pain characteristics and comorbidities

The included patients reported CNCP mainly in the back (43.4%, $n = 233/537$), lower limbs (24.6%, $n = 132/537$) and upper limbs (9.3%, $n = 50/537$). The median pain duration was 7.00 years [IQR_{25-75}: 4.00–15.00; min-max: 0.25–60.00] and the median pain VAS score was 7.00 [IQR_{25-75}: 5.00–8.00; min-max: 1.00–10.00].

The main psychological disorders (reported by participants) were depression ($n = 93/414$ patients; 22.5%), anxiety ($n = 90/414$;

FIGURE 1 Study flowchart



21.7%), and sleep disorders ($n = 73/414$; 17.6%), followed by schizophrenia ($n = 5/414$; 1.2%) and bipolar disorders ($n = 4/414$; 0.97%). Alcohol consumption was reported by seven patients (1.69%), and other substances by six patients (1.45%).

3.2 | Opioid prescriptions

General practitioners were the main opioid analgesic prescribers (377/414; 91.1% of all prescriptions). Other prescribers were rheumatologists (13/414; 3.1%), psychiatrists (4/414; 0.97%), pain specialists (4/414; 0.72%) and neurologists (3/414; 0.72%).

The median number of opioids prescribed per patient was 1 [IQR_{25-75}: 1.00–2.00; min-max: 1–4]. The median daily MME was 40.00 mg (IQR_{25-75}: 20.00–80.00; min-max: 1.00–800.00]. Specifically, 66.67% of patients ($n = 276/414$) were taking only weak opioids, 27.3% ($n = 113/414$) only strong opioids and 6.04% ($n = 25/414$) a mixture of strong and weak opioids (from two to four co-prescribed molecules). The opioids found in the study are reported in Table 1.

3.3 | Prescription of non-opioid pain medications

In total, 192 non-opioid analgesics were prescribed to 166 patients (40.10%): paracetamol ($n = 113/192$; 58.85%), NSAIDs ($n = 68/192$; 35.4%) and nefopam ($n = 11/192$; 5.7%). Paracetamol overdosage (>4 g/day) was found in 11.40% ($n = 30$) of the 263 prescriptions containing paracetamol (alone or in combination with an opioid).

3.4 | Co-analgesics

In total, 170 co-analgesics were prescribed to 127 patients (30.68%):

- 58 patients (14.01%) took antiepileptic drugs ($n = 66/170$, 38.8%), mainly pregabalin (29.4%, $n = 50/170$);
- 56 patients (13.53%) took antidepressant drugs ($n = 61/170$, 35.88%), mainly duloxetine (14.71%, $n = 25/170$) and amitriptyline (14.12%, $n = 24/170$);
- 26 patients (6.28%) took steroidal anti-inflammatory drugs ($n = 26/170$, 15.29%);
- 10 patients (2.42%) took muscle relaxants ($n = 12/170$, 7.06%);
- 5 patients (1.21%) took lidocaine (transdermal delivery system) ($n = 5/170$, 2.9%).

3.5 | POMI score

Among the included patients with opioid prescriptions, 399/414 (96.38%) completed the POMI. The mean POMI score was 1.72 ± 1.61; 181 patients (45.36%) had a score of ≥2 among whom 64 (16.04%) had a score of ≥4 (Table 2). The distribution of positive answers by patients with POMI score <4 and ≥4 is reported in Figure 2.

In univariate analysis (Table 3), patients with POMI score of ≥4 were younger ($P < .01$), more urban ($P = .03$) and reported more frequently alcohol consumption ($P = .01$) and depression ($P = .03$). Moreover, they had higher pain VAS score ($P < .01$), higher MME

TABLE 1 Characteristics of the included patients and prescribed opioids

	n	%		
Sex	**386**			
Men	145	37.56		
Women	241	62.44		
Age (years)	412		**Median (IQR_{25-75})**	**Min-max**
			57.00 (47.00; 71.00)	19.00–98.00
Living location	**414**			
Rural	140	33.82		
Urban	274	66.18		
Education level	**403**			
Primary school	79	19.60		
Secondary school	179	44.42		
Higher education	145	35.98		
Prescribed opioids	**579**			
Weak opioids	**370**	**63.90**		
Tramadol	148	25.56		
Tramadol + paracetamol	55	9.50		
Codeine	3	0.52		
Codeine + paracetamol	82	14.16		
Opium + paracetamol	82	14.16		
Strong opioids	**209**	**36.10**		
Oxycodone	93	16.06		
Morphine	60	10.36		
Fentanyl	52	8.98		
Buprenorphine	2	0.35		
Methadone	1	0.17		
Nalbuphine	1	0.17		

TABLE 2 Prescription Opioid Misuse Index (POMI) scores

	n	%			
POMI score	**399**		**Mean (SD)**	**Median (IQR_{25-75})**	**Min-max**
			1.72 (1.61)	1.00 (0.00–3.00)	0.00–6.00
POMI ≥ 2	**181**	**45.36**			
POMI ≥ 4	**64**	**16.04**			
POMI = 0	113	28.32			
POMI = 1	105	26.32			
POMI = 2	57	14.29			
POMI = 3	60	15.04			
POMI = 4	40	10.03			
POMI = 5	15	3.76			
POMI = 6	9	2.26			

($P < .01$), and lower consumption of weak opioids ($P = .04$) and higher consumption of strong opioids ($P = .02$) compared with patients with POMI score of <4.

In multivariate analysis, age (each 10 years), VAS (each 2 units) and MME (as dichotomized variable with a threshold >100 mg) were significantly associated with POMI score ≥4: OR: 0.68 (95%

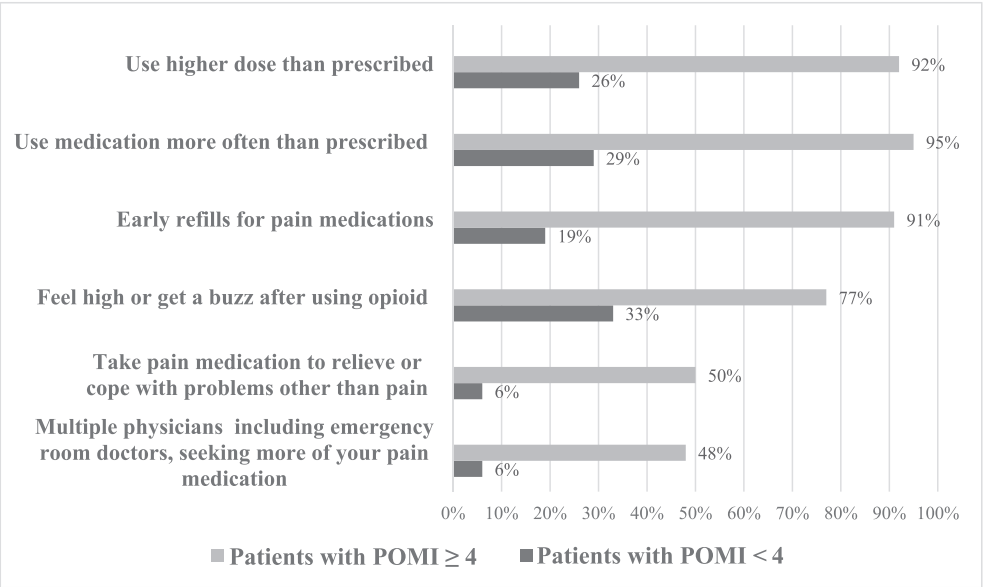


FIGURE 2 Percentage of YES answers for each of the six POMI questions in patients with POMI score <4 and ≥4

TABLE 3 Factors related to the risk of opioid misuse (univariate analysis)

	POMI All patients	POMI < 4	POMI ≥ 4	*P*-value	OR [CI]
Age, mean ± SD	57.9 ± 16.0	59.6 ± 15.9	49.0 ± 13.7	< 0.01	0.65 [0.54–0.78]
Education level, *n* (%)				0.34	
Post-graduate	145 (36.0)	128 (37.8)	17 (26.6)		Ref
Graduate	107 (26.5)	88 (25.9)	19 (29.7)		1.63 [0.80–3.30]
Secondary school	72 (17.9)	60 (17.7)	12 (18.7)		1.51 [0.68–3.35]
Primary school	79 (19.6)	63 (18.6)	16 (25.0)		1.91 [0.91–4.03]
Living in urban area, *n* (%)	274 (66.2)	224 (64.0)	50 (78.1)	0.03	2.00 [1.07–3.78]
Alcohol use, *n* (%)	7 (1.7)	3 (0.9)	4 (6.2)	0.01	7.71 [1.68–35.32]
Depression, *n* (%)	93 (22.5)	72 (20.6)	21 (32.8)	0.03	1.89 [1.06–3.38]
Pain VAS score, mean ± SD	6.4 ± 2.1	6.2 ± 2.1	7.33 ± 1.9	< 0.01	1.78 [1.31–2.42]
Total daily MME, mean ± SD	65.7 ± 85.8	57.7 ± 71.5	112.06 ± 133.5	< 0.01	1.01 [1.00–1.01]
MME, *n* (%)				< 0.01	
<100 mg	341 (84.0)	298 (86.4)			Ref
≥100 mg	65 (16.0)	47 (13.6)			2.65 [1.41–4.98]
Weak opioids, *n* (%)	303 (73.2)	263 (75.1)	40 (62.5)	0.04	0.55 [0.31–0.97]
Strong opioids, *n* (%)	135 (32.6)	106 (30.3)	29 (45.3)	0.02	1.91 [1.11–3.28]
Oxycodone, *n* (%)	57 (13.8)	43 (12.3)	14 (21.9)	0.04	1.99 [1.02–3.92]
Osteoarticular pain, *n* (%)	166 (40.1)	150 (42.9)	16 (25.0)	< 0.01	0.44 [0.24–0.81]
Anxiety, *n* (%)	90 (21.7)	71 (20.3)	19 (29.7)	0.09	1.66 [0.91–3.01]
Behaviour disorder, *n* (%)	5 (1.2)	2 (0.6)	3 (4.7)	0.03	8.55 [1.40–52.24]

CI: 0.56–0.82, $P < .0001$); OR: 1.78 (95% CI: 1.26–2.40, $P = .0008$); OR: 2.65 (95% CI: 1.14–4.41, $P = .0194$), respectively (Table 4).

4 | DISCUSSION

In this study, misuse of prescription opioids by patients visiting their community pharmacy was assessed using a screening questionnaire that included the POMI. To our knowledge, the detection of opioid misuse in community pharmacy patients has never been evaluated in France.

This population is comparable to other samples of patients treated for CNCP: more women and aged between 50 and 60 years.[9]

In this study, the most commonly prescribed opioids were tramadol (for weak opioids) and oxycodone (for strong opioids). In France, in 2019, the prevalence of reimbursement of at least one prescription of oxycodone and tramadol was 5.7/1000 inhabitants and

TABLE 4 Logistic regression analysis: risk factors of POMI ≥ 4 (OR_C: Crude OR, OR_A: Adjusted OR)

	Univariate		Multivariate	
Variables	**OR_C**	**CI**	**OR_A**	**CI**
$Age_{(OR\ for\ 10\ years)}$	0.65	[0.54–0.78]	0.68	[0.56–0.82]
$VAS_{(OR\ for\ 2\ units)}$	1.78	[1.31–2.42]	1.74	[1.26–2.40]
Total MME ≥ 100 mg (ref < 100 mg)	2.65	[1.41–4.99]	2.24	[1.14–4.41]

The variables included in the initial model are reported in Table 3, except for "alcohol" due to the too small number of patients concerned.
Continuous variables have a linear association with the POMI score. The multivariate model was developed using the stepwise method.
MME: median morphine equivalent.

99.15/1000 inhabitants, respectively (OpemMedic data).[16] Currently, there is no major warning signal on oxycodone misuse in France, although spontaneous notifications are regularly sent to the French Addictovigilance Network. Conversely, tramadol is one of the opioids with the strongest misuse signals in recent years. Indeed, tramadol is one of the main drugs in falsified prescriptions and represents the first analgesic listed in the accidental death reports of patients who use it for pain management.[1,17] One of the first measures taken to limit tramadol consumption was to reduce the maximum prescription period from 12 months to 3 months in 2020.[18]

Besides the assessment of opioid misuse, this study gives information on the prescribing habits for CNCP management. First, 11.40% of paracetamol prescriptions (alone and/or in combination with a weak opioid) exceeded the maximum dosage of 4 g/day, thus increasing the risk of hepatotoxicity in these patients.[19,20] Second, pregabalin was the co-analgesic drug most frequently prescribed with opioid analgesics (28.74% of all prescriptions of co-analgesics). Pregabalin is closely monitored by the French health authorities due to its recently identified potential for abuse and the risk of overdose when combined with opioids.[21] Indeed, experimental and observational studies have shown that that the combination of pregabalin with opioids increases the risk of acute overdose death by reversing the tolerance to respiratory depression.[22]

Therefore, the early identification of patients with opioid misuse is essential and the POMI might represent an easy-to-use screening tool in community pharmacies because it is quick and brief (six YES/NO questions).[23]

Community pharmacists, in coordination with the patient's physician, can contribute to identify patients with opioid misuse. However, the limited time available and the pharmacy physical environment (little possibility of confidentiality/privacy) might hamper their ability to detect such patients. Moreover, in the present study, pharmacy students highlighted their lack of training in tackling prescription opioid misuse and in how to propose the screening to patients. Therefore, it is essential to train the future, and also the existing, community pharmacists on how to approach patients, how to use screening tools, what kind of advice to give to patients with opioid misuse and to whom to refer them.

In this study, 45% of patients had a POMI score of ≥2 and among these patients, 16.4% had a POMI score of ≥4. The few previous studies on opioid misuse in community pharmacies using the POMI detected prescription opioid misuse in 15.1% and 21% of participants, much lower rates than in our study.[9,11] However, the POMI score should be interpreted in the context of each individual patient (pain severity and POMI questions with a Yes answer). For instance, a score of 2 due to a positive answer to items 1 and 2 (quantity and frequency of consumption) may indicate poor pain management, especially if the pain VAS score is high, like in our study (median pain VAS score of 7 despite the opioid treatment). Conversely, a POMI score of 2 due to a positive answer to items 4 and 5 (euphoric effects and use for reasons other than pain) may suggest the search for psychoactive effects. In agreement, 77% and 50% of patients with a POMI score of ≥4 gave a Yes answer to items 4 and 5, respectively (Figure 2). Therefore, in this analysis, patients with a POMI score of ≥4 and <4 were compared to better characterize the patients with higher level of misuse. In univariate analysis, patients with POMI score of ≥4 were younger ($P < .01$), more urban ($P = .03$), and reported more frequently alcohol consumption ($P = .01$) and depression ($P = .03$). Here, depression was self-reported and not assessed with a psychometric scale; however, it is commonly associated with chronic pain.[24] Alcohol consumption also was higher in the POMI ≥4 group, but the small number of patients makes it difficult to interpret these results.[25] The multivariate analysis confirmed that higher VAS pain score and MME (>100 mg) were significantly associated with a POMI score of ≥4. The higher pain level in these patients may explain the higher MME and the more frequent use of strong opioids. These patients needed dosages that might induce euphoric effects. Therefore, they should be referred to pain specialists for pain evaluation and management and, possibly, opioid withdrawal. According to the French Pain Management Society recommendations, in patients with CNCP treated with strong opioids, a specialist opinion should be sought when pain persists despite high opioid consumption (i.e., more than 3 months of treatment with MME > 150 mg).[26,27]

Moreover, 91% of analgesic prescriptions were made by general practitioners who may not be well trained in the management of severe intractable pain (i.e., the indication for strong opioids).[1] General practitioners' training is essential because patients first go to their family doctor who should be able to identify patients with opioid misuse and refer them to specialized centres. In a recent study, prescription opioid misuse was assessed in patients with CNCP hospitalized in pain clinics for withdrawal. According to the DSM-V criteria, 76.9% of these patients had opioid use disorder (≥2 DSM-V criteria), which was severe in 52% of them (≥6 DSM-V criteria).[24]

In this context, community pharmacies could be of major support because of their nationwide presence, even in rural areas where healthcare services are limited. At a time when the profession of pharmacist is moving towards the development of clinical pharmacy both in outpatient and hospital settings, improving their skills in opioid misuse screening could allow the early identification of such patients. Pharmacists could discuss with the prescriber to adapt pain management, and if necessary, refer the patient to a pain clinic, thus limiting

the harmful consequences of opioid misuse.[5] Pharmacists also have a role to play in the therapeutic education of patients. In the US, therapeutic education programmes, coordinated by the local pharmacist and targeted to misuser patients, have been set up. A similar programme could be tested in France after training of the interested pharmacists.[11]

Our study has some limitations, linked essentially to the cross-sectional study design. We did not record the number of patients who refused to participate and the reasons for their refusal. Moreover, our study was carried out only is some pharmacies of the study region and only in one region: the results could have been different in another region.

5 | CONCLUSION

The community pharmacy seems to be an ideal place to quickly identify and initiate the management of patients with prescription opioid misuse. In France, research on opioid use disorders has paid little attention to the possible role of community pharmacists. This study demonstrated that community pharmacists could use the POMI to rapidly identify adult patients with opioid misuse, in urban and also rural areas. This screening is much required as highlighted also by the high percentage of participants with high POMI scores.

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COMPETING INTERESTS

The authors report no conflicts of interest.

CONTRIBUTORS

H.P., H.D.R. and C.E. conceived and designed the study; C.P. and S.R. were responsible for database management and interpretation; M.S. and M.C.P. performed the statistical analysis; F.G. and A.M. supervised the pharmacy students during data collection; H.P. and C.P. drafted the manuscript; all authors revised and gave final approval of the manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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