Knowledge, attitude, and barriers regarding prescribing long-term opioids among Taiwan physicians treating officially registered patients with chronic noncancer pain

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Abstract

Background: Prescribing opioids for patients with chronic noncancer pain (CNCP) remains controversial. This study surveyed Taiwanese physicians who were clinically treating CNCP outpatients with long-term opioids.

Methods: Anonymous questionnaires investigating the clinical practices, opioid knowledge, attitude, and barriers regarding the prescription of long-term opioids were delivered to 66 physicians treating CNCP outpatients who were officially registered and monitored by the Taiwan Food and Drug Administration in 2011.

Results: All 66 (100%) physicians responded to the survey, comprising 41 (62%) board-certified pain specialists and 25 (38%) nonpain board-certified physicians. Pain specialists treated a greater number of CNCP outpatients and attended more CNCP training courses than nonpain board-certified physicians (97.6% vs. 56.0%, $p < 0.001$). Most of pain specialists stated that they were familiar with the Taiwan's narcotic regulations for CNCP patients (92.7% vs. 68.0%, $p = 0.015$). In addition, pain specialists were less likely to skip or reduce the dosage and duration of opioid prescriptions (22.0% vs. 36.0%, $p < 0.001$). By contrast, nonpain board-certified physicians had significantly less knowledge and a more negative attitude toward opioid prescription. The major perceived barriers were physician's reluctance to prescribe opioids (78% vs. 92%) and an inadequate knowledge of pain management (73% vs. 84%) among all physicians.

Conclusion: Among the Taiwanese physicians treating the officially registered CNCP patients, nonpain board-certified physicians had fewer patients, less knowledge, and an increased negative attitude toward long-term opioid prescriptions. Better education on chronic pain management is needed for improvement of clinical practice.

Keywords: Attitude; Barrier; Chronic pain; Knowledge; Noncancer; Opioid

1. INTRODUCTION

With the advocacy of pain as the fifth vital sign and an increased awareness of human rights to pain relief,[1] opioid prescriptions have gained acceptance for pain management of both inpatients and outpatients during the past 2 decades. However, a great increase in opioid prescriptions in the United States has caused the soaring number of opioid-related deaths, the so-called "Opioid Crisis,"[2,3] accounting for up to 17,029 deaths (46 per day) of 70,237 drug overdose-related deaths in 2017.[4] In developed European nations, opioid prescriptions nearly doubled in the Netherlands between 2008 and 2017.[5] Nevertheless, opioid misuse remains substantially less than in the United States and Canada. To address early preventative opioid misuse, the Taiwan Food and Drug Administration hosted the 2019 International Conference on Narcotics: Safe Use and Management in September 2019.[6] In clinical practice, overemphasizing patient satisfaction with pain management may escalate the risk of opioid addiction and misuse.[2] However, some surveys have demonstrated that roughly one-third of physicians chose to not initiate opioid prescriptions for chronic noncancer pain (CNCP) patients due to the burden of clinical practice and the fear of regulatory investigations.[7,8] This has led a substantial proportion of physicians to limit the number of refills (46%) or to prescribe a weaker opioid (35%), a smaller quantity (35%),

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and a lower dose (19%).[8] Moreover, the physicians' knowledge, attitudes, and concerns regarding the efficacy and adverse effects of long-term opioid therapy may contribute to varied behaviors when prescribing opioids within their specialties.[8,9] Therefore, the expertise of chronic pain physicians may be the answer, but not the cause of the opioid crisis.[3]

Guidelines have been updated in North America to assist general practitioners to prescribe opioids for CNCP management.[10–12] They curtail the inappropriate long-term use of opioids and provide legitimate support for physicians' prescriptions. In Taiwan, long-term opioid use for CNCP patients has been strictly regulated since 1996 by the National Bureau of Controlled Drugs, which was merged into the Taiwan Food and Drug Administration in 2011.[13] Each CNCP outpatient who uses opioids for 14 days continuously or exceeds intermittent use for 28 days within 3 months should be referred to a medical center or regional hospital for assessment by the hospital committee on narcotics. Physicians should regularly evaluate the registered patients and report prescriptions to the administration at least every 4 months.[13]

The number of officially registered CNCP patients in Taiwan increased from 114 in 2001 to 328 in 2010[14–16]; we surveyed 210 registered CNCP patients in 2010.[15] To compare physician knowledge of and attitude toward prescribing opioids for CNCP management in 2011,[17] we also surveyed 4 groups of Taiwanese physicians with different pain management practices: (1) 66 physicians treating CNCP patients; (2) 66 anesthesiologists treating acute pain; (3) 66 oncologists treating cancer pain; and (4) 68 ophthalmologists/otolaryngologists/pediatricians with fewer opioid prescriptions. According to Taiwanese narcotic regulations,[13] each CNCP patient can only obtain long-term opioid prescriptions from a single physician. Therefore, the aim of this study was to further analyze the 66 surveyed CNCP physicians who were clinically treating officially registered CNCP outpatients. This would reveal the differences among board-certified pain specialists (certified by the Taiwan Pain Society) and nonpain board-certified physicians in their characteristics, opioid knowledge, attitude, and perceived barriers regarding chronic pain management.

2. METHODS

2.1. Study instrument

This study was supported and approved by the Division of Controlled Drugs, Taiwan Food and Drug Administration and Tri-Service General Hospital Institutional Review Board (TSGHIRB-099-05-186). The questionnaire of Taiwan Physician's Prescribing Opioid Survey (TP-POS) for CNCP in Traditional Chinese was based on similar prior surveys.[17] These are used to assess the physician's characteristics, clinical practices and continuing educational experience, knowledge of opioid pharmacology, attitudes toward opioid use, hesitation to prescribe opioids because of concerns, and perceived barriers to using opioid pain medication for CNCP patients.[18,19] All of the questions were refined and assessed by a review committee of 6 senior specialists with expertise in CNCP management. Test–retest reliabilities were estimated by calculating the intraclass correlation coefficient for each item in scales, with acceptable values as ≥0.55. Internal consistencies were evaluated by computing Cronbach's alpha internal consistency coefficients, with acceptable values as ≥0.70.[17]

2.2. Participants

All 66 physicians treating officially registered Taiwanese CNCP outpatients in January 2011 were included and completed the questionnaires. A trained research assistant delivered the written, self-administered questionnaires to all physicians in 18 medical centers (n = 44) and 14 regional hospitals (n = 22) across Taiwan. A secondary analysis was conducted to compare the self-declared board-certified pain specialists (n = 41) (certified by the Taiwan Pain Society) and the nonpain board-certified physicians (n = 25) regarding the prescription of opioids for CNCP patients.

2.3. Data analysis

The total correct responses of opioid knowledge are presented as the mean ± SD and were compared using a Student's *t* test. The categorical responses were allocated as "strongly agree," "agree," "unsure," "disagree," or "strongly disagree" for statements regarding opioid knowledge and attitude and as "always," "frequently," "sometimes," "seldom," or "never" for hesitation regarding prescription of opioids due to concerns. In addition, multiple choice selections for questions regarding barriers were used. A chi-square test was used to compare the differences among categorical responses, with an additional Fisher's exact test conducted when the number of patients was <5. All statistical analyses were performed using the SPSS software package (version 15.0, SPSS Inc., Chicago, IL, USA). Differences with $p < 0.05$ were considered statistically significant.

3. RESULTS

All 66 physicians (100%) completed the questionnaires (Table 1). There were 41 (62%) board-certified pain specialists and 25 (38%) nonpain board-certified specialists, comprising 8 anesthesiologists, 5 neurosurgeons, 5 orthopedists, 3 gastroenterologists, 2 psychiatrists, 1 plastic surgeon, and 1 immunologist. Pain specialists had a greater number of outpatients, and most of pain specialists had received CNCP-related training (97.6% vs. 56.0%, $p < 0.001$). Their statements indicated greater familiarity with Taiwan's narcotic regulations (92.7% vs. 68.0%, $p = 0.015$), and they are less likely to reduce opioid dosage or to skip opioid prescriptions (22.0% vs. 36.0%, $p < 0.001$) because of concerns for narcotic regulations when compared with nonpain board-certified physicians. Both pain specialists and nonpain board-certified physicians spent a comparable amount of time with their outpatients. Nearly half (32/66) of all physicians believed that most of the CNCP patients in their hospitals received inadequate pain management (Table 1).

Table 2 presents more accurate responses to the 9 questions regarding opioid knowledge by pain specialists, especially among those who had received CNCP-related training courses. The nonpain board-certified physicians who were not familiar with Taiwanese CNCP regulation had the least accurate responses.

The attitude toward long-term use of opioids is shown in Table 3. Up to 78% of pain specialists disagreed with the statement, "Increasing analgesic requirements are a sign that the patient is becoming addicted," whereas a much lower proportion of nonpain board-certified physicians had disagreement (32%, $p < 0.001$), indicating a more negative attitude.

In Table 4, physicians' concerns with side effects, addiction, diversion for illegal use, regulatory scrutiny, and correct opioid dosage for prescribing long-term opioids were comparable among both groups. Only 20% of all physicians were concerned with opioid addiction and diversion for illegal use in these patients.

The leading perceived barriers for prescribing long-term opioids in all physicians (Table 5) were the physician's reluctance to prescribe opioids and the physician's inadequate knowledge of pain management.

Table 1

Physicians' demographic data, pain education, and clinical practice for CNCP in Taiwan

	Pain-certified n = 41 (%)	Nonpain-certified n = 25 (%)	*p*[a]
Medical center/regional hospital	34/7	10/15	<0.001
Geographic distribution			
Northern area	16 (39.0)	17 (68.0)	0.119[b]
Middle area	7 (17.1)	1 (4.0)	
Southern area	16 (39.0)	6 (24.0)	
East area and islands	2 (4.9)	1 (4.0)	
Gender, male/female	37/4	24/1	0.642[b]
Receiving CNCP-related training courses			
No	1 (2.4)	11 (44.0)	<0.001[b]
Yes (with the following multiple choices)	40 (97.6)	14 (56.0)	
Annual meeting or symposium	39 (95.1)	12 (48.0)	<0.001
Colleague's lectures	22 (53.7)	10 (40.0)	0.281
Medical school and resident training	10 (24.4)	3 (12.0)	0.340[b]
Internet resources	3 (7.3)	4 (16.0)	0.412[b]
Number of CNCP outpatients in the past 3 mo			
<40 (<3 patients/wk)	19 (46.3)	23 (92.0)	< 0.001
≥40	22 (53.7)	2 (8.0)	
Taiwan official narcotic regulation for CNCP[13]			
Familiar	38 (92.7)	17 (68.0)	0.015[b]
Unfamiliar	3 (7.3)	8 (32.0)	
Interference by narcotic regulation			
No interference with dosage and duration	32 (78.0)	16 (64.0)	<0.001
Skipping or reducing dosage and duration	9 (22.0)	9 (36.0)	
Most CNCP patients in my hospital have received			
Adequate pain management	20 (48.8)	14 (56.0)	0.569
Inadequate pain management	21 (51.2)	11 (44.0)	

CNCP = chronic noncancer pain.

[a]*p* values were estimated by the chi-square test.

[b]*p* values were estimated by Fisher's exact test.

4. DISCUSSION

This is the first analytical survey of 66 physicians who were clinically prescribing long-term opioids for officially registered CNCP outpatients in Taiwan. Among them, nonpain board-certified physicians were less familiar with Taiwan's narcotic regulations and tended to reduce or skip opioid prescriptions, with an inferior level of knowledge and a negative attitude toward prescribing long-term opioids, as compared with board-certified pain specialists. The leading barriers were the physician's reluctance to prescribe opioids and the physician's inadequate knowledge of pain management. Nearly half of all physicians believed that CNCP patients in their hospitals had received inadequate pain management.

The Taiwan National Health Insurance has provided comprehensive healthcare coverage (>99%) for the nation's 23-million population since 2007.[20] With the health insurance support, both pain specialists and nonpain physicians were able to prescribe long-term opioids for CNCP patients, without concerns for a patient's ability to pay for them. To the best of our knowledge, since 1995, only one elective curriculum on pain management has been established at a single Taiwan medical school (National Defense Medical Center, Taipei). Therefore, the prelicensure pain education and clinical experience for pain management are inadequate among physicians;[21] additional postgraduate education is required to help clinicians provide safe and effective pain management while reducing the devastating impact of the opioid crisis in the United States.[22] Furthermore, Taiwanese board-certified pain specialists originated primarily from board-certified anesthesiologists (77%) and partially from the other board-certified specialists in rehabilitation (4.4%), neurosurgery (3.7%), neurology (2.2%), or family medicine (2.2%) in 2015.[23] As expected, physicians with a greater number of CNCP patients were more likely to prescribe opioids and to agree that they were adequately trained for treating CNCP.[24] In this survey, nonpain board-certified physicians had a lower number of CNCP outpatients. They were less familiar with Taiwan's narcotic regulations for CNCP patients, and 36% of them would

Table 2

Physician's knowledge of prescribing long-term opioids for patients with CNCP

Correct response, n Knowledge statement	Pain-certified n = 41 (%)	Nonpain-certified n = 25 (%)	*p*[a]
1. To prescribe chronic opioid therapy for CNCP patients, injective formulation is superior to oral form (False)	37 (90.2)	17 (68.0)	0.045
2. To prescribe chronic opioid therapy for CNCP patients, a single opioid is superior to adding adjuvants (False)	36 (87.8)	19 (76.0)	0.308
3. To prescribe chronic opioid therapy for CNCP patients, a laxative should be given for constipation (True)	37 (90.2)	18 (72.0)	0.087
4. For an opioid-naïve patient, fentanyl transdermal patch is the best choice (False)	30 (73.2)	13 (52.0)	0.080
5. Injective morphine 10 mg is equivalent to oral morphine 30 mg (True)	32 (78.0)	18 (72.0)	0.578
6. Among long-term use of opioids, meperidine is more likely to get addiction than morphine (True)	31 (75.6)	19 (76.0)	0.971
7. Long-term use of meperidine tends to accumulate a neurotoxic metabolite and cause tremors or convulsions (True)	36 (87.8)	16 (64.0)	0.022
8. 25% of all patients receiving chronic opioids become addicted (False)	28 (68.3)	8 (32.0)	0.004
9. It is not real for a patient to complain pain over the healed surgical wound after 4 mo (False)	36 (87.8)	19 (76.0)	0.308
Sum (%)	303 (82.1)	147 (65.3)	<0.001
Correct responses of the above 9 items, mean ± SD	7.4 ± 1.4	5.8 ± 2.3	0.003[b]
Receiving CNCP-related training courses	7.4 ± 1.4 (n = 40)	6.0 ± 2.5 (n = 14)	0.047[b]
Not receiving CNCP-related training courses	6.0 (n = 1)	5.6 ± 2.1 (n = 11)	1.000[b]
Familiar with Taiwan official narcotic regulation for CNCP	7.4 ± 1.4 (n = 38)	6.3 ± 2.3 (n = 17)	0.084[b]
Not familiar with Taiwan official narcotic regulation for CNCP	7.7 ± 1.2 (n = 3)	4.9 ± 2.0 (n = 8)	0.034[b]

The data were presented as physician numbers (%) with correct responses.

CNCP = chronic noncancer pain.

[a]*p* values were estimated by the chi-square test.

[b]*p* values were estimated by Student's *t* test.

Table 3

Physician's attitude regarding long-term use of opioids

Disagreement response, n Attitude statement	Pain-certified n = 41 (%)	Nonpain-certified n = 25 (%)	*p*
1. An adult should endure his pain as possible	38 (92.7)	22 (88.0)	0.666
2. An adult should not frequently ask for opioids	29 (70.7)	16 (64.0)	0.569
3. Opioids are not good for human bodies	27 (65.9)	14 (56.0)	0.423
4. Opioids should only be used in terminal stages	38 (92.7)	20 (80.0)	0.242
5. Opioids may cause many side effects	16 (39.0)	7 (28.0)	0.362
6. It's not easy to solve the side effects of opioids	34 (82.9)	18 (72.0)	0.292
7. Due to respiratory depression, opioids should not be used in pediatric patients	33 (80.5)	17 (68.0)	0.251
8. Increasing analgesic requirements is a sign that the patient is becoming addicted	32 (78.0)	8 (32.0)	<0.001
9. Early use of the opioid will reduce its future efficacy	31 (75.6)	17 (68.0)	0.501
Sum (%)	278 (75.3)	139 (61.8)	<0.001

The data were presented as physician numbers (%) with disagreement responses.
p values were estimated by the chi-square test.

Table 4

Physician's concern for hesitation of prescribing long-term opioids

	Pain-certified n = 41 (%)	Nonpain-certified n = 25 (%)	*p*[a]
1. Side effects			
Always or frequently	16 (39.0)	9 (36.0)	0.639
Sometimes	13 (31.7)	6 (24.0)	
Seldom or never	12 (29.3)	10 (40.0)	
2. Addiction			
Always or frequently	9 (22.0)	6 (24.0)	0.136
Sometimes	8 (19.5)	10 (40.0)	
Seldom or never	24 (58.5)	9 (36.0)	
3. Diversion for illegal use			
Always or frequently	8 (19.5)	5 (20.0)	1.000[b]
Sometimes	16 (39.0)	10 (40.0)	
Seldom or never	17 (41.5)	10 (40.0)	
4. Regulatory scrutiny			
Always or frequently	17 (41.5)	5 (20.0)	0.133[b]
Sometimes	14 (34.1)	9 (36.0)	
Seldom or never	10 (24.4)	11 (44.0)	
5. Correct dose			
Always or frequently	3 (7.3)	1 (4.0)	0.130[b]
Sometimes	5 (12.2)	8 (32.0)	
Seldom or never	33 (80.5)	16 (64.0)	

[a]*p* values were estimated by the chi-square test.
[b]*p* values were estimated by Fisher's exact test.

accordingly reduce or skip the opioid prescriptions. Our results implied that some CNCP patients in Taiwan had received insufficient opioid prescriptions from nonpain board-certified physicians. Indeed, nearly half of both groups of physicians believed most of the CNCP patients received inadequate pain management. Therefore, additional evidence-based education in multidisciplinary pain management,[25] either pharmacotherapeutic or interventional, is needed for Taiwanese physicians.

Despite clinically treating CNCP patients, only two-thirds of nonpain board-certified physicians responded correctly to the false statement, "To prescribe chronic opioid therapy for CNCP patients, injective formulation is superior to oral form," in addition to the true statement, "Long-term use of meperidine tends to accumulate a neurotoxic metabolite and cause tremors or convulsions." Furthermore, only one-third of them could recognize the two false statements, "25% of all patients receiving chronic opioids become addicted" and "Increasing analgesic requirements is a sign that the patient is becoming addicted," indicating their negative attitude and concerns for long-term opioid prescriptions. The meta-analyses revealed that signs of opioid addiction/abuse were reported in only 0.27%–3.27% of CNCP patients receiving long-term opioid therapy.[26,27] The gaps in opioid knowledge and attitude could be improved by using an innovative e-learning pain education resource for medical school students.[28] For the nonpain board-certified physicians in this survey, additional on-the-job education regarding opioid knowledge, attitude, and interventional techniques are required to enhance their clinical practices for CNCP patients.

Table 5

Physician's perceived barriers for prescribing long-term opioids for chronic noncancer pain

Factors (multiple choices)	Pain-certified n = 41 (%)	Nonpain-certified n = 25 (%)	*p*
1. Physician reluctance to prescribe opioids	32 (78.0)	23 (92.0)	0.185
2. Physician's inadequate knowledge of pain management	30 (73.2)	21 (84.0)	0.309
3. Physician's inadequate technique of nerve block	19 (46.3)	16 (64.0)	0.163
4. Family reluctance to support opioid prescriptions	29 (70.7)	17 (68.0)	0.815
5. Patient reluctance to take opioids	26 (63.4)	18 (72.0)	0.473
6. Inadequate choices of opioids	28 (68.3)	12 (48.0)	0.102
7. Inadequate facility of pain management in the hospital	21 (51.2)	19 (76.0)	0.046
8. The official narcotic regulation is too restrictive	16 (39.0)	11 (44.0)	0.690
9. The hospital's opioid rules are too restrictive	15 (36.6)	15 (60.0)	0.064

p values were estimated by the chi-square test.

In this study, over three-quarters of the 66 physicians perceived physician reluctance and inadequate knowledge of pain management, followed by patient or family reluctance, as barriers for prescribing long-term opioids. However, only 20% of physicians were concerned with opioid addiction and diversion for illegal use in these patients. Therefore, it can be hypothesized that opioidphobia itself contributes to Taiwanese physician and patient reluctance in this study.[29] In Taiwan, strict narcotic regulations prevent aggressive marketing by pharmaceutical companies and so-called pill mills (pain clinics that inappropriately dispense opioids), and the general reluctance to use chronic opioid therapy among physicians, patients, and their families has prevented the opioid crisis in Taiwan. Nearly half of all physicians in this survey thought that CNCP patients in their hospitals had received inadequate pain management. Among physicians treating CNCP patients with long-term opioids, concerns for hesitation of prescribing opioids, such as side effect, correct dose, addiction, diversion for illegal use, and regulatory scrutiny, were comparable between pain specialists and nonpain physicians. Nowadays, multidisciplinary pain management with interventional treatment and opioid tapering should be considered for CNCP patients,[25] either by primary physicians themselves or by the other experienced pain specialists through referral in Taiwan. Otherwise, appropriate pretreatment discussions with the patients and their families regarding the benefits and harms of opioids, implementation of a chronic pain protocols and the development of electronic reports,[30] and awareness of CNCP guidelines, may increase the physician's confidence of appropriate prescriptions.[31]

Two limitations of this study should be addressed. First, the cross-sectional design of the survey may result in biased responses by participants. In this study, we acquired the full cooperation of all 66 physicians by surveying their CNCP outpatients in advance.[15] The leading 3 diagnoses for chronic pain were chronic pancreatitis, spinal cord injury, and neuralgia, totaling 115 (54.8%) of 210 surveyed patients.[15] However, the ratios of interventional techniques and opioid tapering in their patients were not documented in this survey. Second, this survey assessed the gaps in characteristics, opioid knowledge, and attitudes among pain specialists and nonpain board-certified physicians but did not assess their prescription behaviors. Moreover, the questionnaire did not permit the participating physicians to elaborate on why they agreed or disagreed with a specific statement. Therefore, their specific responses and behaviors could not be determined.

In conclusion, this is the first analysis of Taiwanese physicians who were clinically prescribing long-term opioids for CNCP patients. There were considerable differences in pain-related training, opioid knowledge, and attitude between board-certified pain specialists and nonpain board-certified physicians in Taiwan, indicating a need for continued education of chronic pain management techniques for nonpain board-certified physicians that are treating CNCP patients.

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