International Journal of Nursing Sciences 4 (2017) 430–436

Contents lists available at ScienceDirect

International Journal of Nursing Sciences

journal homepage: http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132

Discussion

Reviewing opioid use, monitoring, and legislature: Nursing perspectives

Deniece A. Jukiewicz*, Aisha Alhofaian, Zenora Thompson, Faye A. Gary

Case Western Reserve University, Frances Payne Bolton School of Nursing, 10900 Euclid Ave., Cleveland, OH 44106, USA

ARTICLE INFO

Article history:
Received 28 February 2017
Received in revised form
17 August 2017
Accepted 4 September 2017
Available online 14 September 2017

Keywords:
Abuse
Administration
Legislature
Nursing
Opioid
Overdose
Policy
Prescribing

ABSTRACT

The phenomena of prescription opioid misuse and abuse have a complicated history of contributing factors including policies, practices, and prescribing leading to contemporary phenomena. Some factors implicated in the opioid drug abuse problem include inefficient prescribing and improper use, lack of knowledge related to interpretation and assessment of pain levels, and decreased oversight and regulation from government and policy agents. Nurses, often frontline providers, need to be knowledgeable and embrace the guidelines, and necessary implications associated with both prescribing and administration of opioids. Additionally, all providers including physicians, physician assistants, nurse practitioners, and bedside nurses must have a firm understanding of the improper use and abuse of opioids. The examination and review of opioid policies at the state and federal level has revealed inconsistency with regulations, policies, and guidelines that have lead to the current situation. The use of an interdisciplinary team with nurses and various other practitioners is a good strategy to help reduce this problem.

© 2017 Chinese Nursing Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

There has been an increase of opioid prescription and use since the turn of the century, leading to the current critical situation of overdose and death that we are presently experiencing in the United States. Daily, more than 650,000 prescriptions for opioids are written [1]. The purpose of this paper is to elucidate the nature of opioid abuse, identify nursing implications and knowledge gaps, and investigate prescribing policies that are significant for addressing this problem.

The definition of prescription drug abuse is the use of a drug for purposes other than medically indicated, without prescription, or to experience a feeling of pleasure and happiness [1]. Opioids are analgesics that bind to opioid receptors found on nerve cells located in the spinal cord and the brain [2]. The classification of opioids includes morphine, codeine, and other substances derived from the opium poppy used for analgesia purposes [2]. Opioids are considered "safe" to use as pain relievers for a short time when used under the supervision of a physician or an advanced practitioner, or when a patient is receiving oversight by a licensed caregiver [3]. However, abuse and dependence may occur as a result of individuals using this classification of medications to achieve the euphoric sensations these drugs may induce in addition to the pain-relieving effects [1]. The definition of opioid abuse is an interference with social functioning related to a strong desire for and an inability to control the use of opioids leading to dependence and tolerance [4]. As individuals develop tolerance, they may resort to any means necessary to prevent the withdrawal symptoms associated with cessation of opioid use. Withdrawal symptoms of opioid use may include nausea or vomiting, muscle aches, diarrhea, fever, negative mood and insomnia [5].

In the United States, during the last fifteen to twenty years, healthcare providers, patients, and key stakeholders have witnessed the phenomena of prescription opioids becoming the treatment of choice for management of pain [6,7]. Although opioids have been available and used as analgesics since the late 1800's, it was the turn of the 21st century when an actual focus on pain management began [2]. Based upon an influential article written by Porter and Jick in the 1980s, pain management became one of the core components linked to quality health care. This focus on pain reduction helped to reduce the fear of addiction and provided a false sense of safety associated with opioid use. Additionally, drug companies utilized the article by Porter and Jick to further

* Corresponding author.
E-mail address: daj47@case.edu (D.A. Jukiewicz).
Peer review under responsibility of Chinese Nursing Association.

https://doi.org/10.1016/j.ijnss.2017.09.001
2352-0132/© 2017 Chinese Nursing Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

diminished as a concern publicly and from a healthcare perspective [2,8]. The American Pain Society embraced the concept of pain as the fifth vital sign and helped establish a platform to raise attention among professionals, policy makers, researchers, and patients to the significance of effective pain recognition, treatment, and management [9,10]. Furthermore, pain management was fueled by Congress designating the beginning of the new millennium as the "Decade of Pain Control and Research" [6]. Also, during the early 2000s, the Joint Commission (previously named the Joint Commission on Health Care) revised and issued new standards mandating pain evaluation and treatment in return for federal reimbursement encouraging clinicians to consider pain relief "a human right" [6,10]. Additional initiatives focusing on pain control include the Veterans Pain Care Act [11], and the National Pain Care Policy Act [12].

The Decade of Pain Control and Research promoted two goals [6,9,13]. The first goal focused on reducing the incidence of suffering associated with pain both acute and chronic (lasting longer than six months). It raised both public and professional attention and awareness regarding a significant and often neglected public concern of under-treated chronic pain [13]. Estimates indicate that over 100 million adults are afflicted with chronic pain in the United States [9]. The second goal of this campaign focused on reducing the health and societal costs related to unrelieved pain, through diligent and careful attention to pain control [9]. *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*, a 2011 report prepared by the Institute of Medicine, suggests that costs associated with pain are between $560-$635 billion dollars annually [14]. These figures include costs related to lost productivity as well as costs related to the treatment of pain. Tompkins, Hobelmann, and Compton reported that published meta-analysis indicate evidence of treatment gains evident over a majority of the last two decades. These data helped to create a reduction in health care expenditures and improved overall functioning of patients, which allowed them to return to work [9]. However, it was not the single treatment component of opioid prescriptions that lead to this improvement, but the implementation of a comprehensive team approach to pain treatment which leads to this desired outcome [15].

Although there is excellent documentation in the literature that effective pain relief requires a comprehensive team approach using multidisciplinary interventions, economic influences have attributed to a decline in the interdisciplinary approach. The other potential outcome is a movement towards single providers that would help to carry the core responsibility for providing oversight and care to individuals with pain [9,16,17]. Balestra cites the Emergency Department (ED) of hospitals as a point of access where a single provider nurse practitioner or physician may face this particular clinical situation [18]. Patients enter the ED with various types of pain, seeking duplicate opioid prescriptions, or demanding opiates to treat the suffering associated with the pain they experience. Additionally, sole or independent providers such as nurse practitioners or physicians may be pressured, over-burdened, or lack the necessary resources or support to provide comprehensive care in primary care settings [19]. Addicted patients may view these sole providers as readily available resources of opioid prescriptions [19].

The under-utilization of multidisciplinary teams might circumvent the checks and balances system that an interdisciplinary may provide. This under-utilization may result in less oversight and may lead practitioners to set aside common sense and best practices regarding cautionary use of opiates as a first line treatment in pain control. In these situations, alternative pain treatments that have less potential for abuse and addiction [19]. Additionally, there has been mounting pressure from pharmaceutical companies, the Joint Commission, the American Pain Society, and the public to encourage the practice of prescribing and using opiates as a safe and efficient intervention for many types of pain relief [20]. Although the prudent use of resources should allow for the efficient and proper treatment of most types of pain, health care providers, especially physicians and nurses, have been lulled into believing that opioids are a safe, convenient, and efficient means of treating the various types of pain [4]. As a result of this false sense of safety (related to the initial low rates of addiction) and the undertreatment of pain, opioids have become a first line intervention for the alleviation of all types of pain [21]. Again, the outcome is often abuse and addiction of opioids.

As the practice for treating many types of pain with opioids has grown over the last several decades, the potential for abuse and addiction has increased, fueling the epidemic of inappropriate use of opiates and dependence [19]. The abuse of opioids has now become a public health concern resulting in unprecedented opioid related deaths across the nation [22]. Also, individuals misuse drugs inappropriately through sharing or buying prescriptions, at times illegally, as well as stealing opioids for the desire to attain an altered euphoric level of consciousness or dull emotional and psychological pain. Also, some individuals earn their wages from the "black market" by selling to those persons who are dependent and/or addicted to opiates [20]. Although there are many legislative policies, guidelines, and recommendations written and passed to address this concern, there are fears that the likelihood of opioid policy changes will not happen promptly as each of these directives address the problem from a different point of view. Furthermore, states may differ from one another in opioid policies and procedures. These differences may help to create stalemates related to a cohesive and uniform policy about opioid use.

According to the results from the 2013 National Survey on Drug Use and Health, Americans aged 12 or older reported the use of an illicit drug for the first time, this is an estimated 2.8 million people in the United States [23]. This estimation indicates there are about 7800 new illicit drug users per day, and is similar to the 2012 estimate of 2.9 million users [23]. More than half of initial illicit drug users (54.1%) began using before they turned 18 years old, and approximately 58% of new users were female [23]. About 12.5% who used illicit drugs were introduced to them through the nonmedical use of prescription pain relievers [23]. There were approximately 1.9 million individuals with a pain reliever dependence, and this was similar to the 2012 findings of 2.1 million [23]. Additionally, reports indicate that there has been an increase in illicit drug use from the years of 2006 through 2011 ranging from 1.6 million to 1.9 million respectively [23]. These results show a steady increase over the past decade regarding the use of nonmedical pain relievers. Likewise, the Centers for Disease Control and Prevention (CDC), suggests close to 12.5 million Americans older than 12 years of age have used opioids for purposes other than medically indicated at least once in their life further showing the significance of this epidemic [24]. As opioids are the most commonly abused and inappropriately used pain interventions as suggested by Phillips, it is important to understand how inappropriate use may impact health care and the associated societal costs [25].

In 2007, according to Crowley et al. the strain on the U.S. economy regarding the cost of prescription opioid abuse was around $200 billion per year [26]. This price included workplace productivity loss, medical expenses, and criminal and associated court costs. Furthermore, data presented by Chen, Hedegaard, and Warner, report opioid deaths have almost quadrupled from 1.4 to 5.1 deaths per 100,000 people between 1999 and 2013 [27]. As a result of these opioid deaths, local, state, and federal government agencies have enacted efforts aimed at overdose reduction. Some examples of the efforts executed include state registries to monitor

prescription filling, decreasing the number of free standing pain management clinics known as "pill-mills," and the development of tamper resistant formulas for extended release opioid products [28]. As opioids become harder to attain and alter, users are making the switch to heroin [29].

2. Material and methods

Schirle and McCabe, and Paulozzi, Mack, and Hockenberry studied the variation among states regarding prescribing practices of opioids [30,31]. They concluded that the factors that account for the differences in prescribing practices were unknown. Furthermore, as states have a variety tools to use against the war on opioids, many inconsistencies remain regarding the education of providers, prescribing practices, and reduction strategies [32]. Additionally, after investigating each state as well as the federal policy on opioid use, it is plausible to assert that the variations can be attributed to inconsistency in oversight and regulation both at a federal and state level. A thorough review of federal and state opioid prescribing policies, guidelines, and protocols was undertaken to help develop a strategy to curtail the ubiquitous opioid burden. We also completed a comprehensive Internet search of state and federal information related to prescribing practices.

2.1. Data sources and searches

We searched the internet for government publications, as well as PubMed for research articles evaluating state policy and federal policy published from 2007 to 2017 with search terms including, but not limited to, "opioid," "abuse policy," "prescription opioid crisis," and "state legislature for opioid abuse." We used (the Databases of Statutes, Regulations, and Other Policies for Pain Management from the Pain & Policy Studies Group at the University of Wisconsin; the Trust for America's Health; the National Alliance for Model State Drug Laws; and the State Successes page from the Center for Disease Control and Prevention) to guide our review of policies, statutes, and regulations related to current prescribing practices of opioid medications across the nation [33–36].

2.2. Selection criteria

Articles were analyzed for relevance. Articles were selected for the review if they were written in English and they pertained to evaluating state or federal policies and practices. Descriptive studies were excluded. We focused on studies that reviewed both state and national infrastructure and health policy systems related to opioid prescribing and education.

2.3. Data extraction and synthesis

Categories of state policy and national policy were identified in our literature search: prescribing guidelines, state legislation, clinical guidelines, and provider education (see Table 1). These policies are broad and represent professional approaches to teach and reduce the dangers of opioid misuse. We examined individual state changes to provide a thorough review related to understanding outcomes in combatting opioid misuse and abuse.

3. Results

We found significant differences in prescribing inconsistencies, educational requirements, and opioid reduction strategies demonstrated across all states related to policy references, development, and updates. Even more shocking, we found there is a lack of regulated systems in many of the states related to the role of nurses in administration and prescribing of opioid medications [33,37]. As advanced practice nurses are becoming key players in the care of both acute and chronic conditions, there is a significant need to include them in the safe prescribing and use of opioids.

3.1. Prescription drug monitoring programs

Background: Prescription drug monitoring programs are present and functional in all 50 states in the United States. These programs are in place to allow pharmacies to submit all order information related to controlled substances to a central database in each state. From these databases, practitioners that prescribe can determine if patients are using multiple practitioners and/or pharmacies to secure and receive controlled substances [32,38].

Findings: Use of prescription drug monitoring programs are not required by prescribers in all 50 states, and the results of use are heterogeneous from one state to the next. Identifying and using best practices as standard operating procedures consistently throughout all states may show benefits to patients and help with more predictable and standardized use by all prescribers. Finally, the use of prescription drug monitoring programs is not mandatory in all states, so there is inconsistency in not only their use but in maintaining patient safety with scheduled medicines [39].

3.2. Individual states

Background: Importantly, states such as Illinois, Montana, and South Dakota have no particular policies documented to guide prescribers regarding how to address chronic pain as experienced by patients. Other states have policies and guidelines that are 20 or more years old that are without any evidence of updates. For example, Colorado's controlled substance act relating to prescriptions was last written or amended in 1996. Legislation has recently passed in Colorado to legalize the use of marijuana as a recreational drug. Similarly, Kansas, Louisiana, and Maryland, to name a few other states, have also not amended laws regarding opioid practices since the 1990s. On the other hand, some states, such as Arizona, California, New Mexico, and Oklahoma, have rules that may be difficult for the practitioner and patient to decipher. For instance, there are three or four governing bodies that have produced documents that are related to the regulation of prescription and use of opiate medications. This practice does not allow for a centralized body which could act as a hub for all agencies that have an interest in opioid prescription implementation and use. No one particular governing body provides the oversight or regulation. Hence, there is a corresponding decrease in accountability stemming from this fragmentation of monitoring and control that ultimately affects patient and population outcomes [33].

Lastly, many states lack regulations, policies, and guidelines regarding the nursing role in prescribing and/or administering opioids. Although all states are required to subscribe to and participate in federal guidelines, some states have more stringent or specific rules, policies, and guidelines that have a provision for opioid regulation [37]. The states of Missouri, Washington, Oregon, Utah, Wisconsin, Oklahoma, Indiana, Massachusetts, Florida, and Rhode Island have more specific, well-circumscribed policies and requirements and they are the most restrictive regarding opioid prescription use across the nation [37].

Findings: As Paulozzi, Mack, and Hockenberry reported in 2012, 82.5% of opioid use originated from written prescriptions [31]. Our review produced many notable findings. In this research, we found the highest rate of opioid prescriptions originating in Alabama, an under resourced southern state, with 142.9 opioid pain relievers prescribed for every 100 persons [40]. Unsurprisingly, it was ranked 46th out of 50 states for health disparities with the 50th state being

Table 1
Overview of state and federal prescribing practices and policies.

Intervention	Participants involved	Description
Prescription drug monitoring programs	Physicians and Advanced Practitioners [a](NP, PA, CNS)	Programs at state levels require pharmacies to submit information regarding controlled substances to a central database, and can be reviewed by prescribers prior to writing controlled substance prescriptions. All states have a prescription drug monitoring program in place
State legislation	Senate, Congress, Lobby Agents, Political Action Committees, Licensing Boards	Regulation of prescribing guidelines related to authority, and prescribing with registration, Pain clinic regulation, and laws regarding controlled substance activity. Legislation varies among states. Incongruencies from state to state regarding advanced practitioners scope and authority. Incongruency from state to state regarding laws and rules and regulations regarding prescription, oversight, and education related to opioid use
Federal legislation	Developed by federal legislature with education and information supplied by Federal health agencies, Political Action Committees, and Law enforcement	Oversight and guidance that provide recommendations to states regarding prescribing policies and practices, including but not limited to education requirements, clinical guidelines, safe storage and disposal, and topic research and findings. Recommendations for all states, disparate application from state to state

[a] NP: Nurse Practitioner (including Nurse Practioner Anesthetists, Family Nurse Practitioner, Geriatric Nurse Practitioner, Adult Nurse Practitioner, and Psychiatric Nurse Practitioner), PA: Physician Assistant, CNS: Clinical Nurse Specialist (including Adult Clinical Nurse Specialist, and Geriatric Clinical Nurse Specialists).

the most disparate [41]. In the last two years, Alabama's excessive drinking has increased, the level of health by educational attainment has decreased, and infant mortality has increased. These health indicators could reflect the high rate of opioid prescription use and abuse among its residents [41]. Maine, on the other hand, has not experienced the same level of disparity. Maine ranks 15th out of 50 according to America's Health Rankings for 2015 [41]. Remarkably, Maine ranked first in prescribed long-acting/extended-release opioid pain relievers with a prescription rate of 21.8 for every 100 persons [40]. The median number of opioid pain relievers per 100 individuals in the United States was 82.4 [40]. The South ranked highest, with an average of 93.7 per 100 people being prescribed opioids; and the West ranked lowest, with the average number of prescriptions being 68.0 per 100 people [31]. These prescribing practices can contribute to a poor quality of life and subsequent overdoses and death. Although it is not yet clear how Alabama, one of the nation's most economically deprived states, has one of the highest rates of opioid use, Compton and Weaver shed light on one hypothesis for this finding [42]. As previously discussed, the South ranked highest in prescription rates for opioids. Increased opioid abuse in the South may be related to an economic disadvantage for many low-income families. Many income earners in these low-income households engage in manual labor. Years of manual labor can cause many back and joint problems associated with the heavy work [42]. The physical ailments can lead to increased levels of pain encouraging workers to seek providers willing to prescribe opioids. As the prescription demand rises for opioids, they become more readily available and are an easier way to make money by the income earners than engaging in manual labor. Through illegal sales and diversion, opportunistic recreational use may lead to opioid use and addiction at an accelerated rate [42].

3.3. Federal guidelines

Background: Federally established guidelines from the Center for Disease Control, National Institute of Health, and Substance Abuse and Mental Health Services Administration, as well as the model policy drafted by the Federation of State Medical Boards, were also reviewed for relevancy. A particular area of concern is the use of a clinical assessment tool for pain and outcome measure as it may not be consistently applied and utilized in either research or practice [35]. Additionally, as the Pain Relief Promotion Act commenced at the turn of the 21st century, federal policies have taken a more liberal approach leading to some states following broad federal guidelines and having increased difficulties with opioid misuse and abuse [6].

Findings: The national policies, guidelines, and regulations are problematic from an implementation perspective because there is limited ability and resources at the state level to apply these rules [37]. However, these guidelines are in the process of being revised. This revision may lead to better consistency and clarity as well as allowing for the legal system to better enforce and uphold the legislation [33].

Pathways towards better practice regarding opioid use and prescribing include education, policy changes, and consistent application of laws related to opioid use. Although there are currently prescriptive guidelines for practitioners set forth at both the federal and state levels, the oversight and regulation at each level is inconsistent and lacking. These current practices do not provide congruency with a common goal of clarity and guidance regarding proper opioid prescribing practices [43]. According to the National Institute for Health, this prescribing pattern has led not only to the widespread availability of opioids but also increased visits to the emergency department, where opioid overdoses caused by misuse often result in untimely deaths [44]. Although there is legislation currently in process for the revision of opioid use and regulation regarding the use of naloxone, there are not yet comprehensive policies that suggest a significant reversal of opioid use and death. Inconsistency, unless addressed, will not allow for robust and transparent policy about naloxone use.

4. Discussion

There is a variety of support and number of tools for use in reducing the opioid epidemic. However, we found that they are inconsistently used and vary in application from one state to the next. During our research, we learned that there are contributing factors, practice gaps among practitioners when prescribing and monitoring, inconsistent policies, and knowledge deficits that have helped fuel the phenomena of opioid abuse and overdoses. As nurses become more involved in both the administration and prescribing of opioids, it is important that we become aware of the concerns that have led to the opioid epidemic as well as understand our role in preventing and reducing further opioid abuse. Because nurses interact with the patients in both the prescribing and administration of opioids, we are well poised to make a significant impact in helping to reduce this current problem.

4.1. Nursing implications

Proper education and accountability are essential for advanced practice nurses who are prescribing opioids and for bedside nurses who are administering them [45,46]. For nurses to effectively collaborate with physicians in providing optimal pain treatment, it is essential for nurses to learn, understand, and communicate effectively with the interdisciplinary team about the patient's physical and emotional status, and goals regarding pain relief. Also, it is crucial that nurses have a thorough physiological understanding of how opioids work in the body and how they may function when they are "stacked" or given together with other medications that are of the same classification. Nurses must be knowledgeable about which drugs may potentiate or alter the effects of opioids [46]. In addition to the knowledge of pain management, the nurse must have data about the policies and practices of the organization, and excellent written and verbal communication skills. It is also important for nurses to have sharp assessment acumen, effective interpersonal skills, and a commitment to providing empathetic rather than sympathetic care for the patient [47].

Importantly, nurses who are providing care must assist in the prescribers' determination of how to best provide pain management based on findings and results such as vital signs, and patient level of consciousness, and overall health status. Nurses must also be involved in policy and practice initiatives at the institutional level regarding the adoption of pain scales, pain interventions that are culturally and linguistically appropriate [47]. Nurses should maintain a central role as members of the interdisciplinary team regarding pain treatments [13,47]. They ought to receive in-depth education related to opioid abuse and addiction, and have the capacity and opportunity to consult collegially with prescribers when there are questions regarding opioid orders, and/or when assessment findings show contraindications for further opioid use. As nurses are frequently the final quality assurance resource in patient care and outcomes, it is essential to include them in all concerns related to the opioid epidemic. The inclusion begins with training and policy development [46]. The extent to which nurses are adequately educated to function in these important and emerging roles is not yet well documented [48].

In the previous two decades, we have focused on opioid use for pain control. However, an area for future attention where nursing can have a significant impact is to utilize and study the wide variety of non-opioid pain management strategies. Educating the public about alternative methods of pain control such as non-opioid analgesics, physical therapy, psychological therapies, and complementary alternative medicine interventions is one strategy to help combat the current medical dilemma related to opioid abuse [9]. Using non-opioid strategies are necessary approaches to help providers effectively and culturally address patient needs and provide efficient and safe care.

4.2. Nursing knowledge gap

The role and knowledge of pain relief modalities of both nursing prescribers and other providers vary and directly impacts opioid use [49]. Shepherd, discussed combating the painkiller epidemic and identified insufficient prescriber training, and inadequate monitoring of patients as causative factors of abuse of opioids [49]. Nurses at the bedside must be able to use superb clinical judgment when administering opioids to treat pain. Not only does this decision require linking the use of pain scales to training in the assessment of pain and the evaluation of potential outcomes, but it also requires balancing clinical judgment, and using pain assessment instruments to triangulate assessment findings within the framework of the particular patients' needs [50]. Additionally, there is considerable inconsistency among providers in the way pain is managed according to patient data [51]. Interdisciplinary interactions and constant communications among bedside nurses, prescribers (including both nurses and physicians), pharmacists, and alternative medicine interventionists need to happen at the onset of problematic signs related to the opiate use and with education regarding Naloxone (an opioid antagonist). Upon admission, the conversation should begin referring to the level of opioid tolerance/intolerance. Also on admission, a skin assessment should be done to check for implantable pain devices, transdermal patches, or any other devices used to administer opioid medications [13]. However, a lack of clinical experience or knowledge may inhibit these practices from happening.

Practicing clinicians may not be familiar with the most current research and evidence-based practice approaches to pain management. Furthermore, many providers do not even receive adequate knowledge about pain treatments, assessments, and alternative interventions which could also place the patient in a vulnerable position [52]. Research indicates that providers need to use better assessment skills to determine the effectiveness of alternative pain relief methods before opioids become the only choice [9]. However, education alone cannot be expected to change practice. Practice change requires an institutional commitment towards the development of interventions, plans, and consistent use of protocols amongst all caregivers to allow for the best patient outcomes and quality pain control as well as allowing all providers of care to equally participate in patient care [47,53].

Most often, nurses are the providers that assess and re-evaluate pain in acute, long-term, and physician office settings [54]. The pre/post-pain assessment includes monitoring pain quality, intensity, and duration before and after administration of pain medication. Nurses need to balance the evaluation with direct observations of the level of consciousness, behavior, and vital signs that we learn to use to assess various situations including pain during our nursing education [55]. These are the essential core competencies that nurses possess that are useful when providing care to patients. The knowledge and skill set, in addition to others, should be evident in nursing curricula and continuing education activities [55]. Findings related to increased requests for pain medication, inadequate pain relief, or unacceptable behaviors from patients related to an inability to receive requests or demands need to be addressed by an interdisciplinary team. This approach should help to assure that a more comprehensive and complete course of action will dominate the decision-making process. The use of evidence-based guidelines should be followed, and all members of the team ought to serve as monitors of the process to more closely align with medicine guidelines related to opioid use and prescribing [55]. Nurses are well positioned to collaborate on the developing and standardizing analgesic administration guidelines and presenting the outcomes of their practice through research [55].

At discharge, patients need further assessment through collaboration with nurses and physicians regarding the need for opioids; weaning should take place to help reduce the potential for abuse at home when the time approaches [42]. Although prescribers may initially provide a prescription for opioids correctly, they may further re-prescribe or renew a prescription without conducting a re-evaluation of the patient's condition which could further the opioid abuse epidemic. It is important to recall that practitioners must be educated about and monitored with the use of national standards set forth by the U.S. Food and Drug Administration [50,55].

The rise in the number of opioid overdose related-deaths in recent years is disturbing, and the American Nurses Association (ANA) has posited that a multifaceted approach is needed to

respond effectively to the rise of opioid addiction. The ANA holds the position that nurses can play a fundamental role in a comprehensive approach to addressing the opioid crisis [56]. There are some specific strategies that the ANA believes that nurses can offer significant assistance in this crisis. First, the ANA argues that properly trained Advance Practice Registered Nurses should be allowed to administer buprenorphine to expand access to medication-assisted treatment for addiction. Second, the organization contends that health care professionals need proper training and education to prescribe opioid medications safely. Third, the ANA posits that a long-term solution requires further scientific and clinical research to develop, test, and use abuse deterrent formulations to help reduce addictions and still serve those patients who need relief from severe pain. Fourth, the ANA views prescription drug monitoring programs as key in a comprehensive approach and promotes awareness of these programs in member associations and among registered nurses across the nation. These types of programs could aid in reducing inappropriate access while at the same time help to ensure that those patients who need strong pain relief medications can obtain them without unnecessary barriers. Finally, the ANA believes that Naloxone is crucial in preventing deaths from overdose by opioid drugs such as heroin, morphine, and oxycodone; therefore, these agents should be available to first responders, friends, family, and caregivers of anyone who is known to be a frequent user of opioid medications. In conjunction with increasing the availability of naloxone, trained first responders should be given legal protections. Medical insurance such as Medicaid and Medicare should be made available to those who need treatment and pay for naloxone. According to the National Conference of State Legislatures, all states in the US have enacted drug overdose/immunity and Good Samaritan Laws except Montana, Wyoming, and Kansas [57].

5. Conclusions

Although a one-size-fits-all approach does not seem suitable to address opioid abuse, standardizing prescribing practices, monitoring, and education across the country would be a logical approach to help reduce opioid abuse, as it could provide consistency, conciseness, and clarification. Recently, there has been an increased number of publicized deaths from opioid overdoses reported in the media and scientific literature. As this situation heralds a state of emergency, President Obama has mandated $1.1 billion in new funding to address the opioid problem [58], and President Trump has recently established a commission to combat drug addiction and the opioid crisis. Consistent with the Food and Drug Administration (FDA) guidance for the pharmaceutical industry regarding abuse-deterrent opioids, work is being done to reformulate opioid analgesics making them difficult to tamper with or abuse by nasal and intravenous routes when prescribed orally. Also, in April of 2017, the FDA announced the restriction of codeine and tramadol in children under the age of 12 years [55]. Consistent with government efforts, a clear federal policy that guides prescription practice is sorely needed to direct the care given to patients and their families. The current state of affairs also seems to be the right time to analyze variation among state and federal prescribing guidelines/laws on opioid medications, identify areas of deficiency, and then focus on a strategic plan that will help encourage consistency across the United States. A comprehensive federal prescribing policy protects both patients and prescribers from the untoward outcomes of opioid abuse and has the potential to improve safety and promote the intended use of these medications.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ijnss.2017.09.001.

References

[1] Leahy L. The opioid epidemic what does it mean for nurses? J Psychosoc Nurs Ment Health Serv 2017;55(1):18–23. https://doi.org/10.3928/02793695-20170119-03.
[2] Wilkerson RG, Kim HK, Windsor TA, et al. The opioid epidemic in the United States. Emerg Med Clin N. Am 2016;34(2):e1–23. https://doi.org/10.1016/j.emc.2015.11.002.
[3] Leon-Casasola O. Opioids for chronic pain: new evidence, new strategies, safe prescribing. Am J Med 2013;126(3):S3–11. https://doi.org/10.1016/j.amjmed.2012.11.01.
[4] Cheatle MD. Prescription opioid misuse, abuse, morbidity, and mortality: balancing effective pain management and safety. Pain Med 2015;16(S1):S3–8. https://doi.org/10.1111/pme.12904.
[5] Prescription Drug Misuse and Abuse. Substance abuse and mental health Services administration. Rockville. 2015 [cited 2017 May 22]. Available from, https://www.samhsa.gov/prescription-drug-misuse-abuse.
[6] Brennan F. The US congressional "decade on pain control and research" 2001-2011: a review. J Pain & Palliat Care Pharmacother 2015;29(3):212–27.
[7] American Psychiatric Association. DSM-5 task force, american psychiatric association. Diagnostic and statistical manual of mental disorders: DSM-5. 5th ed. Arlington, VA: American Psychiatric Association; 2013.
[8] Porter J, Jick H. Addiction rare in patients treated with narcotics. N. Engl J Med 1980;302(2). https://doi.org/10.1056/NEJM198001103020221. 123–123.
[9] Tompkins D, Hobelmann J, Compton P. Providing chronic pain management in the "fifth vital sign" era: historical and treatment perspectives on a modern-day medical dilemma. Drug Alcohol Dependence 2017;173:S11–21. https://doi.org/10.1016/j.drugalcdep.2016.12.002.
[10] Baker D. History of the joint commission's pain standards lessons for today's prescription opioid epidemic. Jama-Journal Am Med Assoc 2017;317(11):1117–8. https://doi.org/10.1001/jama.2017.0935.
[11] Veterans pain care act of 2007. Report (to accompany S. 2160). (No. 110–267). Washington, D.C: U.S. Government Printing Office. United States. Congress Senate Committee on Veterans' Affairs; 2008 [cited 2017 August 1]. Available from, https://www.govtrack.us/congress/bills/110/s2160/text/is.
[12] Meghani SH, Polomano RC, Tait RC, et al. Advancing a national agenda to eliminate disparities in pain care: directions for health policy, education, practice, and research. Pain Med 2012;13(1):5–28. https://doi.org/10.1111/j.1526-4637.2011.01289.x.
[13] Surprise JK, Simpson MH. One hospital's initiatives to encourage safe opioid use. J Infusion Nurs 2015;38(4):278–83. https://doi.org/10.1097/NAN.0000000000000110.
[14] Relieving pain in America. A blueprint for transforming prevention, care, education, and Research. Washington: National Academies Press; 2011 [Cited 2017 May 22]. Available from, www.ncbi.nlm.nih.gov/pubmed/22553896.
[15] Jamison RN, Edwards RR. Integrating pain management in clinical practice. J Clin Psychol Med Settings 2012;19(1):49–64. https://doi.org/10.1007/s10880-012-9295-2.
[16] DeBar LL, Kindler L, Keefe FJ, et al. A primary care-based interdisciplinary team approach to the treatment of chronic pain utilizing a pragmatic clinical trials framework. Transl Behav Med 2012;2(4):523–30. https://doi.org/10.1007/s13142-012-0163-2.
[17] Okifuji A, Turk D. Behavioral and Cognitive–Behavioral approaches to treating patients with chronic pain: thinking outside the pillbox. J Rational-Emotive Cognitive-Behavior Ther 2015;33(3):218–38. https://doi.org/10.1007/s10942-015-0215-x.
[18] Balestra M. Liability in emergency departments and disciplinary exposure for nurse practitioners. Jnp-Journal Nurse Pract 2016;12(2):80–7. https://doi.org/10.1016/j.nurpra.2015.09.003.
[19] Seal K, Becker W, Tighe J, et al. Managing chronic pain in primary care: it really does take a village. J General Intern Med 2017;32(8):931–4. https://doi.org/10.1007/S11606-017-4047-5.
[20] Kanouse AB, Compton P. The epidemic of prescription opioid abuse, the subsequent rising prevalence of heroin use, and the federal response. J Pain & Palliat Care Pharmacother 2015;29(2):102–14. https://doi.org/10.3109/15360288.2015.1037521.
[21] Barth KS, Maria MM, Lawson K, et al. Pain and motives for use among non-treatment seeking individuals with prescription opioid dependence. Am J Addict 2013;22(5):486–91. https://doi.org/10.1111/j.1521-0391.2013.12038.x.
[22] Calcaterra S, Glanz J, Binswanger I. National trends in pharmaceutical opioid related overdose deaths compared to other substance related overdose deaths: 1999-2009. Drug Alcohol Dependence 2013;131(3):263–70. https://doi.org/10.1016/j.drugalcdep.2012.11.018.
[23] Substance Abuse and Mental Health Services Administration. Results from the 2013 national Survey on drug use and health: summary of national findings, NSDUH series H-48. Substance Abuse and Mental Health Services Administration. Rockville (MD): HHS Publication; 2014. p. 14–4863 [Cited 2017 May

22]. Available from, https://store,samhsa.gov/shin/content/PHD1130/PHD1130.pdf.
[24] Hughes A, Williams MR, Lipari RN, et al. Prescription drug use and misuse in the United States: results from the 2015 national survey on drug use and health. NSDUH Data Rev September, 2016:1 [Cited 2017 August 1]. Available from, http://www.samhsa.gov/data/.
[25] Phillips J. Prescription drug abuse: problem, policies, and implications. Nurs Outlook 2012;61(2):78–84. https://doi.org/10.1016/j.outlook.2012.06.009.
[26] Crowley R, Kirschner N, Dunn A, Bornstein S. Amer Coll Phys, & Hlth Public Policy Comm. Health and public policy to facilitate effective prevention and treatment of substance use disorders involving illicit and prescription drugs: an american college of physicians position paper. Ann Intern Med 2017;166(10). https://doi.org/10.7326/M16-2953. 733–733.
[27] Chen L, Hedegaard H, Warner M. Rates of deaths from drug poisoning and drug poisoning involving opioid analgesics - United States, 1999-2013. Mmwr-Morbidity Mortal Wkly Rep 2015;64(1):32.
[28] Nguyen V, Raffa RB, Taylor R, et al. The role of abuse-deterrent formulations in countering opioid misuse and abuse. J Clin Pharm Ther 2015;40(6):629–34. https://doi.org/10.1111/jcpt.12337.
[29] Manchikanti L, Kaye AM, Kaye AD. Current state of opioid therapy and abuse. Curr Pain Headache Rep 2016;20(5):1–9. https://doi.org/10.1007/s11916-016-0564-x.
[30] Schirle L, McCabe B. State variation in opioid and benzodiazepine prescriptions between independent and nonindependent advanced practice registered nurse prescribing states. Nurs Outlook 2016;64(1):86–93. https://doi.org/10.1016/j.outlook.2015.10.003.
[31] Paulozzi LJ, Mack KA, Hockenberry JM. Variation among states in prescribing of opioid pain relievers and benzodiazepines — United States 2012. J Saf Res 2014;51:125–9. https://doi.org/10.1016/j.jsr.2014.09.001.
[32] Haegerich T, Paulozzi L, Manns B, et al. What we know, and don't know, about the impact of state policy and systems-level interventions on prescription drug overdose. Drug Alcohol Dependence 2014;145:34–47. https://doi.org/10.1016/j.drugalcdep.2014.10.001.
[33] Databases of Statutes. Regulations, & other policies for pain management. Madison (WI). 2016 [Cited 2017 May 20]. Available from, http://www.painpolicy.wisc.edu/database-statutes-regulations-other-policies-pain-management.
[34] Trust for America's Health. Prescription drug abuse: strategies to stop the epidemic. 2013. Washington (DC): 2013. [Cited 2017 February 3] Available from, http://healthyamericans.org/reports/drugabuse2013/TFAH2013RxDrugAbuseRpt12_ no_embargo.pdf.
[35] Charlottesville (VA) National alliance for model state drug laws. 2016 [Cited 2017 August 1]. Available from, http://www.namsdl.org/IssuesandEvents/Overview of Pain Management and Prescribing Policies 03212016.pdf.
[36] Atlanta (GA) Center for Disease control and prevention. 2016 [Cited 2017 August 1]. Available from, https://www.cdc.gov/drugoverdose/policy/successes.html.
[37] Pain & Policy Studies Group. Achieving balance in state pain policy: a progress report card CY 2013. Madison (WI). 2014 [Cited 2017 February 3]. Available from, http://www.painpolicy.wisc.edu/.
[38] Charlottesville (VA) National Alliance for Model State Drug Laws. 2014 [Cited 2017 August 1]. Available from, http://www.namsdl.org/library/3449DDCF-BB94-288B-049EB9A92BAD73DF/.
[39] Manasco AT, Griggs C, Leeds R, et al. Characteristics of state prescription drug monitoring programs: a state-by-state survey. Pharmacoepidemiol Drug Saf 2016;25(7):847–51. https://doi.org/10.1002/pds.4003.
[40] Atlanta (GA) Centers for Disease Control and Prevention. 2014 [Cited 2017 August 1]. Available from, https://www.cdc.gov/media/releases/2014/p0701-opioid-painkiller.html.
[41] America's Health Rankings. State data annual. Minnetonka (MN). 2015. 2015 [Cited 2016 August 30]. Available from, http://assets.americashealthrankings.org/app/uploads/2015ahr_annual-v1.pdf.
[42] Compton P, Weaver MF. Responsible opioid use. J Pain & Palliat Care Pharmacother 2015;29(2):166–8. https://doi.org/10.3109/15360288.2015.1037522.
[43] Cifuentes M, Webster B, Genevay S, et al. The course of opioid prescribing for a new episode of disabling low back pain: opioid features and dose escalation. Pain 2010;151(1):22–9. https://doi.org/10.1016/j.pain.2010.04.012.
[44] Cunningham C. Opioid addiction treatment: evidence-based medicine, policy, and practice. On point: health policy brief2; 2015. p. 1–7.
[45] Jarzyna D, Jungquist CR, Pasero C, et al. American society for pain management nursing guidelines on monitoring for opioid-induced sedation and respiratory depression. Pain Manag Nurs 2011;12(3). https://doi.org/10.1016/j.pmn.2011.06.008.
[46] Markocic S, Humphries M, Tarne K, et al. What are the risks and knowledge deficits for prescribing and administering opioids in the ward environment? A quality project on assessing and improving knowledge. Nurse Educ Pract 2016;17:182–7. https://doi.org/10.1016/j.nepr.2015.10.011.
[47] Jungquist CR, Pasero C, Tripoli NM, et al. Instituting best practice for monitoring for opioid-induced advancing sedation in hospitalized patients: monitoring for opioid-induced sedation. Worldviews Evidence-Based Nurs 2014;11(6):350–60. https://doi.org/10.1111/wvn.12061.
[48] Botti M, Kent B, Bucknall T, et al. Development of a management algorithm for post-operative pain (MAPP) after total knee and total hip replacement: study rationale and design. Implement Sci 2014;9(1):110. https://doi.org/10.1186/s13012-014-0110-3.
[49] Hudspeth RS. Standards of care for opioid prescribing: what every APRN prescriber and investigator need to know. J Nurs Regul 2016;7(1):15–20. https://doi.org/10.1016/S2155-8256(16)31036-5.
[50] Shepherd J. Combatting the prescription painkiller epidemic: a national prescription drug reporting program. SSRN Electron J SSRN J 2014;40:85–112. https://doi.org/10.2139/ssrn.2270154.
[51] Woien H, Bjork I. Intensive care pain treatment and sedation: nurses' experiences of the conflict between clinical judgement and standardised care: an explorative study. Intensive Crit Care Nurs 2013;29(3):128–36. https://doi.org/10.1016/j.iccn.2012.11.003.
[52] MacDermid J, Law M, Buckley N, et al. Push" versus "pull" for mobilizing pain evidence into practice across different health professions: a protocol for a randomized trial. Implement Sci 2012;7(1):115. https://doi.org/10.1186/1748-5908-7-115.
[53] Fine P, Finnegan T, Portenoy R. Protect your patients, protect your practice. Journal of Family Practice 2010;59(9):S1–16.
[54] Chatchumni M, Namvongprom A, Eriksson H, et al. Thai nurses' experiences of post-operative pain assessment and its' influence on pain management decisions. BMC Nurs 2016;15(1):1–9.
[55] Schiek S, Moritz K, Seichter SJ, et al. Standardising analgesic administration for nurses: a prospective intervention study. Int J Clin Pharm 2016;38(6):1497–504. https://doi.org/10.1007/s11096-016-0311-8.
[56] Nursing's Role in Addressing Nation's Opioid Crisis. American nurses association. Silversprings (MD). 2016 [Cited 2017 May 22]. Available from, http://nursingworld.org/DocumentVault/GOVA/Health-System- Reform/Nursings-Role-Opioid-Crisis.pdf.
[57] Drug overdose immunity and good samaritan laws. National conference of state legislatures. 2017. Washington (DC) [Cited 2017 May 22]. Available from, http://www.ncsl.org/research/civil-and-criminal-justice/drug-overdose-immunity-good-samaritan-laws.aspx.
[58] Botticelli M. Why we need more resources for the prescription opioid and heroin epidemic. Washington (DC): Whitehouse Government Blog (US); 2016. Available from, https://www.whitehouse.gov/blog/2016/05/12/why-we-need-more-resources-prescription-opioid-and-heroin-epidemic.