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Original Article

Development and Validation of the *Achieving Effective & Safe Opioid Prescribing—Advanced Practice Registered Nurse* (AESOP-APRN) Survey: A Pilot Study

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ABSTRACT

Background: Advanced practice registered nurses (APRNs) are essential partners in the management of pain, both in primary care and in pain specialty practices. One of the more controversial treatment practices surrounds the use of opioid analgesic medication for the relief of pain in persons with chronic pain. Although several guidelines have been developed, the extent and impact of APRN knowledge, attitudes, and values about pain management and opioid prescribing practices are not known. In addition, regulatory mandates may encumber APRN scope of pain management practice.
Aims: This manuscript describes the development and pilot testing of the Achieving Effective & Safe Opioid Prescribing—APRN (AESOP-APRN) Survey conceptualized to address these topics.
Design: Instrument development.
Participants/Subjects: Advanced practice registered nurses.
Methods: Phase I addressed development, content validity determination, and survey refinement. APRN-focused discussion groups, expert review, and analysis of content were conducted. In phase II, pilot testing was conducted to determine reliability.
Results: APRNs are aware of regulatory restrictions to practice and potential implications on patient outcomes. The Initial Content Validity Index suggested refinement of survey questions. After content revision, final ratings were acceptable. A sample of APRNs ($N = 23$) completed the survey. Cronbach's α range (.65-.91) suggests acceptable internal consistency for a new survey.
Conclusions: Even at this initial phase, the newly developed AESOP-APRN Survey accurately represents the underlying thematic concepts of interest; however further psychometric analyses are required, and instrument refinement is possible. Additional study should include analysis of members from a variety of health care disciplines, as was the intention of the development of the Core Competencies for Pain Management from which many items were derived.
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Painful conditions such as musculoskeletal disorders and arthritis are among the most common reasons patients seek health care (Centers for Disease Control and Prevention, 2013; Sauver et al., 2013). It is estimated that 100 million Americans suffer from chronic pain and that the cost to society is projected to be approximately $600 billion annually (Interagency Pain Research Coordinating Committee, 2016). Chronic pain is present in a variety of conditions, and patients seek care in both primary care and specialty settings. Advanced practice registered nurses (APRNs) provide a range of services, including evaluation, diagnosis, treatment, consultation, education, risk assessment, health promotion, and counseling. Considering the APRN's role, these providers offer a wide range of services to a wide portion of the population.

APRNs are essential partners in the management of pain, both in primary care and in pain specialty practices. One of the more controversial treatment practices surrounds the use of opioid analgesic medication for the relief of pain in persons with chronic pain. Several clinical practice guidelines and health care regulatory guidelines have been developed to assist health care professionals in the appropriate selection of patients for opioid therapy, assessment techniques and tools, ongoing monitoring parameters, and

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strategies for risk mitigation for abuse, misuse, and diversion of opioid analgesics (Chou et al., 2009; Federation of the State Medical Boards of the United States, 2013; Gourlay, Heit, & Almahrezi, 2005; Webster & Fine, 2010). More recently, the Centers for Disease Control and Prevention developed a clinical practice guideline for prescribing opioids for chronic pain (Dowell, Haegerich, & Chou, 2016). Another important contribution to this issue is the Federation of State Medical Board's (FSMB's) history of providing regulatory guidance templates in 1998, 2004, 2013, and 2017 for treating pain and reducing risks associated with prescribing opioid analgesics such as adverse events, and the risks of misuse, abuse, and diversion. APRNs who are familiar with current guidelines, and who conform to their recommendations, are in a better position to provide optimal evidence-based care to patients with chronic pain. Despite the guidance provided by the recommended practices outlined in these documents, challenges exist associated with prescribing opioid analgesics for people with chronic pain.

The lack of understanding about the complexity of chronic pain by APRNs and other health professionals, and varying interpretations of guideline recommendations or even legal standards for pain management, may lead to unintended consequences for people who suffer with chronic pain. Although recent guidelines and mandates will likely result in a decrease in overall opioid prescribing, it is not known what effect the decrease in patient access to opioid analgesics will have on pain and function. There is limited empirical evidence to support long-term opioid treatment for chronic pain because opioids' efficacy and risk-benefit ratio have not been evaluated in long-term studies. Furthermore, access to some recommended nonpharmacologic treatment is limited by restrictions or denial of insurance coverage for these treatments (Barth, Guille, McCauley, & Brady, 2017). Guidelines cannot account for individual risks and benefits for every patient, and therefore clinical decision making must be based on current evidence, be patient centered, and conform to available practice standards and regulatory guidance.

In an effort to improve health care professionals' general practice of pain management, a multidisciplinary 2-day summit was convened in August 2012 to develop an Interprofessional Consensus on Pain Management Competencies that would provide a foundation for creating, defining, and revising prelicensure educational curricula. Members of the summit consisted of health care professionals from nursing, medicine, physical therapy, and pharmacy from both the United States and Canada. Recognizing the complexities of pain and its treatment, four domains capturing core concepts and guiding principles were conceptualized (Fishman et al., 2013). The four domains are as follows:

(1) Multidimensional nature of pain, including the science, taxonomy, experience of pain, and impact on society
(2) Pain assessment and measurement, including how pain is assessed, measured, and communicated in individual, health system, and societal levels
(3) Management of pain, including approaches to decision making, treatment options, assessment of risk in a patient centered context
(4) Clinical conditions in the context of patient populations, settings, and care teams

These core pain management competencies were designed to provide curricular guidance for prelicensure health professionals as a means to bridge the gap between meeting the needs of persons in pain and having practitioners with the skills, knowledge, and values necessary to safely and effectively provide such treatment (Fishman et al., 2013). The extent and impact of APRNs' knowledge, attitudes, and values about pain management and opioid prescribing practices are not known and warrant empirical attention. As a first step (or pilot study) to begin bridging this information gap, the Achieving Effective & Safe Opioid Prescribing—Advanced Practice Registered Nurse (AESOP-APRN) Survey was generated to represent these core competencies.

APRN Pain Prescriptive Practices: Legislative and Regulatory Policy

Policy and regulations related to the prescribing of schedule II medications can encumber APRNs' scope of practice and the ability to provide accessible, quality health care to persons with pain. A number of factors can influence the provision of pain treatment services, including the factors related to prescribing of opioid analgesics, factors related to health care and reimbursement systems, and factors related to practitioner knowledge and attitudes. Attempts to address these factors have been made over the past several years (Auret & Schug, 2005; Breuer, Fleishman, Cruciani, & Portenoy, 2011; Cintron & Morrison, 2006; Dawson et al., 2005; Gilson, 2010; Green & Hart-Johnson, 2010; Institute of Medicine, 2011; Lippe, Brock, David, Crossno, & Gitlow, 2010; McCarberg, 2010; McCracken, Hoskins, & Eccleston, 2006; McErlean, Triner, & Young, 2006; Narayan, 2010; Notcutt & Gibbs, 2010; Taylor, Gostin, & Pagonis, 2008). Indeed, studies have found that practicing nurses share other health care professionals' concerns about regulatory investigation when their practice involves the use of opioid pain medications (Hickman, Tolle, & Tilden, 2000; New York State Public Health Council, 1998; Wilken, 2008). However, the impact of policies on pain management practices is just beginning to be explored.

For example, there are four categories representing current levels of APRNs' prescriptive authority for schedule II controlled substances in each state:

- Category I: Independent prescribing authority
- Category II: Requires formal physician involvement
- Category III: Requires formal physician involvement with additional prescribing limitations
- Category IV: No prescribing authority.

In a study by Lowery, Scott, and Swanson (2016) a sample of nurse practitioners perceived that legal requirements concerning physician oversight did not promote safer nurse practitioner practice, improve patient safety, enhance public safety, or contribute to safer medication management. Nurse practitioners in this study were confident in their delivery of safe and effective patient care independent of physician regulatory oversight. Furthermore, physician oversight was viewed as creating provider–patient confusion, hindering provider patient trust, and impeding transitions to other levels of care. States with more expanded scope of practice regulations are more likely to promote care by nurse practitioners in rural and underserved areas, which provides increased access to care for these populations (Xue, Ye, Brewer, & Spetz, 2016).

A recent report from the National Governors Association (NGA) focused on the function of nurses in meeting current demands for primary care services (National Governors Association, 2012). There seems to be consensus that APRNs generally have substantial professional autonomy (Newhouse et al., 2012). However, the report's author recognized that "states tend to place greater restrictions on [nurse practitioners'] prescriptive authority than on [nurse practitioners'] other practice authority and the restrictions may differ depending on the type of drugs and devices prescribed" (National Governors Association, 2012, p. 9).

In response to the belief that nursing practice can be affected by state laws or other regulatory policies that are perceived as being

severely restrictive or ambiguous, the National Council of State Boards of Nursing (NCSBN) adopted a brief policy statement about pain management in mid-2007. The policy provided a framework for developing guidelines regarding the regulatory issues raised in the statement (National Council of State Boards of Nursing, 2007). A year later, the NCSBN issued a report outlining expectations about pain management practices, which was then made available to all nursing boards to serve as a template for the creation of state nursing regulatory policy. This policy resource served to formally recognize nurse practitioners as an essential component of patients' pain care and promote policies from individual state nursing boards that address pain treatment issues. The report served as the foundation for several states adopting laws and policies promoting pain management as an integral part of nursing practice, including prescriptive authority for APRNs (Pain & Policy Studies Group, 2014). Such laws underscore the legal role of APRNs in treating pain, particularly related to prescribing controlled medicines. At this time, however, the impact of state regulations on pain management delivered by APRNs is not known. As a result, APRNs' knowledge of policy issues relating to pain management services was added as the fifth domain of inquiry (labeled the "Regulatory Considerations" domain) in the AESOP-APRN Survey.

Although other surveys have been developed to assess practitioners' knowledge, attitudes, beliefs, and practices regarding opioid management for pain (Allen, Asbridge, Macdougall, Furlan, & Tugalev 2013; Menendez, Mellema, & Ring, 2015; Wolfert, Gilson, Dahl, & Cleary, 2010), they have neither been validated nor designed specifically for APRNs. In addition, no surveys have yet been constructed to measure whether APRNs perceive that state laws or regulatory policies have an influence on effective pain and symptom management that could adversely affect care. As a result, a pilot research project was undertaken to develop and test a questionnaire conceptualized to address these overlooked topics. This manuscript reports on the processes and findings related to the initial questionnaire development, content validity determination, and refinement of the AESOP-APRN Survey and the questionnaire pilot testing.

Methods

Institutional review board approvals were obtained from the universities of both researchers for both phases of survey development and administration. Methods used to develop the questionnaire and to test psychometric properties of the questionnaire are described next.

Phase 1: Initial Questionnaire Draft—Development, Content Validity Determination, and Refinement

Instrument Item Development

Two principal documents were used to inform item and domain development of the AESOP-APRN survey: (1) the *Core Competencies for Pain Management: Results of an Interprofessional Consensus Summit* (Fishman et al., 2013) and (2) *the Model Policy on the Use of Opioid Analgesics in the Treatment of Chronic Pain* (FSBM, 2013). The Core Competencies document was developed by a panel of pain experts, including physicians, staff nurses, nurse practitioners, physical therapists, and pharmacists. Although originally conceptualized for prelicensure education, the authors have acknowledged that these competencies also are applicable to post-licensure education (Fishman et al., 2013). This consensus-driven process was built on an in-depth literature review and resulted in core competencies that reflect a set of values and guiding principles embedded within each of the four domains listed previously (Fishman et al., 2013). All four domains were maintained for the purpose of this survey.

A fifth domain, titled "Regulatory Considerations," was also included in this survey to discretely assess beliefs, attitudes, and behaviors involving prescribing policies governing nursing practice. To inform this domain, researchers looked to the FSMB, which has created a series of model policies published in 1998, 2004, 2013, and 2017 to govern pain management. Unlike the earlier version, those policies published in 2013 and 2017 were specific to the use of opioid analgesics for chronic pain conditions. The most recent version (FSMB, 2017), in addition to all previous model policies, is meant to be a regulatory guide to promote safe and effective pain treatment within the bounds of professional practice. Recommendations emphasize professional and ethical responsibility to appropriately assess and manage patients' pain while monitoring for aberrant or unsafe medication-related behavior and mitigating treatment-related harms (FSMB, 2017). This document provides state medical boards and other regulatory bodies that adopt the provisions, with an updated evidenced-based template for assessing physicians' and other prescribers' management of chronic pain and the use of opioid analgesics, both in a medically appropriate manner (i.e., for a legitimate medical purpose) and in compliance with state and federal legislation and regulations. Survey items were generated to mirror specific recommendations from the model policy that address the multidimensionality, assessment, and management of pain that were in effect during survey construction (FSMB, 2013). Resulting items were then embedded within most of the relevant domains constructed for this questionnaire as a means to supplement items reflecting the core competencies standards.

Further consideration of the Regulatory Considerations domain was achieved through a focused discussion with 26 practicing APRN doctorate of nursing practice students in New York State. These post-master's students currently practice as APRNs and have familiarity with prescribing medications. This discussion was conducted to determine the extent that APRNs were familiar with guidelines and regulatory policies. This task was facilitated in a group classroom setting, with consent, during a health policy class. Responses were recorded by hand by the course instructor. Seven broad questions were posed to students to promote discussion and solicit current insights into the survey items under development and were as follows:

1. In many states, APRNs cannot prescribe controlled substances without entering into a formal collaborative relationship with a physician. To what extent do you believe this requirement inhibits nurses' prescribing practices?
2. What would you consider to be barriers, if any, in your state that can hinder APRNs' role in providing appropriate pain management?
3. Do you believe that the nursing regulatory board in your state provides sufficient guidance about treating chronic pain?
4. Are you aware of any resources that are available to provide information about current state pain or policy issues?
5. What are some ways the DEA [Drug Enforcement Administration] recommends to safeguard controlled substance prescriptions?
6. To what extent do APRNs' prescribing practices contribute to the abuse and diversion of controlled substances?
7. Can you name some federal and state responses to controlled substances abuse and diversion?

Using the Core Competencies for Pain Management and the FSBM pain management policy, an initial 33-item questionnaire was developed to capture the five domains. Each item was placed

on a 5-point Likert scale and evaluated for content validity before the pilot testing phase. An additional 15 demographic items were added to the questionnaire.

A factor analysis was not conducted at this stage of instrument development. This pilot sample consisted of 23 participants. Content validity was tested using the Content Validity Index and is described next.

Content Validity Testing

The Content Validity Index (CVI) was used to establish content validity using ratings from content experts (Polit & Beck, 2006). The CVI evaluates the degree to which a sample of items represents domain of content in the instrument in addition to providing an operational definition of the construct that the instrument represents. This method allows for quantification of agreement and disagreement about each item and computes the agreement and disagreement of the instrument as a whole by the content experts. It is recommended that both individual item and overall scale CVIs are computed (Polit & Beck, 2006). A decision to calculate the scale level CVI/average (S-CVI/AVE) was based on recommendations by Polit and Beck (2006). In the context of CVI testing, a "scale" represents all of the items in the instrument being evaluated for content validity.

Item CVI (I-CVI) was computed for each item in the scale. Each item should have an I-CVI of $\geq$0.78. The I-CVI represents the content validity of individual items and is calculated as the proportion of content experts giving item relevance ratings of 3 or 4. The S-CVI represents the content validity of the overall scale and can be computed as either the S-CVI/universal agreement (S-CVI/UA) or S-CVI/AVE. The S-CVI/UA is the proportion of items that achieve a relevance rating of 3 or 4 by all content experts. The S-CVI/AVE is the average of the I-CVIs for all items on the scale. It is recommended that the S-CVI/UA be $\geq$ 0.80 and the S-CVI-AVE be $\geq$ 0.90.

Expert Sample

Seven national pain management nurse content experts were identified and sent letters of invitation to evaluate the items and domains of the first-draft survey. An initial round of CVI testing was conducted by five of the seven nurse experts who responded to the invitation. Of the five nurse experts who participated, two were expert APRN pain management nurse practitioners, one an expert pain management clinician and researcher, and two expert pain management nurse academics. The confidentiality of the expert reviewers was maintained because the CVI responses were known only to the lead investigator throughout the development of the survey.

Phase 2: Final Questionnaire Draft—Pilot Testing

Once the survey items were modified in response to APRN students' input and round one of the CVI analyses, they were entered into Survey Monkey. An a priori decision was made to conduct initial pilot testing in a category II state (i.e., nurse prescribers require some formal level of physician authority and may influence prescriptive authority). The state APRN professional organizations of all 16 states (California, Connecticut, Delaware, Indiana, Kansas, Massachusetts, Minnesota, Mississippi, Nebraska, Nevada, New Jersey, New York, Tennessee, Utah, Virginia, and Wisconsin) belonging to category II, at the time of this study, were contacted either by e-mail, website, phone, or Facebook. One APRN professional organization that granted approval was chosen, and the survey was administered via an e-mail solicitation to the membership. The invitation included a letter explaining the study, emphasizing the following: (1) their participation in the study was voluntary, (2) completion of the survey signified their consent to participate, (3) individual responses were anonymous, and (4) only the aggregate results of the survey would be presented or published. The e-mail instructions included an electronic link to the survey.

APRN Sample

Participants for this study phase were recruited from a proprietary list provided by a state nurse practitioner organization. Inclusion criteria consisted of APRNs who treat patients with chronic pain conditions resulting from either cancer and noncancer conditions. Participants were recruited to complete the electronic questionnaire based on this criterion.

Statistical Analysis

Data analysis was conducted using SPSS Version 23 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to evaluate the characteristics of the sample demographic variables. In addition, internal consistency, or reliability, of the scale items comprising each of the five conceptual domains was computed with Cronbach's α, resulting in a separate α value for each domain. When relevant, reverse-phrased survey items (introduced to reduce response bias) were reverse scored to avoid negative α values.

Results

Phase 1: Initial Questionnaire Draft—Development, Content Validity Determination, and Refinement

Table 1 provides the focus discussion responses to the seven questions assessing regulatory considerations that are listed in the Methods section. APRN student responses indicated a general awareness of current legislative and regulatory activity with the potential to affect nursing practice related to pain care. Such knowledge also extended to the presence of policy requirements governing nursing practice, as well as a realistic comprehension of their inhibiting practice implications (i.e., creating the opportunity to impede patient treatment). These responses were considered and used to craft items for the Regulatory Considerations domain. Differences in regulatory requirements across states, and their potential impact on opioid prescribing, eventually can be explored via a national distribution of the survey.

Content Validity Index

Initial I-CVI rating (0.84) was acceptable. However the S-CVI/AVE rating (0.84) and S-CVI/UA rating (0.54) fell below the recommended rating of 0.90 for S-CVI/AVE and 0.80 for S-CVI/UA. Individual rater proportion relevance ratings (items rated as a 3 or 4 on a 4-point scale) were used to calculate S-CVI/AVE and S-CVI/AU (range 0.71-0.94).

It has been suggested that the modified κ statistic be applied to adjust for the possibility of chance agreement when calculating content validity. However, as the number of experts evaluating a scales content increases ($\geq$10), the probability of chance agreement diminishes and the κ statistic is not necessary. In addition, if the I-CVI is greater than 0.78, it would fall into the range of excellent, regardless of the number of expert reviewers and that a perfect agreement is needed only when there are three to four experts (Polit, Beck, & Owen, 2007). A modified κ statistic was not calculated given that there were five expert content reviewers and the I-CVI rating was greater than 0.78.

Examination of responses from expert reviewers identified that instructions to reviewers did not include that some items were to be reverse scored and therefore were not likely interpreted as intended. In addition, individual items that fell to a rating <0.78 were omitted. After these revisions, a second analysis of I-CVI and S-CVI/

Table 1
Summary of Responses From Focus Discussions Involving APRN Doctoral Students

Question to Students		Responses from Students
1.	In many states, APRNs cannot prescribe controlled substances without entering into a formal collaborative relationship with a physician. To what extent do you believe this requirement inhibits nurses' prescribing practices?	Respondents reported that supervision impedes more than collaborative relationships. It inhibits independent judgement by NPs to properly manage pain. These agreements are especially impactful in rural areas where collaborative doctors are scarce. "It's just a letter, nothing specific, and very restrictive." In some institutions, the NPs reported that the collaborative language is interpreted as supervision and this limits access to patient care, especially in rural areas.
2.	What would you consider to be barriers, if any, in your state that can hinder APRN's role in providing appropriate pain management?	Respondents indicated that the collaborative agreement was a barrier. Specific language can be interpreted as supervision and this can limit access to care. "I practice in a professional practice collaborative fashion with or without an agreement." Other barriers included needing more knowledge about pain management and holistic approaches.
3.	Do you believe that the nursing regulatory board in your state provides sufficient guidance about treating chronic pain?	Responses indicated that most respondents were, correctly, unaware of any State Board of Nursing regulatory guidance and felt this was a "grey area." At the time of this focus group there was limited language providing guidance from the State Board of Nursing but did include recommendations for nonpharmacologic nursing measures for management of chronic pain, albeit not current or evidence based.
4.	Are you aware of any resources that are available to provide information about current state pain or policy issues?	Half of the respondents reported and were aware of a recent legislative mandate for use of the PMP and half were not aware of this legislative change.
5.	What are some ways the DEA recommends to safeguard controlled substance prescriptions?	Responses included dose restrictions, limits on refills, movement toward electronic prescribing, and use of the PMP.
6.	To what extent do APRNs' prescribing practices contribute to the abuse and diversion of controlled substances?	Respondents reported that they were more cautious than MDs but did not have enough time during a patient visit to thoroughly assess patients.
7.	Can you name some federal and state responses to controlled substances abuse and diversion?	Half of the respondents were not aware of PMP regulations; some were aware but did not always use the PMP when prescribing opioid analgesics; the majority were not aware of the REMS program of extended release opioid analgesics.

APRN = advanced practice registered nurse; NP = nurse practitioner; DEA = Drug Enforcement Administration; PMP = prescription monitoring program; MD = medical doctor; REMS = Risk Evaluation and Mitigation Strategy.

AVE was performed and achieved a coefficient value of 0.95 and S-CVI/UA achieved a coefficient value of 0.80 and therefore deemed acceptable. Further, the items that fell to <0.78 were refined, a final survey of 31 items comprising five conceptual domains were retained, and the items were formatted as either Likert scales or dichotomous/trichotomous response options (Appendix 1).

Phase 2: Final Questionnaire Draft—Pilot Testing

Sample

Twenty-three APRNs completed the questionnaire through Survey Monkey. The number APRN members of the state APRN organization were not known; therefore a calculation of survey response rate was not possible. Demographic and clinical characteristics are summarized in Table 2. As expected, women comprised a vast majority of the sample (87%). Age ranged from 23 to 61 (mean = 47), and years in practice ranged from 1 to 25 (mean = 9). An equal proportion of respondents reported their outpatient practice as involving private practice or "other" (39%), whereas the remaining sample were employed in hospices or hospitals based either in academic or nonacademic settings. A majority of nurses (39%) had a position in primary care or internal medicine.

When asked about their patient and prescribing practices, more than 40% of APRNs reported not treating patients with chronic cancer pain, whereas all had at least some experience treating patients with chronic noncancer pain. A majority of those who treat patients with cancer also used opioids, and more than 50% of respondents prescribed opioids to treat patients with noncancer pain. Almost all APRNs who prescribe opioids also use those in schedule II (e.g., fentanyl, morphine, or oxycodone).

Eighty-three percent of APRNs reported having a collaborative practice agreement with a physician. When asked to rate themselves on their training to manage chronic pain in their patients and in patients with an addiction comorbidity, 65% considered themselves as having either good or excellent training for both clinical scenarios.

Internal Consistency

As mentioned previously, survey domain reliability was assessed by internal consistency coefficients. Cronbach's α values for each domain are as follows:

- Domain 1: Multidisciplinary nature of pain ($\alpha = .66$)
- Domain 2: Pain Assessment and measurement ($\alpha = .91$)
- Domain 3: Management of pain ($\alpha = .76$)
- Domain 4: Clinical conditions ($\alpha = .80$)
- Domain 5: Regulatory considerations ($\alpha = .65$)

Cronbach's α should exceed .70 for a developing questionnaire or .80 for a more established questionnaire (Bowling, 1997; Bryman & Cramer, 1997) to indicate good internal consistency. For this pilot investigation, all α coefficients suggest acceptable or approaching acceptable internal consistency, along with indicating strong content validity via CVI testing. Even at this initial phase, it seems that the domain accurately represents the underlying thematic concepts of interest.

Discussion

The prevalence of chronic pain in the United States and the clinical challenges facing practitioners providing pain care indicates the importance of APRNs having the knowledge to better ensure safe and effective treatment for these patients, especially when that treatment warrants the use of opioid analgesics. The ability to provide appropriate patient-centered pain care is additionally affected by an understanding of and conformity to state-level legislative and regulatory policies. Ideally, APRNs who have the requisite competencies regarding a comprehensive approach to

Table 2
Demographic and Clinical Characteristics of APRN Sample (n = 23)

Age in Years, Mean (SD; Range)	47.0 (10.0; 23-61)
Years in practice, mean (SD; range)	9.0 (6.3; 1-25)
	No. (%)
Sex (female)	20 (87.0)
Type of Outpatient Practice	
Academic/university based	2 (8.7)
Hospice	1 (4.3)
Nonacademic/university hospital based	2 (8.7)
Private practice	9 (39.1)
Other	9 (39.1)
Field of Practice	
Family medicine	5 (21.7)
Primary care/internal medicine	9 (39.1)
Surgery	2 (8.7)
Other	7 (30.4)
Percentage of patients treated with chronic noncancer pain	
1%-10%	8 (34.8)
11%-30%	7 (30.4)
31%-50%	3 (13.0)
>50%	5 (21.7)
Percentage of patients treated with chronic cancer pain	
None	10 (43.5)
1%-10%	6 (26.1)
11%-30%	3 (13.0)
31%-50%	3 (13.0)
>50%	1 (4.3)
Percentage of patients with chronic noncancer pain treated with schedule II opioids	
None	1 (4.3)
1%-10%	9 (39.1)
11%-30%	5 (21.7)
31%-50%	2 (8.7)
>50%	6 (26.1)
Percentage of patients with chronic cancer pain treated with schedule II opioids	
None	10 (43.5)
1%-10%	4 (17.4)
11%-30%	1 (4.3)
31%-50%	3 (13.0)
>50%	5 (21.7)
Self-perception of training to manage patients with chronic pain	
Excellent	3 (13.0)
Good	12 (52.2)
Fair	7 (30.4)
Poor	1 (4.3)
Self-perception of training to comanage patients with chronic pain and addictive disorders	
Excellent	4 (17.4)
Good	11 (47.8)
Fair	6 (26.1)
Poor	2 (8.7)
Collaborative practice agreement with a physician	
Yes	19 (82.6)
No	4 (17.4)

APRN = advanced practice registered nurse; SD = standard deviation.

pain management will be more likely to offer such care. Indeed, recent research suggests that the potential for opioid analgesic-related harms related to practitioner prescribing is amplified by practice that fails to conform to guidelines and practice standards (Margolis et al., 2017). Although there has been considerable progress in the last few years to develop initiatives to reinforce pain-related competencies (Antman et al., 2016; Arwood et al., 2015; Fishman et al., 2013; Herr et al., 2015; Hoeger Bement et al., 2014; Hunter et al., 2015; Tick, Chauvin, Brown, & Haramati, 2015; Watt-Watson et al., 2017), currently there is no valid and reliable instrument to measure practitioner adherence to those competencies. The purpose of this study was to begin developing an instrument to address this important need.

Given that the AESOP-APRN survey is a new instrument, the content validity and internal consistency provide preliminary evidence that the questionnaire meets minimal acceptable standards for this professional population. These results suggest that the survey might be used to assess APRN knowledge, attitudes, and values about pain management and opioid prescribing practices. The α coefficient values found in this study suggest that the AESOP-APRN survey is a relatively reliable instrument that represents the content domains of interest, even given the possibility of random error (e.g., from transient participant personal factors or milieu). Despite these acceptable Cronbach α values, however, it is likely that item responses running counter to current practice standards and core competencies will have lowered the reliability coefficient values. Given this, further psychometric testing is warranted to strengthen the confidence in the AESOP-APRN over time. Nevertheless, the use of the AESOP-APRN for assessment of pain management competencies is propitious given the current concerns surrounding both the prevalence of chronic pain in the United States and the omnipresent concerns regarding opioid misuse, diversion, and associated opioid overdose consequences. Both pain prevalence and opioid misuse represent public health problems that can be identified through the use of this survey and can be addressed, at least in part, by health care practitioner pain management education (Fishman et al., 2013; U.S. Food and Drug Administration, 2017).

Limitations

There are a number of limitations to be kept in mind when considering this study. General limitations to any survey design include the possibility that respondents may not feel comfortable to provide honest answers that may present themselves in an unfavorable manner. Although this risk is reduced when surveys are provided anonymously, the nature of survey on opioid prescribing may have an influence on responses. Surveys composed of forced-choice questions, such as with this entire instrument, may have a lower validity rating than would have semistructured questions. In addition, consistency and clarity in question interpretation may exist, but the items were constructed to minimize the likelihood of this occurrence.

Although online survey research has advantages, including the ability to access groups of individuals in a timely and cost-efficient manner, there are certain downsides to this methodology. It is possible that electronic communication inviting participation may be automatically classified as “spam” and rerouted from the person's inbox, or else judged to be an unwanted post because of an already high volume of e-mail messages and not given consideration. There also may be a low priority for completing a survey because of competing tasks. These factors may explain the difficulty recruiting respondents (Cho, Johnson, & VanGeest, 2013). Furthermore, although the response rate for this survey was not able to be calculated, there is a possibility that is was low and reflects a no-response bias, underestimating the true response value.

Finally, for this initial phase of instrument testing, the sample selection was limited to only one state. Further efforts are needed to broaden survey implementation and increase the number of respondents. However, for pilot-testing purposes, the sample size is sufficient for these analyses (Hertzog, 2008). Additional validity or reliability metrics were not conducted. Because there are no other established measures of the constructs considered for this instrument, criterion validity testing was not conducted. It is possible, however, that the availability of a few published survey instruments evaluating practitioners' knowledge, attitudes, and behaviors regarding pain management (although none have reported psychometric properties) could conceivably be useful to establish concurrent validity. Test–retest reliability was not feasible because of the anonymous e-mail distribution and receipt of the survey. Furthermore, CVI was not performed on the final version, which contained 11 revised content items. Future opportunities for such

psychometric refinement are possible. Indeed, administration of the AESOP-APRN in varied practice settings has the potential to inform future psychometric evaluation and refinement of this survey.

Implications for Nursing Practice, Education, and Research

The current national dialogue surrounding opioid use and misuse highlights the need to better understand APRN practice surrounding this issue. The AESOP-APRN can be used to identify aggregate educational and practice gaps in, as well as the implication of state policy on, APRN pain management practice. Survey findings could then point to the need for targeted pain management educational interventions to promote more consistent patient pain care for specific treatment issues. One example of available instructional resources is the Extended-Release/Long Acting (ER/LA) Risk Evaluation and Mitigation Strategy program approved by the Federal Food and Drug Administration in 2012 (U S. Food and Drug Administration, 2018). Another national training opportunity is available from the Substance Abuse and Mental Health Services Administration (www.samhsa.gov/medication-assisted-treatment/training-resources/opioid-courses). At the state level, Massachusetts has developed an initiative titled Safe and Effective Opioid Prescribing for Chronic Pain (http://www.opioidprescribing.com), and the New York state Department of Health offers opioid prescribing training for practitioners (http://pharmacy.buffalo.edu/academic-programs/continuing-education/events/opioid-prescriber-training.html). These strategies represent only a selected sample of the multiple national and state programs designed to educate health care practitioners both before and after licensure in the risk assessment and safe use of opioid analgesic medications for pain management.

Conclusions

The psychometric testing of the AESOP-APRN Survey resulted in the development of a final 31-item, 5-domain, reliable and valid measure of safe and effective pain management, including implications of regulatory policy. Although satisfactory results were initially achieved for this newly developed instrument, further psychometric analyses are required, and instrument refinement is possible and anticipated. Additional study should include analysis of and potential application to members from a variety of health care disciplines, as was the intention of the development of the Core Competencies for Pain Management (Fishman et al., 2013).

As illustrated throughout this article, the continued quest for safe, appropriate, and effective pain management practice exemplifies an ethical moral befitting the title of this new survey: “They who act without sufficient thought, will often fall into unsuspected danger” (*Aesop's Fables*, “The Dog and the Oyster”). The national, state, and organizational efforts already discussed, including the development of this survey, represent efforts designed to help ensure that this scenario is avoided and that patient pain care is enhanced both in terms of its prevalence and quality.

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Appendix 1

Achieving Effective and Safe Opioid Prescribing: Advanced Practice Registered Nurse (AESOP-APRN) Survey.

Please check one of the following responses for each statement in the survey.

Domain 1: Multidimensional Nature of Pain

1. In the context of opioid therapy, I can recognize behaviors considered "aberrant" (e.g., multiple reports of lost or stolen prescription drugs, using prescribed drugs before renewal date, concurrent use of illicit drugs, or seeking drugs from other providers)

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	strongly Agree

2. As part of my practice I use tools (e.g., the Current Opioid Misuse Measure) to identify patients who are using their prescribed opioid medication for other than therapeutic purposes

Never	Rarely	Sometimes	Often	Always

3. Opioid medications have not been shown to result in liver or kidney damage so are safe in this respect for treating chronic pain

False	True	Unsure

4. If a patient has been successfully maintained on opioid therapy for 6 months but now complains of increased pain, as a very next step I would titrate the dose up by 10%-20% of current dose

Never	Rarely	Sometimes	Often	Always

5. Basically, addiction to an opioid medication is the same thing as physical dependence on an opioid medication

False	True	Unsure

6. It is contraindicated to add an opioid medication for patients with chronic pain who are also on antidepressant medication

False	True	Unsure

7. For every patient on opioid therapy for chronic pain I ask them to bring in their significant other or other family member to participate in discussions regarding impact of patient's pain treatment on family functioning

Never	Rarely	Sometimes	Often	Always

Domain 2: Pain Assessment and Measurement

8. As an advanced practice nurse, I can independently initiate an initial assessment on a patient new to my practice or medical service

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

9. Prior to initiating opioid therapy, I use the following approach to document risk, benefit, and safety of opioid therapy (CHECK ALL THAT APPLY)

a. verbal informed consent	never	rarely	sometimes	often	always
b. written informed consent	never	rarely	sometimes	often	always
c. written opioid treatment agreement	never	rarely	sometimes	often	always

10. I use the following approach to educate patients about the risks, benefits, and safety of opioid therapy (CHECK ALL THAT APPPLY)

a. verbal informed consent	never	rarely	sometimes	often	always
b. written informed consent	never	rarely	sometimes	often	always
c. written opioid treatment agreement	never	rarely	sometimes	often	always

11. Prior to starting opioid therapy, I use an opioid risk stratification tool (e.g., the ORT or the SOAPP) to assess patient risk for non-therapeutic use of the prescribed opioid medication

Never	Rarely	Sometimes	Often	Always

12. As part of my practice I use tools (e.g., the CAGE) to assess patients for alcohol abuse

Never	Rarely	Sometimes	Often	Always

Domaine 3: Management of Pain

13. I discuss methods for safe medication storage with patients who are prescribed an opioid medication

Never	Rarely	Sometimes	Often	Always

14. Prior to initiating opioid therapy, treatment plans and goals should be established with patients

strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	strongly Agree

15. I order urine drug testing for patients on opioid therapy:

a. never
b. only initially when starting treatment
c. periodically throughout treatment
d. at every visit

16. I access data from my state Prescription Drug Monitoring Program for patients on opioid therapy:

a. never
b. only initially when starting treatment
c. periodically throughout treatment
d. at every visit

17. Both short and long-acting opioid medications can be prescribed concurrently for patients when it is clinically warranted to treat chronic pain

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

18. I discuss methods for disposing of unused/expired opioid medication with patients who are prescribed an opioid medication

Never	Rarely	Sometimes	Often	Always

19. After initiating opioid therapy, if a patient has successfully met the pain relief or functional goals defined as part of the treatment plan, they should be weaned off their opioid medication

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

20. After initiating opioid therapy, if a patient has NOT met the pain relief or functional goals defined as part of the treatment plan, I have an opioid medication exit strategy plan to put in place

Never	Rarely	Sometimes	Often	Always

21. If I learned that a patient on opioid therapy for chronic pain is found to be obtaining scheduled medications from another health care practitioner, as a very next step I would recommend the patient be terminated from my practice

Never	Rarely	Sometimes	Often	Always

Domain 4: Clinical Conditions

22. Patients with a history of substance abuse should never concurrently be prescribed opioid medication to treat chronic pain

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

23. Patients with a diagnosed active substance use disorder should never concurrently be prescribed opioid medication to treat chronic pain

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

24. What I have been hearing about opioid-related mortality has changed my opioid medication prescribing habits in the following ways (CHECK ALL THAT APPLY)

	Yes	No
a. I have increased my use of opioid risk stratification tools (e.g., the ORT or SOAPP)		
b. I have increased my use of treatment agreements to document risk, benefit, and safety of opioid treatment		
c. I have increased my review of data from my state's prescription drug monitoring program		
d. I have increased my review of data from my state's prescription drug monitoring program		
e. I more frequently discuss methods for safe medication storage		
f. I more frequently discuss methods for disposing of unused/expired medications		
g. I have substantially limited by prescribing of opioid medications		
h. I have stopped prescribing opioid medications altogether		

25. Patients with chronic nerve pain will not benefit from opioid therapy

False	True	Unsure

Domain 5: Regulatory Considerations

26. Fear of DEA scrutiny inhibits me from managing patients with chronic pain on Schedule II opioid medications

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

27. Increased regulatory requirements inhibit me from managing patients with chronic pain on Schedule II opioid medications

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

28. Laws and regulations governing nursing practice in my state can impede APN prescribers' treatment of chronic pain

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

29. Patients are legally required to report all medications they are on to their health care practitioner

False	True	Unsure

30. Policies adopted by boards of nursing to recognize pain management as an important part of APN practice are useful for improving pain management

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

31. It is important for a state board of nursing to have a regulation, guideline, or policy statement for APN prescribers regarding pain management and/or the use of opioid medications for pain

Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

ORT = Opioid Risk Tool; SOAPP = Screener and Opioid Assessment for Patients with Pain; DEA = Drug Enforcement Administration; APN = advanced practice nurse.