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Factors Influencing Controlled Substance Prescribing Behaviors Following Changes in Prescriptive Authority
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Abstract

Purpose: This evidence-based policy project was developed to examine the factors that influence controlled substance prescribing behaviors among Florida’s APRNs and the impact prescribing controlled substances has had on their practice following legislative changes in 2017.

Methods: Using a quantitative design, 1,850 Florida actively licensed APRNs met inclusion criteria from the online email distribution via the Florida Health Care Public Data Portal with a Qualtrics survey link. We specifically focused on evaluating participants perceived readiness to prescribe, barriers to utilization of this prescriptive authority, and impacts on APRN practice. The data was analyzed using descriptive and nonparametric statistics with SPSS Version 23.

Results: Overall, two years post-legislative change, 55.2% of Florida APRNs have DEA registration ($n = 1021$), with 59.1% of participants currently prescribing controlled substances in their practice ($n = 1093$). A large group of Florida APRNs felt very or extremely comfortable with prescribing (45.8%), with more continuing education hours increasing feelings of preparedness ($\tau = .418, p < .001$), and overall feelings of preparedness improving comfort levels when prescribing ($\tau = .703, p < .001$). The most commonly selected response for impact to practice from prescribing controlled substances was the ability to efficiently meet patient’s needs (62.3%, $n = 713$) and the most commonly selected barrier to practice was that the APRN did not want to prescribe controlled substances (33.9%, $n = 254$).

Implications: The DNP project results revealed that Florida APRNs are reporting impactful changes through the utilization of their prescriptive authority for scheduled II-IV substances, having proactively increased their education and feelings of preparedness, but there are some barriers that continue to persist in practice.

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Key words: controlled substance, prescribing, APRNs, advanced practice registered nurse, Florida, schedule II-IV substances, opioid prescribing, barriers, implications, readiness
After more than twenty years of attempts to obtain prescriptive authority in Florida for Advanced Practice Registered Nurses (APRNs), House Bill 423 (HB 423) was passed in 2016 and enacted on January 1, 2017 (The Florida Senate, 2016). This law allows APRNs in Florida to prescribe schedule II-IV substances under their current supervisory protocols with physicians (The Florida Senate, 2016). APRNs are licensed registered nurses who have completed a masters or doctoral degree with advanced clinical course hours beyond their initial nursing training (American Academy of Nurse Practitioners, 2019). As one of the last states to be granted controlled substance prescribing authority, Florida’s APRNs looked to other, more progressive states to proactively prepare them for this important transition in practice (Craig-Rodriguez et al., 2017). Researchers in Washington state, one of the earliest states to grant APRNs the ability to prescribe controlled substances, began documenting its transition in 2001, prior to when the law was enacted, and continued to document the transition over a five-year period after the legislative change took place (Kaplan et al., 2006, 2010; Kaplan & Brown, 2004, 2007). To date, no other state’s transition to controlled substance prescribing has been so thoroughly documented.

Prior to the passage of HB 423, the internal and external barriers to Florida APRN prescribing schedule II-IV medications were evaluated, identifying significant knowledge gaps in the areas of regulatory guidelines, opioid classes/doses, risk assessment, monitoring, and dealing with challenges, indicating a need for more education prior to making this transition to controlled substance prescribing (Craig-Rodriguez et al., 2017). Several courses were subsequently developed and implemented to meet the minimum 3 credit hour requirement set forth by the Board of Nursing. Two years following the legislative change, Weissing (2019) examined the barriers and impacts of DEA prescribing on APRNs in two Florida nurse
practitioner organizations. Results suggested that more than 80% of the participants were DEA-registered prescribers. This rate is considerably higher than what other states have shown, such as Washington state, where 55% of APRNs held DEA registration three years post-legislative change (Kaplan et al., 2006). These unanticipated results warranted further investigation to determine whether the participants in the Florida sample were representative of all APRNs within the state. By broadening the sample, the investigator evaluated whether the larger APRN sample population yielded different results two years after changes in prescriptive authority.

Clinical Question

The evidence-based practice question for this project was “Among Florida APRNs, what factors have influenced controlled substance prescribing behaviors and how has prescribing controlled substances impacted their practice?”

Purpose and Aims

This evidence-based policy project was developed to better understand the factors that influence controlled substance prescribing behaviors among Florida’s APRNs and the impact prescribing controlled substances has had on their practice. A goal for this project was to assist in determining what type(s) of policy intervention(s) would best reduce prescribing barriers, specifically related to APRN’s reported readiness to prescribe Phase II-IV substances.

The three aims of this project were to:

1) Assess APRN perceived readiness to prescribing schedule II-IV substances.
2) Identify the barriers that impact Florida APRN prescribing behaviors of schedule II-IV substances.
3) Analyze how prescribing schedule II-IV substances has impacted APRN practice.

Literature Review
Internationally, barriers to the use of controlled substances are persistent, with a reported lack of education regarding policies and treatment recommendations (Berterame et al., 2016; Singh et al., 2019). North American providers in Canada and the USA have also expressed how utilizing improvements in controlled substance education could assist providers in improving their confidence and knowledge (Craig-Rodriguez et al., 2017; Ebbert et al., 2018; Kaplan et al., 2006; Kaplan & Brown, 2004; Mack, 2018; Tilley et al., 2019). In the US, individual state regulations vary in the amount of oversight physicians have for APRNs to prescribe schedule II-IV substances. Currently there are 22 states requiring no physician supervision, and others requiring a supervisory or collaborative agreement between physicians and APRNs, thereby reducing or restricting practice (American Academy of Nurse Practitioners, 2019). In Florida, APRNs are currently required to have a supervisory agreement with a physician or dentist (The Florida Senate, 2019).

Responsible prescribing necessitates an understanding of the risks and benefits associated with controlled substances, appropriate use of those drugs, and an understanding of the legal parameters in place for safe prescribing (U.S. Food and Drug Administration, 2018). In the US, the Drug Enforcement Administration (DEA) regulates the scheduling of these medications and classifies them into five (5) distinct schedules, depending upon the drug’s acceptable medical use and the drug’s abuse or dependency potential. Schedule I substances have no currently accepted medical use and have a high potential for abuse; Schedule II drugs are defined to have high abuse potential; Schedule III drugs have slightly less abuse potential, Schedule IV drugs have the lowest risk of abuse, and Schedule V drugs having only a trace amounts of narcotic agents (Drug Enforcement Administration, 2019). Through the process of evaluating what challenges might be
faced with APRNs prescribing controlled substances, this DNP project can help identify practice barriers in regard to regulations and risk of disciplinary action by state or federal regulators.

When the legislative change was enacted in 2017 for APRNs to prescribe controlled substances, Florida was still trying to repair its reputation as the "epicenter of prescription drug diversion" in the United States, where, just six years earlier, Drug Enforcement Administration (DEA) reported that Florida’s physicians were dispensing five times more oxycodone than the national average, resulting in a massive increase in opioid and substance abuse deaths (Craig-Rodriguez, et al., 2017; Johnson et al., 2014). After implementing various laws regulating pain clinics and standardizing the use of prescribing guidelines and prescription monitoring for physicians, overdose death rates in Florida decreased significantly (Johnson et al., 2014). These regulations necessitated close scrutiny of APRNs during the transition to schedule II-IV prescribing to ensure that APRN prescribers would not repeat the mistakes of the past. (Craig-Rodriguez et al., 2017). Evaluating the perceived barriers and impacts to practice APRNs are facing regarding controlled substance prescribing will be an integral part in understanding this transition. Three major themes emerged from a literature review on APRNs and controlled substance prescribing: knowledge gaps about these medications, barriers to prescribing, and continual APRN role development to improve prescribing schedule II-IV substances.

**Knowledge Gaps**

Florida statutes require at least three continuing education credits, offered and accredited by a statewide professional association, every two years as part of the APRN licensure renewal (Florida Statutes, 2019b). Prior to the legislative changes, in prescribing controlled substances, a significant number of surveyed APRNs in both Florida and Washington state reported that they did not feel confident to prescribe these drugs (Craig-Rodriguez et al., 2017; Kaplan & Brown,
2004). Even without the relative legislative changes to prescriptive authority for these substances, the evidence indicates that APRNs request additional education in this area (Kaplan et al., 2006; Kaplan & Brown, 2007; St. Marie, 2016; Tilley et al., 2019). This request for additional education regarding controlled substance prescribing was not specific to APRNs, but spanned a wide range of providers—physicians, dentists, physician assistants (PAs), and APRNs (Ebbert et al., 2018; Howell & Kaplan, 2015). Concerns expressed by APRNs about prescribing opioids included the potential risk of side effects, having to manage patients with a substance abuse disorder, and having to prescribe specific controlled substances outside of an APRNs comfort zone, such as long-acting opioids (Ebbert et al., 2018; Kaplan et al., 2006).

In addition to the reported lack of knowledge about prescribing, APRNs indicated they felt poorly prepared to utilize controlled substances in their practice (Kaplan et al., 2010; Muench et al., 2019; Shilling & Hodnicki, 2015; St. Marie, 2016). Research has found that APRNs are less likely to prescribe opioids prescriptions than MDs for the same patient groups initial management, performing additional tests such as plain radiographs prior to moving to opioids (Dietrich et al., 2018; Muench et al., 2019). Encouraging educational curricula that covers the entire subject of prescribing controlled substances, including regulatory guidelines, pharmacology content, assessment, and monitoring, as well as integrating this into clinical rotations, can improve confidence and assist with preparing new graduate APRNs for autonomous full practice upon graduation, no matter which part of the country they choose to practice (Compton & Blacher, 2020; Kaplan et al., 2010; Muench et al., 2019; Tilley et al., 2019; Witry et al., 2020).

Finally, the current evidence supports implementing measures that focus on increasing APRN knowledge regarding safe and informed prescribing practices to protect both providers
and patients (Ebbert et al., 2018; Kellams & Maye, 2017; Shilling & Hodnicki, 2015; Witry et al., 2020). Results have shown that only 41.7% of healthcare providers (APRN*s, PAs, physicians, dentists, or podiatrists) rate themselves as very or extremely competent in treating noncancer pain (Howell & Kaplan, 2015), while another study showed only 47% of clinicians felt confident in their ability to care for patients with chronic non cancer pain (Ebbert et al., 2018). Encouraging interprofessional education and awareness of national guidelines on controlled substance prescribing between all provider groups has been shown to increase healthcare providers’ confidence and improve their ability to manage patients’ needs (Cardarelli et al., 2018; Ebbert et al., 2018). As members of the broader healthcare provider team, APRNs are able to participate in various methods of increasing confidence in this area of prescribing. Within this DNP project, the objective is to determine whether the graduate training and continuing education requirements placed by the state of Florida are sufficient to overcome these reported knowledge gaps.

**Practice Barriers**

A practice barrier that emerged in the literature was the inconsistent approaches to opioid prescribing across provider groups (e.g. MDs, APRNs, or PAs), causing difficulties developing and enforcing adherence to the treatment plan for the patient (Ebbert et al., 2018; Kaasalainen et al., 2016; St. Marie, 2016). Torrens et al. (2020) found meta analytic support for the importance of communication when sharing information between both providers and other providers, as well as providers and patients. If a patient is unable to comprehend the APRN’s role in his or her current treatment plan, a revised communication approach is encouraged to allow the APRN to be fully effective in treating the patient’s concerns (Kaplan et al., 2010; Torrens et al., 2020). Recommended means for improving communication between APRNs and patients, or APRNs
and other medical providers, include team collaboration through documentation of a consistent treatment plan, increasing the frequency of office visits if a patient’s pain is increasing, and working to avoid fragmented care (Mack, 2018; St. Marie, 2016).

Internal barriers—those barriers specific to individual APRNs—include APRNs practicing without DEA registration, APRNs expressing concerns about having interactions with patients who display drug seeking behaviors, or who become addicted as a result of being prescribed these medications, and concerns about facing potential disciplinary action from prescribing (Ebbert et al., 2018; Kaplan et al., 2006, 2010; Kaplan & Brown, 2004, 2007). When an APRN chooses to practice without DEA registration, another provider is utilized to prescribe schedule II-IV medications for the APRN’s patients (Kaplan et al., 2006; Shilling & Hodnicki, 2015; Tilley et al., 2019). If supervisory agreements were required for APRNs to prescribe controlled substances, APRNs expressed ambivalence towards obtaining DEA licensure, having an increased administrative work load, and experiencing difficulties or tensions with a supervisory provider (Kaplan et al., 2006; Kaplan & Brown, 2007; Shilling & Hodnicki, 2015; Torrens et al., 2020).

Some external barriers—systemic or regulatory hurdles that impact all APRNs—include challenges surrounding health system structuring. These system difficulties arise when patients are recommended to try non-prescription modalities, such as alternative therapies or complementary medicine, but meet resistance because of insurance denial, length of time to get approval, or location availability (Mack, 2018; Shilling & Hodnicki, 2015; St. Marie, 2016). When pain management referrals are made, many patients face lengthy wait periods to be seen by a pain specialist, which can increase a patient’s desire for a quicker remedy in the form of pain medication (Howell & Kaplan, 2015; Mack, 2018; St. Marie, 2016). Even seemingly simple
structural issues, such as allowing APRNs to be included in the provider directories for healthcare systems can be a way of breaking down external barriers to practice (Petersen & Way, 2017). All of these aforementioned practice barriers warrant further investigation to determine whether Florida APRNs are experiencing similar setbacks to utilizing this prescriptive authority.

**Supporting Role Development Through Education**

As APRNs across the nation gain more autonomy in clinical practice, the evidence underscores the importance of the continual development of this evolving role in prescribing controlled substances. First, APRNs have a unique opportunity to merge their advanced clinical skills with their controlled substance knowledge to educate other healthcare colleagues about pain assessment, utilization of alternative treatment modalities, and risk assessment tools to mitigate patient misuse, abuse and diversion of controlled substances (Kaasalainen et al., 2016; Shilling & Hodnicki, 2015; St. Marie, 2016). When APRNs have a supervisory agreement in place and are unable to draw from their training and expertise to exercise their prescribing privileges, barriers emerge, such as resistance from physicians and inability to provide comprehensive care (Shilling & Hodnicki, 2015; Xue et al., 2016). By advocating for further advancement in the healthcare setting, APRNs are able to raise their voice and clarify their role, banishing preconceived or outdated stipulations on an APRNs ability to practice (Cardarelli et al., 2018; Kaasalainen et al., 2016; Torrens et al., 2020).

Florida Statutes (2019a) provides authority to physicians, PAs, and APRNs to prescribe controlled substances, however, all providers have continuing education requirements for licensure, allowing the opportunity for educational improvements to be implemented through multidisciplinary continuing education (Cardarelli et al., 2018; Ebbert et al., 2018; Mack, 2018; St. Marie, 2016). Florida Statute §465.0301 mandates that physicians in Florida must complete 2
hours of continuing education on prescribing controlled substances for licensure renewal (Florida Statutes, 2019a), while APRNs are required to complete 3 hours on safe and effective prescription of controlled substances biennially (Florida Board of Nursing, 2020). Educational course offerings on the prescription of scheduled II-IV substances vary in length and format, and include print-based courses, webcasts, live events, and online learning. One example of an interprofessional education initiative provided via a multi-modal approach is the Central Appalachia Interprofessional Pain Education Collaborative, available for all health professionals (physicians, nurse practitioners, nurses, physician assistants, massage therapists, physical therapists, and behavioral specialist), in the Kentucky or West Virginia region (University of Kentucky, 2020). Utilizing state-level conferences, regional roundtable discussions, and webcasts, researchers found that incorporating interdisciplinary continuing education for opioid prescribing practices can play a role in advancing the overall understanding, as well as increase awareness and communication on this topic between various medical disciplines (Cardarelli et al., 2018). Implementing a similar interprofessional education strategy in Florida has the potential to increase various medical providers’ awareness of APRN prescriptive authority for scheduled II-IV substances as well as advance provider overall knowledge about prescribing these medications.

Improving APRN’s overall prescribing comprehension, especially with prescribing scheduled II-IV substances, can assist in further developing the APRN’s role in healthcare. Preparing the graduate APRN nursing student with education on the different treatment modalities for patients who struggle with chronic pain, substance use disorders, or who have acute pain with a history of addiction, can ensure that upon graduation, the new APRN can properly treat these patients (Compton & Blacher, 2020; Diegel Vacek & Vuckovic, 2019;
Torrens et al., 2020; Witry et al., 2020). There continues to be growth of APRN residency or fellowship programs across the country that reinforce graduate curriculum through didactic learning, in addition to working in a practice environment with a mentor, which can encourage the overall comprehension of controlled substance prescribing (Diegel Vacek & Vuckovic, 2019; Klein & Lugo, 2018). Currently there are 88 APRN fellowship or residency programs dispersed across the country, providing a unique opportunity to prepare new nurse practitioners for controlled substance prescribing by addressing this knowledge gap (Kesten et al., 2019; MacKay et al., 2018).

**Literature Gaps and Recommendations**

A review of the evidence revealed only one study that evaluated multiple schedule II-IV substances prescribing by APRNs, and examined the concomitant prescribing of benzodiazepines with opioids (Muench et al., 2019). The paucity of evidence addressing the prescribing of all types of schedule II-IV substances by APRNs could suggest that opioid prescribing and the opioid epidemic has been the primary focus in research publications. Future research might valuably explore prescribing practices by APRNs for controlled substances other than opioids.

Additionally, further studies should examine how the increase in the prescribing of controlled substances in the US impacts providers in other countries, especially Canada. The federal government in Canada granted prescriptive authority for schedule II-IV substances to APRNs in 2012, but implementation and regulation across the provinces and territories has varied, similar to the US state variations (Canadian Association of Schools of Nursing, 2016). Based upon the similar timing with obtaining prescriptive authority, the findings from the studies
completed in Florida could assist Canadian APRNs who may be experiencing similar barriers and impacts on their practice.

Researchers in Washington state published a multi-year follow up study before and after legislative change, granting schedule II-IV prescriptive authority to APRNs (Kaplan et al., 2006, 2010; Kaplan & Brown, 2004, 2007), but similar data regarding opioid prescribing practices in other states have not been published. Utilizing the research of Craig-Rodriguez, et al. (2017) conducted prior to the legislative changes in Florida will serve as a foundational viewpoint on this topic. Similar to the longitudinal study conducted in Washington state, there are future plans to continue to examine the statewide perspective of Florida APRNs regarding prescribing barriers and practice utilization up to 30 months after legislative implementation.

Theoretical Framework

Grounded upon the Dreyfus model of skill acquisition, Patricia Benner applied her knowledge of this theory to nursing, explaining the five stages that caregivers must pass through from novice, advanced beginner, competent, proficient, and finally to expert nurse clinicians (Benner, 1982). From this model, the concepts of competence, skill acquisition, experience, clinical knowledge, and practical knowledge were recognized as a means to evaluate how new concepts can be applied to patient situations (McEwen & Wills, 2011). Benner discovered that a deep understanding gained through experience, as well as formal education preparation, were required to develop consistency in practice (Benner, 1982).

Prior to implementing HB 423 in 2017, Florida APRNs spanned the entire range of Benner’s skill acquisition stages with their prescriptive abilities. When these new regulations went into effect, even the most experienced APRNs across Florida found themselves entering uncharted territory with regard to controlled substance prescribing, each advanced practice
provider transitioning in a unique way based on their prior experiences with controlled substance and educational background. This process of role development includes “multiple, dynamic, and situational processes, with each new undertaking being characterized by passage through earlier transitional phases and with some movement back and forth, horizontally or vertically… (p. 83)” for all APRNs, regardless of their prior stage (Brykcynski & Mackavey, 2019). The pre-statutory evaluation of APRNs in Florida indicated that there was a significant knowledge gap regarding controlled substances that needed to be met, suggesting that educational requirements on this topic be added and further research be completed to examine this transitionary process (Craig-Rodriguez et al., 2017). This DNP project evaluated whether APRNs in Florida filled this knowledge gap by transitioning from novice to expert two years after the legislative changes.

Methodology and Implementation

Participants

The project utilized a quantitative descriptive research design and used a survey data collection process. The sampling method for this DNP project was non-random, purposive sampling. Subject population consisted of actively licensed APRNs with prescriptive authority within the state of Florida. Per HB 423, APRN providers included certified nurse practitioners, certified registered nurse anesthetists, clinical nurse specialists, and certified nurse midwives, but since Florida does not allow clinical nurse specialists to have prescriptive authority for any form of medications, this category of APRNs was not included (The Florida Senate, 2016). Inclusion criteria were: (a) actively licensed and practicing Florida APRNs with prescriptive authority; (b) over the age of 18 years; (c) able to read and write English; (d) able to complete the online informed consent. APRNs were excluded if they worked outside the state of Florida. Based on 25,806 APRNs available to be sampled by our method, a power analysis recommended a sample
size of 1025 participants to achieve 95% confidence that the true population values are within three percentage points of our point estimates (https://www.qualtrics.com/blog/calculating-sample-size/).

To prevent overlap between the participants utilized in Weissing’s (2019) study, a question was added at the beginning of the survey to ask whether the participant had previously completed this survey during January 2019 to May 2019. If a participant opened up the survey and selected “Yes, I have already completed this survey through my FLANP or FNPN membership,” the participant was directed to an exit stage, providing a page that thanked them for their previous participation and that he or she will not be eligible to repeat this survey.

**Setting and Resources**

This study involved an email invitation sent via Qualtrics to APRNs within Florida, accessed via the Florida Health Care Public Data Portal (Florida Department of Health, 2019), and described the reason for the survey with a request to participate. The survey could be completed at any time, and on any device (e.g., computer, tablet, or phone) as long as the internet connection remained present for the Qualtrics survey to be submitted. The estimated time for survey completion was 10-15 minutes. Study participants were required to have basic computer knowledge to follow the online survey directions for completion of the survey.

Resources utilized for this project included the “Prescribing Practices” survey and access to an extensive database of APRN provider’s names and email addresses, such as the Florida public data portal (Florida Department of Health, 2019). Technical assistance and access to a survey site manager, such as Qualtrics, were required for the survey distribution. Additional resources for this project included the expertise of authors who contributed to earlier works on
this subject (Craig-Rodriguez et al., 2017; Kaplan et al., 2006, 2010; Kaplan & Brown, 2004; Weissing, 2019).

**Data Collection Tool**

The 41-question survey employed for data collection was based on a survey instrument utilized in Washington state, used with permission from the authors (Kaplan et al., 2006) and was modified to meet Florida’s practice regulations, including the addition of the first participant screening question that was mentioned earlier. The sampling tool was validated through replication within the same population group over time and has consistently provided results for the researchers (Howell & Kaplan, 2015; Kaplan et al., 2006, 2010). The first section of the survey, “Current Practice” opened with 13 questions that assessed participants’ occupational information such as certification, years in practice, and facility type, including the characteristics of supervisory or collaborative agreements. Within this section were nine nominal, two ordinal, one interval, and two ratio response options. The second section, “Prescribing Practices” had 19 questions assessing participant DEA registration, prescribing behaviors, potential barriers, along with five response options assessing perceived readiness to prescribe controlled substances. This section of the survey concluded with the participant being asked to select all the applicable responses to two questions: “What would help you prescribe controlled substances?” and “How has prescribing schedule II-IV controlled substances impacted your practice?” Both questions allowed for participants to fill in an “other” option and explain their response if they so wished. This second survey block had six nominal and 13 ordinal response options. To minimize the impacts of test fatigue on survey results, the last section of the survey was “Background Information,” which included seven demographic questions, with two nominal, three ordinal, one interval, and one ratio response options. For full text of the survey measure, see Appendix A.
**Intervention and Data Collection Plan**

The IT manager at Florida State University (FSU) College of Nursing downloads the public provider portal information (Florida Department of Health, 2019) at least every six months and uses data cleaning methods to eliminate missing email addresses, avoid duplicate accounts, and clarify that all potential participants are included. These provider data sets are available for use by the FSU College of Nursing for research purposes and these data sets were utilized as part of this DNP project. Use of a broad database such as the Florida data portal (Florida Department of Health, 2019) allowed for a more comprehensive range of survey participants to evaluate.

Documents approved by the FSU Human Subjects Committee were used for the invitation process for participants, indicating compliance with the FSU consent process for expedited studies. The introductory email was sent to the email addresses on file for all Florida APRNs in the database. Within that email was the resource information sheet, the introductory email, and the link to the Qualtrics survey for the participant to click if they wished to continue. By clicking the link to the survey, the participant implied comprehension and consent, and once the survey had been completed, the data was stored. Upon the data collection period closure, the information from Qualtrics was downloaded via the Statistical Package for Social Sciences (SPSS) for data cleaning and analysis.

Data was collected anonymously and will be banked indefinitely. The participants were informed in the introductory email that information obtained in this study may be shared in the future, but only in aggregate form with the response of other APRNs. Survey results were only available to the research team, including the principal investigator, co-investigator, faculty
advisor, FSU College of Nursing IT director, and statistical consultants. Survey responses remained stored electronically on a password-protected computer in a locked room.

**Implementation**

The provider data downloaded on June 14, 2019 indicated there were 32,374 APRNs in Florida with a clear and active license, but only 25,548 APRNs had an active and clear license with email addresses and practicing in Florida, allowing these participants to meet research inclusion criteria. Qualtrics restricts researchers to 25,000 emails per week, which necessitated splitting the total number of eligible respondents \( n = 25,806 \) into two contact lists, the first with 15,000 participants and the second with 10,806 participants. Each participant received the same initial contact email, a reminder notice two weeks after the initial email, and a final reminder notice four weeks after the initial email. The first contact list of participant emails was sent on July 22, August 7, and August 27, 2019. The second list was sent emails on July 30, August 19, and September 4, 2019. The email timing was staggered throughout the day, so the initial email arrived at 8:00 am, the second email arrived at 11:45 am, and the third email arrived at 3:45 pm to maximize visibility and cover all possible shift workers. Qualtrics settings were adjusted so participants who finished their surveys were not sent subsequent emails. Data collection closed on September 30\(^{th}\), 2019, allowing the recipients from the final email sent on September 4\(^{th}\) an appropriate amount of time to complete the survey.

**Human Subjects**

Human Subject Research approval was obtained from the FSU Institutional Review Board (IRB) on July 11, 2019 before instigating any contact with potential participants. The online survey involved minimal risk to the participant, was anonymous, and participants were able stop the survey at any time. No incentive was offered to the participants based on their
completion of this survey, so the responses were purely voluntary. Contact information for the principal investigator and Project Advisor, including phone and email address, was provided within the initial email invitation, as well as the phone number, mailing, and email addresses for the FSU IRB Human Subjects Committee, if a participant chose to talk to someone other than the researcher(s). The DNP student was responsible for reporting any adverse incidents within the project to the IRB, as well as to the student’s major professor. For further information about the introductory email consent, see Appendix B.

**Data Analysis Plan**

The results from the survey data collection were analyzed and evaluated using IBM SPSS for Mac, Version 23. Responses to perceived readiness to prescribe and barrier related questions are on ordinal scales, so the median was used as the measure of central tendency. The majority of the response options used for data analysis were ordinal and assumptions for nonparametric statistics were met. Descriptive statistics were used in all three aims to evaluate the response options. When there were tests of association between two ordinal response options, such as in aim one between the five readiness variables and two groups of participants (those who said they did or did not prescribe controlled substances in their practice, No=0, Yes=1), the Kendall’s tau coefficient (τ) was used. Significance levels for all statistical tests were set at $\alpha = 0.05$.

**Results**

**Demographics**

From the public data portal, there were 25,548 email invitations sent out via Qualtrics, with 2,487 participants starting the survey, and 1,933 APRNs (7.6% of invitations) fully completing the survey. There were 83 APRNs who responded yes to the first question, confirming that they had previously completed this survey as part of Weissing’s (2019) research,
bringing the total number of participants who met inclusion and exclusion criteria to 1,850 APRNs. The average age of the participants was 49 years old ($n = 1785, SD = 11.67$ years; Table 1), with 11.7 years practicing clinically as an APRN ($n = 1847, SD = 10.1$ years), 88.0\% females ($n = 1625$), and over half of the APRNs reporting they planned to retire more than 10 years from now (57.4\%, $n = 1057$). The majority of the respondents worked full time, or greater than 32 hours per week, (76.9\%, $n = 1422$), had a master’s degree (78.5\%, $n = 1450$), and worked in urban areas (76.4\%, $n = 1413$). The top five clinical practice areas were adult primary care at 23.8\% ($n = 440$), family primary care at 19.8\% ($n = 367$), pain management specialty care at 13.7\% ($n = 254$), geriatrics primary care at 11.4\% ($n = 211$), and acute care specialty at 10.8\% ($n = 200$). When asked how often a physician is on site to discuss patient problems, 42.7\% of APRNs reported “nearly always” or more than 75\% of the time ($n = 789$), and the most frequently selected option for the number of patients seen per week was 16-30 patients (17.7\%, $n = 326$).

Overall, two years post-legislative change, 55.2\% of APRNs have DEA registration and are able to utilize their prescriptive authority for scheduled II-IV substances ($n = 1021$). There were 44.7\% of APRNs ($n = 826$) who reported no DEA registration. Within the total sample, 59.1\% of participants currently prescribe controlled substances ($n = 1093$), with 40.5\% ($n = 749$) choosing not to prescribe scheduled II-IV medications.

\footnote{This gender split reflects known patterns among Florida, as one large study (> 20,000 respondents) found that of Florida nurse practitioners who provided information on their sex, 84.9 \% indicated they were female and 15.1\% male (Kaiser Family Foundation, 2020).}
### Table 1

**Summary of Participant Demographics**

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<th>Gender</th>
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<th>%</th>
<th>Work week</th>
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<th>%</th>
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<td>Native Alaskan/American Indian</td>
<td>4</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>84</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>29</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>n</th>
<th>%</th>
<th>Highest level of education</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>196</td>
<td>10.6</td>
<td>Associates/Diploma</td>
<td>15</td>
<td>0.8</td>
</tr>
<tr>
<td>Urban</td>
<td>1413</td>
<td>76.4</td>
<td>Bachelors</td>
<td>32</td>
<td>1.7</td>
</tr>
<tr>
<td>Both</td>
<td>225</td>
<td>12.2</td>
<td>Masters</td>
<td>1450</td>
<td>78.5</td>
</tr>
<tr>
<td>Missing</td>
<td>16</td>
<td>0.8</td>
<td>Doctorate</td>
<td>351</td>
<td>19.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Retirement Status</th>
<th>n</th>
<th>%</th>
<th>Top 5 Clinical Areas⁴</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>53</td>
<td>2.8</td>
<td>Adult Primary Care</td>
<td>440</td>
<td>23.8</td>
</tr>
<tr>
<td>In 1-2 years</td>
<td>89</td>
<td>4.8</td>
<td>Family Primary Care</td>
<td>367</td>
<td>19.8</td>
</tr>
<tr>
<td>In 3-5 years</td>
<td>211</td>
<td>11.4</td>
<td>Pain Management</td>
<td>254</td>
<td>13.7</td>
</tr>
<tr>
<td>In 6-10 years</td>
<td>274</td>
<td>14.8</td>
<td>Geriatrics Primary Care</td>
<td>211</td>
<td>11.4</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>1060</td>
<td>57.4</td>
<td>Acute Care Specialty</td>
<td>200</td>
<td>10.8</td>
</tr>
<tr>
<td>Undecided</td>
<td>161</td>
<td>8.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Relationship with Physician ²   | n    | %   | Florida’s Reputation & Impact on Prescribing | n    | %   |
| Equal Colleagues               | 750  | 35.0| Not at all                              | 792  | 43.3|
| Hierarchical/Supervisory       | 513  | 23.9| A little                                 | 216  | 11.8|
| No physician in practice       | 55   | 2.6 | Somewhat                                 | 300  | 16.4|
| No physician on site           | 191  | 8.9 | Moderately                               | 186  | 10.2|
| Medical Director overseeing    | 520  | 24.3| Very                                    | 187  | 10.2|
| Other                          | 114  | 5.3 | Extremely                               | 150  | 8.2 |

---

² Participants could select multiple options

⁴ Participants could select more than one option
Perceived Readiness to Prescribe

The first aim evaluated APRNs’ perceived readiness for prescribing schedule II-IV substances and specifically examined five variables: graduate education preparedness, global preparedness, continuing education hours, continuing education preparedness, and global comfort with prescribing. We first examined this aim by evaluating what preparation APRNs had for prescribing controlled substances and how well they felt this education prepared them to prescribe. The most common educational program for APRN preparation was master’s (74.5%, \( n = 1597 \)), followed by post-master’s (12.3%, \( n = 264 \)), certificate (7.2%, \( n = 155 \)), and on-the-job training (3.1%, \( n = 67 \)), with participants being able to check all options that applied. APRN responses indicated that 26.3% felt very or extremely well prepared to prescribe from their graduate education (Table 2).

Second, we examined the length of continuing education hours specific to controlled substance prescribing: 26.3% of the APRNs took three hours (\( n = 481 \)), 24.3% took four to seven hours (\( n = 444 \)), and 35.6% took eight or more hours of continuing education (\( n = 653 \)). When asked to rate how well the continuing education prepared them to prescribe controlled substances, 19.9% selected little or not at all (\( n = 361 \)) and 28.1% reported feeling very or extremely well prepared by their continuing education (\( n = 511 \); Table 2).

We also examined overall feelings of preparedness and comfort with prescribing schedule II-IV substances. With comprehensive reports of preparedness, 51.3% of APRNs indicated that they felt very or extremely prepared to prescribe (\( n = 933 \)), while only 11.7% reported feeling a little or not at all prepared (\( n = 212 \)). Reports of comfort were similarly distributed, with 45.7% reporting very or extremely comfortable to prescribe (\( n = 834 \)), while only 14.0% reported feeling a little or not at all comfortable (\( n = 255 \); Table 2).
To further explore feelings of readiness to prescribe, we examined the associations between various education variables and feelings of preparedness to prescribe. When APRNs ranked graduate program preparedness highly, there was a significantly higher relationship to feelings of perceived preparedness ($\tau = .320, p < .001$) and perceived confidence ($\tau = .282, p < .001$) with controlled substance prescribing. Nurse practitioners who completed more continuing education hours reported increased feelings of preparedness ($\tau = .418, p < .001$) and greater perceived comfort with prescribing ($\tau = .324, p < .001$). APRNs who reported increased overall preparation were more likely to take longer continuing education courses ($\tau = .302, p < .001$) and feel more prepared by the continuing education courses ($\tau = .367, p < .001$). Additionally, when APRNs reported increased feelings of overall preparation they also felt more comfortable prescribing controlled substances ($\tau = .703, p < .001$).
### Table 2

*Feelings of Controlled Substance Prescribing Readiness*

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graduate Program</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorly</td>
<td>422</td>
<td>23.0</td>
</tr>
<tr>
<td>Somewhat well</td>
<td>374</td>
<td>20.4</td>
</tr>
<tr>
<td>Moderately well</td>
<td>303</td>
<td>16.5</td>
</tr>
<tr>
<td>Very well</td>
<td>282</td>
<td>15.4</td>
</tr>
<tr>
<td>Extremely</td>
<td>200</td>
<td>10.9</td>
</tr>
<tr>
<td>Too long ago to recall</td>
<td>254</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Continuing Education</strong></td>
<td>1819</td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td>104</td>
<td>5.7</td>
</tr>
<tr>
<td>A little</td>
<td>257</td>
<td>14.1</td>
</tr>
<tr>
<td>Somewhat</td>
<td>437</td>
<td>24.0</td>
</tr>
<tr>
<td>Moderately</td>
<td>510</td>
<td>28.0</td>
</tr>
<tr>
<td>Very</td>
<td>366</td>
<td>20.1</td>
</tr>
<tr>
<td>Extremely</td>
<td>145</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Comfort with Prescribing</strong></td>
<td>1824</td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td>136</td>
<td>7.5</td>
</tr>
<tr>
<td>A little</td>
<td>119</td>
<td>6.5</td>
</tr>
<tr>
<td>Somewhat</td>
<td>294</td>
<td>16.1</td>
</tr>
<tr>
<td>Moderately</td>
<td>441</td>
<td>24.2</td>
</tr>
<tr>
<td>Very</td>
<td>534</td>
<td>29.3</td>
</tr>
<tr>
<td>Extremely</td>
<td>300</td>
<td>16.5</td>
</tr>
</tbody>
</table>
Prescribing Barriers

The second aim for this project identified barriers to practice that have come from APRNs prescribing controlled substances. First, we examined how common it was for APRNs to prescribe controlled substances. A majority of participants said prescribing controlled substances was part of their practice (59.1%, \( n = 1093 \)). Participants who indicated prescribing schedule II-IV medications was not part of their practice were asked to clarify why not from a list of 11 possible options. Of those, (33.9%, \( n = 254 \); Table 3) indicated that the most frequently selected barrier was they did not want to prescribe controlled substances, but a substantial proportion indicated that either an MD in their practice is responsible for writing prescriptions for scheduled II-IV drugs (19.4%, \( n = 227 \)) or their practice did not allow the APRN to prescribe controlled substances (19.4%, \( n = 227 \)). Thirteen percent of APRNs (\( n = 97 \)) who do not prescribe controlled substances reported they did not want to pay the cost for DEA registration.

We also considered other barriers to practice, such as support from colleagues, dealing with drug seeking patients, or risk of disciplinary actions when prescribing controlled substances, particularly in the context of treating acute or chronic pain conditions. Slightly more than one-quarter of APRNs surveyed who did not prescribe controlled substances reported “very little” perceived risk of disciplinary action when treating patients with acute pain (26.7%, \( n = 493 \)) and 21.7% reported “some” risk (\( n = 401 \)). But, when asked about the risk of discipline prescribing for patients with chronic pain, 24.1% (\( n = 445 \)) reported “a great deal” of risk and 21.8% (\( n = 404 \)) reported “moderate” risk. When evaluating support from colleagues regarding prescribing schedule II-IV substances to patients, 36.2% of APRNs (\( n = 670 \)) reported having a great deal of support; 15.1% a moderate amount of support (\( n = 280 \)); and 14.1% of APRNs (\( n = 260 \)) reported receiving no support. When investigating the difficulty of caring for a patient who
exhibits “drug seeking behaviors” versus a patient who is seeking unnecessary medical interventions, 37.5% of participants reported that caring for these patients was about the same ($n = 694$).
Table 3

Reported barriers to practice for those APRNs who do not prescribe

<table>
<thead>
<tr>
<th>Barriers</th>
<th>n</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not want to prescribe any controlled substances</td>
<td>254</td>
<td>33.9</td>
</tr>
<tr>
<td>MD writes prescriptions for schedule II-IV drugs</td>
<td>227</td>
<td>30.3</td>
</tr>
<tr>
<td>Practice setting does not allow prescribing controlled substances</td>
<td>227</td>
<td>30.3</td>
</tr>
<tr>
<td>Developed a practice that does not include schedule II-IV substances</td>
<td>120</td>
<td>16.0</td>
</tr>
<tr>
<td>Unwilling to pay for a DEA number</td>
<td>97</td>
<td>13.0</td>
</tr>
<tr>
<td>Employer created barriers to prescribing II-IV drugs</td>
<td>74</td>
<td>9.9</td>
</tr>
<tr>
<td>Ambivalent about prescribing controlled substances</td>
<td>48</td>
<td>6.4</td>
</tr>
<tr>
<td>Lack the expertise to prescribe controlled substances</td>
<td>44</td>
<td>5.9</td>
</tr>
<tr>
<td>Concerned about the potential for disciplinary action by state/federal</td>
<td>43</td>
<td>5.7</td>
</tr>
<tr>
<td>regulators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concerned about my skills for dealing with drug seeking behavior</td>
<td>28</td>
<td>3.7</td>
</tr>
<tr>
<td>APRN write prescriptions for schedule II-IV drugs</td>
<td>12</td>
<td>1.6</td>
</tr>
</tbody>
</table>
Impacts to Practice

The third and final aim evaluated the perceived impacts of controlled substance prescribing among APRNs who indicated that prescribing controlled substances was part of their practice (n = 1093). Participants were able to select any or all of the 10 options that applied to their practice, so percentages sum to more than 100%. The three most selected response options for impacts to practice were the ability to efficiently meet patient’s needs (62.3%, n = 713), greater sense of autonomy (57.0%, n = 623), and relief of required physician signatures on all schedule II-IV substances (53.1%, n = 580; Table 4).
### Table 4

**Impacts to Practice by APRNs who prescribe controlled substances**

<table>
<thead>
<tr>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>More efficiently meets patient needs</td>
</tr>
<tr>
<td>Greater sense of autonomy</td>
</tr>
<tr>
<td>Relief of required physician signatures on all schedule II-IV substances</td>
</tr>
<tr>
<td>Increased access to care for patients</td>
</tr>
<tr>
<td>Independently manage patients</td>
</tr>
<tr>
<td>More time effective</td>
</tr>
<tr>
<td>Affirms prescriber's knowledge and skills</td>
</tr>
<tr>
<td>Increased professional liability</td>
</tr>
<tr>
<td>Decreased expense to the patient</td>
</tr>
<tr>
<td>Caring for more chronic pain patients</td>
</tr>
<tr>
<td>Other (free text response option available)</td>
</tr>
</tbody>
</table>
Discussion

This quantitative project evaluated the perceptions of APRNs from across the state of Florida post-legislative changes granting prescriptive authority for schedule II-IV substances. The specific aims focused on APRN perceived readiness to prescribe, the barriers faced by those who are not prescribing controlled substances, and the impacts that prescribing has made for the APRNs who do utilize schedule II-IV drugs in practice. The purpose was to better understand the factors that influence controlled substance prescribing behaviors after the 2017 statutory changes to determine ways to reduce any restrictions to APRNs fully embracing this prescriptive authority.

To understand the Florida landscape after 2017 legislative changes, the initial evaluative question asked, “are Florida APRNs utilizing the prescriptive authority permitting them to write prescriptions for schedule II-IV substances?” This project found that 55.2% of APRNs in Florida have DEA registration, allowing them to prescribe controlled substances, with 59.1% of APRNs reporting that they choose to use schedule II-IV substances in their practice. While it is encouraging that over half of Florida APRNs have obtained DEA registration two years after the legislation changed, this number is lower than the 77% of respondents who had obtained this privilege two years after these regulatory changes in Washington state. The results are comparable to Florida due to the fact that at the time the data was collected in 2003, Washington APRNs were still required to have a joint practice agreement with MDs (Kaplan et al., 2006). Despite the 16-year difference between the data collection of this DNP project and the Washington sample, it is interesting to note that APRNs across the state of Florida are less likely to have DEA registration. However, this was not the case when Florida APRNs were surveyed within two professional nurse practitioner organizations. Results in this population showed that
83.5% of APRNs \((n = 227)\) were utilizing controlled substances in their practice and 81.6% \((n = 222)\) had DEA registration (Weissing, 2019). These findings were likely elevated due to nurse practitioners within organizations being more informed of legislative changes or proactive with advancing APRN practice autonomy.

**Perceived Readiness to Prescribe**

Prior to the 2017 legislative change, the evidence strongly implicated a gap in knowledge and confidence among Florida APRNs (Craig-Rodriguez et al., 2017). Regardless of years of experience or educational preparation, there was a significant gap in Florida APRN readiness to prescribe schedule II-IV substances when there was no previous preparation in controlled substance prescribing or prior DEA registration (Craig-Rodriguez, 2016). Where there may have been gaps, results revealed that 51.3% \((n = 933)\) of APRNs felt very or extremely prepared and that 45.7% \((n = 834)\) felt very or extremely comfortable to prescribe controlled substances two years post legislative implementation. The five readiness to prescribe variables used in the tests of association support APRNs in Florida utilizing this prescriptive authority with comfort and confidence in their prescribing. While there may have been discomfort in this transition of new skill acquisition, it appears that some Florida APRNs leaned on previous learning strategies to reduce feelings of inadequacy and adjust to this new prescriptive autonomy (Bryczynski & Mackavey, 2019).

Florida APRNs proactively demonstrated a desire to bridge this knowledge gap in prescribing with almost 60% of the respondents \((59.9\%, n = 1097)\) taking longer courses than the state mandated minimum of three hours. This can further be demonstrated by the fact that longer continuing education hours resulted in APRNs expressing increased feelings of preparedness as well as comfort with prescribing after completing the courses. A possible rationale for Florida
APRNs taking more CE hours than required could be attributed to a desire to mitigate any concerns brought about by Florida’s tarnished reputation with opioid prescribing. As APRNs continue to advance their knowledge in this area, a goal would be to foster interprofessional educational experiences focused on improving the health care delivery of controlled substances in patient care.

An interesting finding within preparedness to prescribe was that a substantial minority of the APRNs felt their graduate training poorly prepared them to prescribe controlled substances (22.8%, n = 422), while only 26.1% felt very or extremely well prepared, despite the majority of participants having master’s degrees. Compared to Washington’s longitudinal study five years post legislative change, 22% of their respondents felt poorly prepared based on their graduate education, while 25% perceived their education prepared them well or extremely well (Kaplan et al., 2010). Since Washington collected their data in 2006, there have been multiple recommendations and guidelines published on controlled substance prescribing, including educational preparation in line with the CDC guidelines on prescribing opioids (Dowell et al., 2016). When compared to Washington, the use of these guidelines and implementation into Florida graduate education programs may have accelerated the readiness of APRNs two years after the legislation change as opposed to five years later. It is also important to note that those who rated their graduate educational program preparation higher, also were more likely to have improved feelings of perceived preparedness and confidence with prescribing. Further research is needed to evaluate educational programs implementation of controlled substance curriculum into nursing graduate programs as Florida APRNs prescribing of these substances continues to evolve.

**Barriers to Practice**
Despite the ability to prescribe controlled substances in Florida, prescribing barriers continue to persist. Over forty percent of the respondents reported that prescribing scheduled II-IV substances was not part of their practice. An encouraging observation was that only 5.9% reported that a barrier to prescribing was due to a lack of expertise with these substances, but on the other hand, the most frequent barrier selected was that the APRN did not want to prescribe controlled substances (33.9%, n = 254). The lack of desire to prescribe these substances is similar to the data collected in Washington at the same time point when 29.6% reported “no desire to write schedule II-IV drugs” (Kaplan et al., 2006). Even five years after the legislative change in Washington state, there were still 40% of APRNs who reported they did not want to prescribe controlled substances as part of their practice (Kaplan et al., 2010). These numbers can be encouraging to Florida leaders and APRNs who are in support of this transition in prescribing.

Impacts to Practice

Analysis showed that APRNs who are now prescribing controlled substances have found it making a difference, with participants identifying multiple impacts to practice. APRNs who prescribe controlled substances in their practice felt prescribing controlled substances “more efficiently meets patient’s needs.” The frequency of this response can be supportive of the movement towards APRNs obtaining more practice autonomy moving forward.

Based on what history tells us, the role transition to full prescriptive authority will evolve in a stepwise fashion. Prior studies underscored the importance of supporting APRNs throughout this transition, which may take several years (Craig-Rodriguez et al., 2017; Kaplan et al., 2006, 2010; Kaplan & Brown, 2004). In 2005, over two years after Washington legislation changed regarding controlled substance prescribing there were 13 states where APRNs were able to prescribe independent of physician involvement (Kaplan et al., 2006). Two years after Florida
legislation change in 2017, there were 22 states with this privilege and it remains the same today (American Academy of Nurse Practitioners, 2019). Multiple findings suggest there is gradual advancement towards autonomous practice in Florida, such as obtaining and utilizing controlled substance prescribing, but the impacts that were reported will continue to evolve since Florida APRNs have only been able to use this privilege for two years.

**Limitations**

Several study limitations were present in this project. First the use of a convenience sample and an online survey, likely introduced self-selection bias, potentially limiting the representativeness of the sample. Although we tried to select broadly by using the large number of APRNs available via the free and easily accessible Florida Health Care Public Data Portal (Florida Department of Health, 2019), self-selection into web-based surveys is based in part on demographic factors in both lay health professional samples (Lusk et al., 2007). Therefore, we cannot assume that our sample is a representative sample of all Florida APRNs, let alone all APRNs in the United States. Nevertheless, the survey was able to portray the APRNs responses who did participate, providing information that was previously unavailable regarding Florida APRNs utilization of controlled substance prescribing after the legislative changes in 2017.

The study was also limited by a response rate of 7.6%. This number is lower than the 10.8% response rate of Florida APRNs recorded prior to controlled substance prescriptive authority being obtained (Craig-Rodriguez, 2016). These low response rate numbers are consistent with an overall decline in response rates over the last two decades in the various forms of data collection (Kohut et al., 2012). One example of this decline is visible with Pew Research, a large US-based public data polling company, who found that their telephone survey response rate fell from 36% in 1997 to only 9% in 2012 (Kohut et al., 2012). While research has been
done to improve web based survey collection from the general population, as well as from specific groups such as university students, educators, and employer populations (Fan & Yan, 2010), there is a limited amount of published literature specific to nursing or APRNs in regard to the optimal means of data collection techniques for this population. Future research might consider applying best practices for data collection among physicians (e.g. VanGeest et al., 2007) to improve response rates, for example, by providing monetary incentives for participation.

Additionally, there were 6,826 APRNs with active and clear licenses in Florida who were unable to participate in the study because there was no available email address in the public data portal. Using a mixed-methods approach, possibly through the implementation of text messaging notifications using telephone numbers obtained from the public data portal, would have potentially bolstered the number of available participants.

The most prominent limitation of our study is our reliance on self-report, retrospective data as to how APRNs’ practice has changed as a result of prescriptive authority. Self-report data is subject to a wide variety of influences, including memory errors, self-serving biases, and socially desirable responding (Paulhus & Vazire, 2007). Future work should examine trends in treatment practices across legislative changes using more objective measures, such as chart review or insurance billing logs.

Conclusions

The project results revealed that Florida APRNs are utilizing their prescriptive authority for scheduled II-substances. While the utilization numbers from the statewide survey are lower than previously reported, APRNs who are using controlled substances in their practice are reporting positive impacts on their practice such as more efficiently meeting patient needs,
greater sense of autonomy, and relief from physician signatures for these prescriptions. The results also revealed that the most common barriers were APRNs not wanting to prescribe controlled substances, MD writing prescriptions, and the practice setting not allowing APRNs to prescribe controlled substances. APRNs in Florida continue to fulfill the educational requirements and are reporting improvement in feelings of preparedness. Results suggest, however, that improvements can and should be made in the delivery of controlled substance education in the graduate curriculum. The outcomes from this project support the need for continual longitudinal research to evaluate whether similar barriers and impacts persist over time as more APRNs in Florida embrace this role transition to controlled substance prescribing, and when enacted, full practice authority.
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Appendix A: Survey Instrument
Barriers and Implications of Controlled Substance Prescribing for Florida APRNs

1. This is a survey looking at the barriers and implications of controlled substance prescribing for Florida APRNs. This study was sent out to members of the Florida Association of Nurse Practitioners (FLANP) and Florida Nurse Practitioner Network (FNPN) between January 2019 and June 2019. Please indicate if you have previously completed this survey:
☐ Yes, I have already completed this survey through my FLANP or FNPN membership.
☐ No, I have not previously completed this survey.

Section I — Current Practice

2. What are your areas of APRN certification? Check all that apply.
☐ Adult Acute care
☐ Adult-Gerontology Acute Care
☐ Adult-Gerontology Primary Care
☐ Emergency
☐ Family
☐ Neonatal
☐ Nurse anesthetist
☐ Nurse midwife
☐ Palliative/Hospice
☐ Other (please specify) ________________________________

3. How many total years have you practiced clinically as an APRN? ________

4. Approximately when do you plan to retire?
☐ 2019
☐ In 1-2 years
☐ In 3-5 years
☐ More than 10 years from now
☐ Undecided

5. In a typical week, how many total hours do you work as an APRN?
☐ Full time (greater than 32 hours per week)
☐ Part time (less than 32 hours per week)
☐ I am currently not working

6. In what type of facility do you practice? Check all that apply.
☐ Private office practice
☐ Community clinic
☐ Correctional facility
☐ Health department
☐ Health maintenance organization
☐ Home care agency
☐ Hospice
☐ Hospital-based inpatient unit
☐ Hospital-based outpatient clinic (not an ED)
☐ Hospital emergency department
☐ Hospital obstetrics
☐ Hospital operating room
☐ Hospital—other (please specify) ________________________________

7. Is the facility in which you practice rural or urban? Rural is defined as a community with less than 25,000 residents.
☐ Rural
☐ Urban
☐ Both

8. Check the term(s) below that best describe(s) your clinical practice. Check all that apply.

[ ] PRIMARY CARE
☐ Adult

[ ] SPECIALTY CARE
☐ Acute Care
☐ Cardiology
☐ Ob-gyn/women’s health
9. To your best estimate, what percentage of your clinical practice is primary care? ________________

10. In a typical **week**, how many patients do you see? ________________

**PLEASE ANSWER THE FOLLOWING QUESTIONS 11-14 BASED ON WHERE YOU PRACTICE THE MOST IF YOU HAVE MORE THAN ONE PRACTICE SITE.**

11. How often is a physician **present** on site to discuss patient problems as they occur?

- **Never** (0% of the time)
- **Seldom** (1%-25% of the time)
- **Sometimes** (26%-50% of the time)
- **Usually** (51%-75% of the time)
- **Nearly always** (76%-100% of the time)

12. What type of relationship do you have with the physician(s) in your practice? **Check all that apply.**

- Equal colleagues/no hierarchy
- Hierarchical/supervisory in which I must accept his/her clinical decision about the patients I see
- No physician in my practice
- No physician on site
- S/he is the medical director who oversees all of our practice and I am accountable to the medical director, as are all other providers
- Other (please describe) ________________

13. Please describe the characteristics of the supervising physician protocol that you have. **Check all apply.**

- Formality only with no restrictions
- Had no contact with my collaborating physician other than to set up the collaborating protocol
- Paid a physician to set up a collaborating protocol
- Amount paid $__________
- Required a log of all controlled substances prescribed
  - Was this enforced? Yes No
- Required periodic chart review by the collaborating physician
  - Was this enforced? Yes No
- Collaborating protocol had additional requirements (please explain) ________________

14. What are your plans for future employment? **Check all that apply.**

- Plan to remain in my current position for the foreseeable future
- Plan to begin looking for another position within the next year
- In the process of looking for new employment
- Would like to leave my current position but am unable to do so
- Plan to retire in the next year
- Other Please explain ________________
Section II — Prescribing Practices

WHEN ANSWERING QUESTIONS 22-40, PLEASE THINK ABOUT PRESCRIBING SCHEDULE II-IV MEDICATIONS. EXAMPLES OF THESE TYPE OF MEDICATIONS INCLUDE:

~ Schedule II drugs such as methadone, hydromorphone (Dilaudid), meperidine (Demerol), oxycodone (OxyContin), fentanyl, Dexedrine, Adderall, and Ritalin

~ Schedule III drugs such as Tylenol with codeine, ketamine, anabolic steroids, testosterone

~ Schedule IV drugs such as Xanax, Soma, Darvon, Darvocet, Valium, Ativan, Talwin, Ambien, Tramadol

15. Do you have prescriptive authority for schedule II-IV medications?
   □ Yes □ No  ➔ Why not?
   □ In process of applying
   □ In process of meeting requirements
   □ MD writes all my prescriptions
   □ APRN writes all my prescriptions
   □ No meds used in my practice, e.g., therapist/analyst
   □ Other (please explain) ____________________________

16. Are you aware that as of 2017 Florida APRNs with prescriptive authority can prescribe schedule II-IV medications if they have a DEA number and a collaborating agreement with a physician?
   □ Yes □ No

17. Do you currently have a personal DEA number?
   □ Yes ➔  □ No  ➔ Why not? (Check all that apply.)
   □ I pay the fee myself
   □ My facility/practice pays the fee
   □ Have not yet applied but plan to do so
   □ Do not want to write for controlled drugs
   □ MD writes prescriptions for controlled drugs
   □ APRN writes prescriptions for controlled drugs
   □ Use an institutional DEA number
   □ Practice without controlled substances
   □ Practice without meds e.g., therapist/analyst
   □ Unwilling to pay the cost
   □ Other (please explain) ____________________________

18. Is prescribing schedule II-IV medications currently part of your individual practice?
   □ Yes ➔ To what extent?
   □ Very little □ Some □ Moderate amount □ A great deal
   □ No ➔ Why not? Check all that apply.
   □ Do not want to prescribe any controlled substances
   □ Lack the expertise to prescribe controlled substances
   □ Concerned about my skills for dealing with drug seeking behavior
   □ Concerned about the potential for disciplinary action by state/federal regulators
   □ Developed a practice that does not include schedule II-IV drugs
   □ Unwilling to pay for a DEA number
   □ MD writes prescriptions for schedule II-IV drugs
   □ APRN writes prescriptions for schedule II-IV drugs
   □ Employer created barriers to prescribing schedule II-IV drugs
   □ Ambivalent about prescribing controlled substances (please explain) __________________________
   □ Practice setting does not allow prescribing controlled substances (please describe) __________________________

19. Since APRNs have been able to prescribe controlled substances, do your patients receive more schedule II-IV medications?
   □ No □ A little more □ Somewhat more □ A moderate amount more □ A great deal more
20. In a typical **week**, how many times do you make a prescribing decision to use a non-controlled substance because you feel prescribing a specific schedule II-IV drug is **outside your area of expertise**?

- [ ] None
- [ ] 1-5
- [ ] 6-10
- [ ] 11-15
- [ ] 16-20
- [ ] 20+
- [ ] I practice without controlled substance prescribing

21. How well do you feel like your NP program education prepared you to prescribe schedule II-IV medications?

- [ ] Poorly
- [ ] Somewhat well
- [ ] Moderately well
- [ ] Very well
- [ ] Extremely well
- [ ] Too long ago to recall

22. In your opinion, what is the risk for disciplinary action by state or federal regulators when prescribing controlled substances for **chronic pain**?

- [ ] None
- [ ] Very little
- [ ] Some
- [ ] Moderate amount
- [ ] A great deal
- [ ] Don’t know

23. In your opinion, what is the risk for disciplinary action by state or federal regulators when prescribing controlled substances for **acute pain**?

- [ ] None
- [ ] Very little
- [ ] Some
- [ ] Moderate amount
- [ ] A great deal
- [ ] Don’t know

24. How much support do you experience from your practice colleagues to prescribe schedule II-IV controlled substances to patients (support may include things such as being able to ask questions or writing prescriptions for a patient)?

- [ ] None
- [ ] Very little
- [ ] Some
- [ ] Moderate amount
- [ ] A great deal
- [ ] N/A Solo practice

25. What is it like to work with patients whom you perceive to have “drug seeking behaviors” compared to working with patients who ask for care you perceive to be unnecessary such as lab tests, medications, or referrals. Drug seeking behavior is:

- [ ] A lot easier
- [ ] A little easier
- [ ] About the same
- [ ] A little harder
- [ ] A lot harder

26. How important is it for you to have the **authority to prescribe schedule II-IV medications for your patients**?

- [ ] Not at all
- [ ] A little
- [ ] Somewhat
- [ ] Moderately
- [ ] Very
- [ ] Extremely

27. Do you feel like the reputation Florida has for overprescribing controlled substances impacts your decision to prescribe controlled substances?

- [ ] Not at all
- [ ] A little
- [ ] Somewhat
- [ ] Moderately
- [ ] Very
- [ ] Extremely

28. How prepared do you feel to use controlled substances in managing your patients?

- [ ] Not at all
- [ ] A little
- [ ] Somewhat
- [ ] Moderately
- [ ] Very
- [ ] Extremely

29. How many hours of continuing education related to prescribing schedule II-IV controlled substance did you complete? Please select one.

- [ ] Less than 3 hours
- [ ] 3 hours
- [ ] 4 – 7 hours
- [ ] 8 hours
- [ ] Greater than 8 hours

30. How well do you feel the continuing education course prepared you to prescribe controlled substances?

- [ ] Not at all
- [ ] A little
- [ ] Somewhat
- [ ] Moderately
- [ ] Very
- [ ] Extremely

31. Overall, how comfortable do you feel in prescribing controlled substances?

- [ ] Not at all
- [ ] A little
- [ ] Somewhat
- [ ] Moderately
- [ ] Very
- [ ] Extremely

32. What would help you in prescribing controlled substances? **Check all that apply.**

- [ ] Decreasing DEA cost
- [ ] Additional knowledge required
- [ ] Remove or reduce protocol requirements
- [ ] Provide skills on how to deal with “drug seeking” patients
- [ ] Reduce quantity limitations for certain medications
- [ ] Other (please explain) ____________________________
33. How has prescribing schedule II-IV controlled substances impacted your practice? Check all that apply.
- [ ] More efficiently meets patient needs
- [ ] Affirms prescriber’s knowledge and skills
- [ ] More time effective
- [ ] Increased access to care for patients
- [ ] Decreased expense for patients
- [ ] Independently manage patients
- [ ] Greater sense of autonomy
- [ ] Relief of required physician signatures on all schedule II-IV substances
- [ ] Increased professional liability
- [ ] Caring for more chronic pain patients
- [ ] Other (please explain) __________________________

34. We would like to offer you a chance to describe ways in which having prescriptive authority for all legend and controlled drugs has changed your practice. Please feel free to share any comments here:
__________________________________________________________________________________________
__________________________________________________________________________________________

Section III — Background Information

35. What is your highest educational attainment?
- [ ] Associate degree
- [ ] Diploma
- [ ] Baccalaureate – Nursing
- [ ] Baccalaureate – Non-nursing
- [ ] Master’s – Nursing
- [ ] Master’s – Non-nursing
- [ ] Doctorate – Nursing
- [ ] Doctorate – Non-nursing

36. What type of educational program did you attend for your APRN preparation? Check all that apply.
- [ ] Master’s
- [ ] Post-master’s
- [ ] Certificate
- [ ] On-the-job training
- [ ] Other (please explain) __________________________

37. What year did you complete your initial APRN education? (e.g., 1994) __________

38. What is your gender?  [ ] Female  [ ] Male

39. What is your age? __________

40. What is your race/ethnicity?
- [ ] White
- [ ] African-American
- [ ] Asian
- [ ] Native Alaskan/American Indian
- [ ] Pacific Islander
- [ ] Other

41. Are you Hispanic?  [ ] Yes  [ ] No

Thank you so much for completing this questionnaire!
Appendix B: Introductory Email

Dear Advanced Practice Registered Nurse:

We are conducting research on Florida APRNs’ experiences with prescribing or providing schedule II-IV controlled substances.

This questionnaire is a follow-up to our 2014 Florida Advanced Registered Nurse Practitioner Survey. The study explores professional, legal, educational and organizational factors that influence nurse practitioners’ experiences with prescribing or providing schedule II-IV controlled substances. We are asking for your participation in the study, regardless of whether you participated in the first survey.

The data from this study will be used to provide you and other APRNs with accurate information for decision-making related to schedule II-IV controlled substances. It will also be used to change the legal and regulatory environment as well as to improve nurse practitioner education. This information will be shared with advanced practice nurses in other states who can benefit from our experience in Florida. We may use the information obtained in this study in the future for two purposes: to compare Florida nurse practitioners with nurse practitioners in other states and to survey Florida APRNs to see if their experiences change over time.

Participation in the survey is completely voluntary and your return of the questionnaire will be interpreted as your consent to participate. By clicking the next button at the bottom of the page, you are giving consent to participate in the study and will be taken to the survey. If you do not wish to participate, please close this internet browser window to leave the study. You may choose to not respond to any question. Identifying information will not be collected to ensure confidentiality and anonymity.

The data collected in this study will be kept confidential to the extent permitted by law. Collected data will be coded and de-identified through FSU’s Qualtrics survey software. Email and IP addresses will not be linked to survey responses. Only members of the research team will have access to data. The data you provide will only be used for the specific research purposes of this study. Responses will be anonymous and reported only in aggregate with the responses of other APRNs.

The questionnaire should take about 10 minutes to complete. If you have any questions or concerns, contact us by email at amr18cp@my.fsu.edu and acraigrodriguez@fsu.edu or call Annie Reynolds at 541-965-1274. You may also contact Florida State University Human Subjects office by email at humansubjects@fsu.edu or via phone at 850-644-7900. Please remember that we cannot guarantee the confidentiality of any information sent by e-mail.

We would be deeply grateful if you would take the time to complete our survey.

Thank you for your support of advanced practice nursing!

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