

Opioid Use Disorder Practice by Licensure Category in North Carolina

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BACKGROUND Nurse practitioners, physician assistants, and certified nurse midwives, collectively known as advanced practice providers (APPs), are critical members of the opioid use disorder (OUD) treatment workforce. Few studies compare the OUD treatment practice patterns of APPs relative to physicians.

METHODS In this cross-sectional study, we distributed a survey examining general substance use disorder (SUD) and OUD-specific treatment practices to all licensed physicians and APPs in North Carolina, resulting in a sample of 332 respondents. Respondents were asked about screening, referrals, and Drug Enforcement Administration (DEA) X-waiver status. Waivered providers were asked about prescribing buprenorphine. Differences in practice patterns by provider type were examined using descriptive statistics and chi-squared tests.

RESULTS Practice patterns were similar between APPs and physicians; however, more APPs reported screening their patients for SUDs (83.3% versus 69.4%, $p = .0045$). Of the providers who were waived to prescribe buprenorphine, APPs and physicians were equally likely to be currently prescribing buprenorphine (75.8% versus 77.1%, $p = .8900$).

LIMITATIONS This was a descriptive cross-sectional study using self-report data from a purposive sample and may not be representative of all providers.

CONCLUSIONS Our results describe practice patterns for APPs and physicians and differences that may be reflective of regulations and therapeutic approaches. Similarities in obtaining an X-waiver and prescribing buprenorphine suggest that reducing restrictions on APPs may result in a larger treatment workforce.

I ncreasing access to medications for opioid use disorder (MOUD) is an effective measure for addressing rising opioid-related deaths [1]. However, the limited supply of providers eligible to prescribe MOUD has been implicated as a barrier to treating opioid use disorder (OUD) despite increases in insurance coverage and an expansion of training [2, 3]. Beginning with the passage of the Comprehensive Addiction and Recovery Act of 2016, nurse practitioners, certified nurse midwives, and physician assistants, collectively referred to as advanced practice providers (APPs), have had a pivotal and cost-effective role in addressing these service gaps related to treating OUD and other substance use disorders (SUD), particularly in rural areas [4–6]. However, current requirements for obtaining the Drug Enforcement Administration (DEA) X-waiver required to prescribe buprenorphine products for OUD (hereafter, buprenorphine) may limit the capacity of APPs to treat OUD effectively, especially relative to physicians. Currently, APPs must complete at least 3 times as much training as physicians (24 hours versus 8 hours) to be eligible to apply for an X-waiver. Additionally, APPs are required to prescribe under the purview of a physician with an X-waiver in the majority of states [7].

A shortage or perceived lack of support from fellow providers has also been cited as a known barrier to APPs treating OUD [8, 9]. For states in which APPs are required to be supervised, such as North Carolina, waived APPs seeking to prescribe buprenorphine are currently required by federal law to be supervised by a waived physician. This effectively requires 2 providers to be waived for an APP to prescribe

buprenorphine, which explicitly places the ability for APPs to treat OUD at the discretion of their supervising physician. Furthermore, if treatment for OUD is not included as part of the collaborative practice agreement between an APP and their physician supervisor, then OUD treatment is implicitly excluded from their scope of work. There is evidence that these additional training and prescribing oversight requirements remain a deterrent to APPs obtaining waivers and prescribing buprenorphine [10]. These restrictions are in place even though research demonstrates that restrictions on APPs' scope of practice are not associated with improvements in the quality of care delivered and that nurse practitioners in particular are capable of producing similar health outcomes to physicians while incurring less cost and health care utilization [11, 12].

Given the established barriers that APPs face with regard to treating OUD, there may be differences in the OUD treatment practice patterns of APPs relative to physicians. A comparative description of these practice patterns may provide evidence to inform policies addressing barriers faced by APPs and may also serve as a baseline measurement for use in assessing the impact of any policy changes. The objective of the analysis presented here is to identify and describe

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patterns in general substance use disorder (SUD) screening, referral, and treatment practices between APPs and physicians in North Carolina. In particular, given the prevalence of OUD and disparities in treatment access, we present similarities and differences in OUD-specific treatment practices between physicians and APPs.

Methods

This study used data from a cross-sectional survey of physicians and APPs in North Carolina that was administered as part of a larger mixed-method study examining buprenorphine-dispensing attitudes and awareness among a range of stakeholders [13–17]. An advisory group of physicians and APPs treating OUD assisted with survey design. Confidential surveys were distributed in August 2020 and September 2020 via email to all physicians, physician assistants, nurse practitioners, and certified nurse midwives licensed in North Carolina using mailing lists provided by the North Carolina Medical Board and the North Carolina Board of Nursing (28,853 total emails). From that list, 11,149 providers opened the email (38.6%), and 709 (2.46%) opened the survey. This response rate is in line with the average response rate for email marketing campaigns in the United States (2.5%), especially given that some email addresses on the provided lists may no longer be in use [18]. Respondents who began but did not reach the end of the survey were excluded ($n = 21$). Qualtrics™ was used to collect responses from the participants who clicked on the survey link in the email and reached the end of the survey ($N = 332$). This study was found to be exempt from review by the institutional review board of the University of North Carolina at Chapel Hill.

The survey included questions about licensure type, which we used to group providers as physicians or APPs. Physicians included medical doctors (MD) and doctors of osteopathic medicine (DO). Providers were grouped based on the differential requirements for obtaining the X-waiver. The survey also collected age and self-reported gender as basic demographic characteristics. At the suggestion of the provider advisory group, the survey began with a selection of general questions about practices related to SUD, including if and when providers screen for SUD, if and where they refer for SUD treatment, and if they currently treat SUD. OUD-specific questions followed the general SUD questions, including whether they currently treat OUD, if they have completed an X-waiver training, if they received their waiver following the training, and if they currently prescribe buprenorphine. See Appendix 1 for the survey questions in

their entirety.

We calculated chi-squared tests with a cutoff of $p < .05$ to determine significance for differences between physicians and APPs. For each question, participants who had missing data were re-coded into a “Did Not Respond” category. Analyses and data management were conducted using SAS 9.4 (SAS Institute, Cary, NC).

Results

Sample characteristics are shown in Table 1. Of the 332 respondents who completed the survey, 48.8% ($n = 162$) were APPs and 51.2% ($n = 170$) were physicians. Our sample of APPs was primarily comprised of nurse practitioners (73.5%), followed by physician assistants (21.0%) and certified nurse-midwives ($< 1\%$). Physicians were almost entirely medical doctors (95.9%) with the remainder being doctors of osteopathic medicine (4.1%). The majority of APPs were aged 35–44 years (29.6%), while the majority of physicians were aged either 45–54 or 55–56 years (22.4% for both categories). This difference in the age distribution was significant ($p = .0008$). APPs predominantly self-reported their gender as female/feminine (75.9%), while most physicians reported their gender as male/masculine (52.4%). A portion of both physicians (2.94%) and APPs (2.47%) reported a gender other than masculine or feminine, such as nonbinary/genderqueer. This difference in gender identity by provider type was significant ($p < .0001$).

APPs were significantly more likely than physicians to screen for SUDs (83.3% versus 69.4%, $p = .0045$) and to refer for SUD treatment (68.5% versus 48.8%, $p = .0017$; Table 2). There was no difference between APPs and physicians regarding currently treating SUDs (37.7% versus 40.0%, $p = .9083$); however, of those who treat SUD, APPs are significantly less likely to treat OUD (54.1% versus 72.1%, $p = .0343$). A similar proportion of APPs and physicians completed X-waiver training (23.5% versus 29.4%, $p = .6491$), and there was no difference in the proportion of those who received their X-waiver after completing training (84.6% versus 96.0%, $p = .4717$). Of those who received the X-waiver, APPs and physicians were equally likely to be currently prescribing buprenorphine (75.8% versus 77.1%, $p = .8900$).

Discussion

APPs face several well-documented barriers to treating OUD relative to physicians. This study sought to describe differences in practice patterns between APPs and physicians to generate evidence for future policy development. Among respondents to our survey, APPs screen for SUDs more often, are more likely to refer patients for treatment, and are less likely to report treating OUD than physicians. APPs treat SUDs, complete X-waiver training, receive X-waivers, and prescribe buprenorphine as frequently as physicians. Our findings suggest that while there are some differences, APPs and physicians are generally similar in

APPENDIX 1 Survey Questionnaire

This appendix is available in its entirety in the online edition of the *NCMJ*.

TABLE 1.
Sample Demographics of Physician and APP Respondents in North Carolina

	Total		Physicians		APPs		p-value
	N	(%)	N	(%)	N	(%)	
Total	332	-	170	(51.20)	162	(48.80)	-
Licensure	-	-	-	-	-	-	-
MD	163	(49.10)	163	(95.88)	-	-	-
DO	7	(2.11)	7	(4.12)	-	-	-
NP	119	(35.84)	-	-	119	(73.46)	-
PA	34	(10.24)	-	-	34	(20.99)	-
CNM	9	(7.65)	-	-	9	(0.05)	-
Age	-	-	-	-	-	-	.0008
25-29	10	(3.01)	1	(0.59)	9	(5.56)	-
30-34	32	(9.64)	16	(9.41)	16	(9.88)	-
35-44	76	(22.89)	28	(16.47)	48	(29.63)	-
45-54	77	(23.19)	38	(22.35)	39	(24.07)	-
55-64	63	(18.98)	38	(22.35)	25	(15.43)	-
65-74	41	(12.35)	30	(17.65)	11	(6.79)	-
75+	5	(1.51)	4	(2.35)	1	(0.62)	-
Did not respond	28	(8.43)	15	(8.82)	13	(8.02)	-
Gender identity	-	-	-	-	-	-	< .0001
Man/masculine	111	(33.43)	89	(52.35)	22	(13.58)	-
Woman/feminine	184	(55.42)	61	(35.88)	123	(75.93)	-
Other ^a	9	(2.71)	5	(2.94)	4	(2.47)	-
Did not respond	28	(8.43)	15	(8.82)	13	(8.02)	-
Patient rurality	-	-	-	-	-	-	.0192
Mostly urban	47	(14.16)	28	(16.47)	19	(11.73)	-
Mostly rural	82	(24.7)	30	(17.65)	52	(32.10)	-
Mixed urban/rural	177	(53.31)	99	(58.24)	78	(48.15)	-
Did not respond	26	(7.83)	13	(7.65)	13	(8.02)	-

Note. Demographics of physicians and advanced practice providers in North Carolina responding to an email survey about substance use treatment practices.

^aThe category 'Other' included nonbinary/genderqueer, other, and prefer not to say.

CNM = Certified Nurse-Midwife; DO = Doctor of Osteopathic Medicine; MD = Medical Doctor; NP = Nurse Practitioner; PA = Physician Assistant

their practice patterns.

This study has methodological limitations worth considering. First, this study was limited to providers in North Carolina, and thus may not generalize beyond North Carolina. Second, the sample of respondents was a purposive sample and may not be representative of all providers. Third, this study was a cross-sectional study using self-report survey data. As such, future research is needed to examine how these patterns may vary over time. Additionally, the use of self-report is important for understanding provider perspectives; however, it does introduce the potential for positive responder bias in which providers may attempt to appear more favorable in their responses. Future studies should seek to examine buprenorphine prescription patterns using prescription claims data. Finally, although the demographic differences we found between the provider types are consistent with national statistics, we acknowledge that it is possible that they contribute to the differences in SUD treatment practices [10].

Our findings—more frequent screening, more referrals, and less treating OUD among APPs—may be attributable to

a combination of regulations and treatment approaches. We believe the differences we found in screening and referring patients for SUDs to be reflective of the supervision requirements for APPs in North Carolina. Prior work has shown that nurse practitioners in states with supervision requirements refer patients in general practice more than nurse practitioners in states without those requirements [11]. It seems reasonable that a similar difference would be found between APPs and physicians given that physicians have no such requirements. Future work to elicit the reasoning behind the rates of screening and referring is needed. The difference in treating OUD, which was not asked exclusively of those who received waivers for buprenorphine, may be reflective of practice differences in the use of other evidence-based interventions for OUD that do not rely on pharmacotherapy, such as contingency management [19]. Future research is needed regarding other treatment options currently being used in order to understand this difference.

Our finding that APPs and physicians were similar in terms of completing waiver training, receiving waivers, and prescribing buprenorphine is notable and encourag-

TABLE 2.
Substance Use Treatment Practices by Provider Type

	Total		Physicians		APPs		p-value
	N	(%)	N	(%)	N	(%)	
Total	332	(100)	170	(51.2)	162	(48.8)	-
Screen for SUD	-		-		-		.0045 ^a
Did not respond	2	(0.6)	1	(0.59)	1	(0.62)	-
No	77	(23.19)	51	(30)	26	(16.05)	-
Yes	253	(76.2)	118	(69.41)	135	(83.33)	-
If YES, when do you screen for SUD?	-		-		-		-
First intake	163	(64.43)	80	(67.8)	83	(61.48)	.2952
Based on family history	48	(18.97)	22	(18.64)	26	(19.26)	.9009
Annual/well-person exam	85	(33.6)	38	(32.2)	47	(34.81)	.6609
Every visit	81	(32.02)	37	(31.36)	44	(32.59)	.8334
When they mention something that raises a concern	150	(59.29)	68	(57.63)	82	(60.74)	.6150
Before prescribing a controlled substance	138	(54.55)	64	(54.24)	74	(54.81)	.9267
Do you refer patients for SUD?	-		-		-		.0017 ^a
Did not respond	5	(1.51)	4	(2.35)	1	(0.62)	-
It depends	77	(23.19)	46	(27.06)	31	(19.14)	-
No	56	(16.87)	37	(21.76)	19	(11.73)	-
Yes	194	(58.43)	83	(48.82)	111	(68.52)	-
If NO, why not?	-		-		-		.7120 ^a
Did not respond	6	(10.71)	3	(8.11)	3	(15.79)	-
Do not refer for any SUD-related services	43	(76.79)	29	(78.38)	14	(73.68)	-
No SUD treatment options in my area	7	(12.5)	5	(13.51)	2	(10.53)	-
If YES, where?	-		-		-		-
Psychiatrist	119	(61.34)	53	(63.86)	66	(59.46)	.5339
Behavioral health provider (e.g., Psychologist)	154	(79.38)	66	(79.52)	88	(79.28)	.9676
Comprehensive treatment program	92	(47.42)	39	(46.99)	53	(47.75)	.9165
Inpatient treatment	80	(41.24)	36	(43.37)	44	(39.64)	.6012
Outpatient treatment	128	(65.98)	56	(67.47)	72	(64.86)	.7048
Recovery programs (e.g., AA/NA)	120	(61.86)	48	(57.83)	72	(64.86)	.3183
Do you currently treat SUD?	-		-		-		.9083
Did not respond	10	(3.01)	5	(2.94)	5	(3.09)	-
No	193	(58.13)	97	(57.06)	96	(59.26)	-
Yes	129	(38.86)	68	(40)	61	(37.65)	-
If YES, do you treat OUD?	-		-		-		.0343
No	47	(36.43)	19	(27.94)	28	(45.9)	-
Yes	82	(63.57)	49	(72.06)	33	(54.1)	-
Completed waiver training	-		-		-		.6491
Did not respond	13	(3.92)	6	(3.53)	7	(4.32)	-
No	204	(61.54)	103	(60.59)	101	(62.35)	-
Started, but not completed	15	(4.52)	6	(3.53)	9	(5.56)	-
Yes	88	(26.51)	50	(29.41)	38	(23.46)	-
Don't know what this is	12	(3.61)	6	(2.94)	7	(4.32)	-
Waived after training	-		-		-		.4717
Did not respond	1	(1.14)	0	(0)	1	(2.63)	-
No	3	(3.41)	1	(2)	2	(5.13)	-
No, but intend to	2	(2.27)	1	(2)	1	(2.56)	-
Yes	81	(92.05)	48	(96)	33	(84.62)	-
Other	1	(1.14)	0	(0)	1	(2.63)	-
Are you currently prescribing buprenorphine for OUD?	-		-		-		.8900
Yes	62	(76.54)	37	(77.08)	25	(75.76)	-
No	19	(23.46)	11	(22.92)	8	(24.24)	-

Substance use disorder practice patterns by provider type for providers in North Carolina.

^aA Fisher's exact test was used due to unmet assumptions for Chi-Square.

AA = Alcoholics Anonymous; APP = Advanced Practice Provider (Nurse Practitioner, Physician Assistant, or Certified Nurse Midwife); OUD = Opioid Use Disorder; NA = Narcotics Anonymous; SUD = Substance Use Disorder; CNM = Certified Nurse-Midwife; DO = Doctor of Osteopathic Medicine; MD = Medical Doctor; NP = Nurse Practitioner; PA = Physician Assistant

ing. Consistent with findings in other states, our results suggest that APPs have readily accepted a role in treating OUD despite the greater training requirements for receiving an X-waiver and other scope-of-practice barriers they face [6, 10]. If policy efforts were made to reduce barriers for APPs wishing to treat OUD, it seems plausible that they may surpass physicians in the frequency with which they complete X-waiver training, obtain a waiver, and prescribe buprenorphine. This would have the benefit of not only increasing the available supply of providers who can effectively treat OUD but may also result in task shifting among the SUD treatment workforce, such that physicians can focus on patients with additional medical complexities [20]. Currently, there are some efforts in North Carolina and on a national level to reduce these barriers, especially relating to training requirements for obtaining an X-waiver [21, 22]; however, supervision requirements remain unaddressed despite evidence that twice as many nurse practitioners have waivers in states without a supervision requirement [23].

Conclusion

APPs are in a position to help address the impact of opioid-related deaths in this country and are fully capable of increasing MOUD prescribing in areas that currently lack and sorely need more treatment options. In North Carolina, the SUD- and OUD-specific treatment practice patterns are similar between APPs and physicians. Future research is needed to better understand the drivers of the differences identified in screening, referring, and treating OUD. The similar proportion of APPs and physicians who have completed X-waiver training, received an X-waiver, and are prescribing buprenorphine suggests that policy efforts to reduce barriers for APPs may result in a robust workforce of SUD treatment providers. NCMJ

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