Telemedicine prescribing: A national, cross-sectional survey of U.S. mental health care providers

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Abstract

Background: In the post-pandemic era, telemedicine continues to enable mental health care access for many people, especially persons living in areas with mental health care provider shortages. However, as lawmakers consider long-term policy decisions related to telemedicine, some have raised questions about the safety and appropriateness of prescribing via telemedicine, and whether there should be requirements for in-person evaluation, especially for controlled substances.

Objective: Our objective was to assess U.S. telemental health care provider perceptions of comfort and perceived safety in prescribing medications, including controlled substances, via telemedicine.

Methods: We conducted a web-based, cross-sectional survey of telemental health providers who prescribe via telemedicine, using non-probability, availability sampling of the TelehealthEngage research panel from February 13 to April 28, 2024. We used descriptive statistics, visualization, and thematic analysis to analyze results. We assessed differences in response distribution by provider licensure type (Physician v. Non-physician) and specialty (Psychiatry v. Non-psychiatry) using the Mann-Whitney U test.

Results: Overall, participants indicated high levels of comfort with prescribing via telemedicine, with 84% (102/115) of providers indicating they strongly agree with the statement indicating comfort in prescribing medications via telemedicine. However, participants indicated less comfort in prescribing if they have never seen a patient in-person, or if the patient is located out-of-state. Most participants indicated they can safely prescribe controlled substances via telemedicine, without having previously provided care to a patient in person. However, 14.8-19.1% of providers (by schedule) felt that they could rarely or never safely prescribe controlled substances. There were some differences in perception of comfort and safety by licensure and specialty. For scheduled medications, participants indicated the least perceived safety with schedule IV medications, and the most safety with schedule II and III medications.

Conclusions: These providers were highly comfortable prescribing both scheduled and unscheduled medications via telemedicine. Comfort and perceived safety with telemedicine prescribing varied somewhat by licensure type (Physician v. Non-physician) and Specialty (Psychiatry vs. Non-psychiatry). Perceived safety varied moderately for scheduled medications (controlled substances), especially for Schedule IV and Schedule V medications. Participants indicated use of adaptive strategies to prescribe safely depending upon the clinical context. In ongoing efforts, we are analyzing additional survey results and conducting qualitative research related to telemedicine prescribing. A strong understanding of prescriber perspectives and experience with telemedicine prescribing is needed to support excellent clinical practice and effective policy-making in the U.S.
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Keywords

telemedicine, prescribing, mental health, digital health, informatics, buprenorphine, ketamine

Word count: 3842

ABSTRACT

Background. In the post-pandemic era, telemedicine continues to enable mental health care access for many people, especially persons living in areas with mental health care

provider shortages. However, as lawmakers consider long-term policy decisions related to telemedicine, some have raised questions about the safety and appropriateness of prescribing via telemedicine, and whether there should be requirements for in-person evaluation, especially for controlled substances.

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unscheduled medications via telemedicine. Comfort and perceived safety with telemedicine prescribing varied somewhat by licensure type (Physician v. Non-physician) and Specialty (Psychiatry vs. Non-psychiatry). Perceived safety varied moderately for scheduled medications (controlled substances), especially for Schedule IV and Schedule V medications. Participants indicated use of adaptive strategies to prescribe safely depending upon the clinical context. In ongoing efforts, we are analyzing additional survey results and conducting qualitative research related to telemedicine prescribing. A strong understanding of prescriber perspectives and experience with telemedicine prescribing is needed to support excellent clinical practice and effective policy-making in the U.S.

BACKGROUND AND SIGNIFICANCE

During the COVID-19 public health emergency, the need for mental health services increased and telemedicine enabled critical access to care.[1,2] In the post-pandemic era, telemedicine continues to enable mental health care access for many people, especially persons living in areas with mental health care provider shortages.[3] However, as lawmakers consider long-term policy decisions related to telemedicine, some have raised questions about the safety and appropriateness of prescribing via telemedicine, and whether there should be requirements for in-person evaluation, especially for controlled substances.

Prior to the U.S. COVID-19 public health emergency declaration (PHE), most health care providers lacked telemedicine prescribing experience due to limited telemedicine adoption. Additionally, telemedicine-based prescribing of controlled substances was restricted during the pre-pandemic era, in compliance with the 2008 Ryan Haight Online Pharmacy Consumer Protection Act (Ryan Haight Act). Pursuant to the Ryan Haight Act, the U.S. Drug Enforcement Agency (DEA) required that providers conduct an in-person evaluation of patients, before prescribing controlled substances via telemedicine. This measure was intended to prevent health care providers from prescribing potentially harmful medications with only minimal and inadequate online interaction with a patient. During the PHE, temporary policy flexibilities enabled controlled substance prescribing without the requirement of an in-person evaluation. In part, this enabled crucial access to buprenorphine for opioid use disorder treatment. [4,5] Now, consumers and stakeholders are calling for new policy that enables continued access to mental health care and

substance use treatment, including medication-based treatment, via telemedicine.[6] The challenge is to develop evidence-based policy that supports safety while enabling critical healthcare access.

Current evidence is inconclusive but suggests that prescribing patterns can differ when care is provided via telemedicine vs. in-person care. A 2023 study at a single institution showed that orthopedic patients are prescribed higher doses (milligram morphine equivalent) of opioids via video telemedicine than during in-person visits. McCabe et al found that telemedicine is used less frequently than in-person visits for prescribing antibiotics.[7] However, other studies have shown little or no difference in prescribing patterns associated with telemedicine use.[8,9] These varied findings likely relate to differences in the clinical context for prescribing, including patient and provider characteristics, system-level factors, and/or the specific medications and their unique requirements for appropriate initiation and monitoring (and whether those requirements can be met via telemedicine). Evidence supporting safety and quality of telemedicine prescribing in mental health care is scarce, and also likely to be context dependent. However, a recent, large cohort study of healthcare claims data found no difference in safety or quality for telemedicine-based treatment vs. in-person treatment of opioid use disorder, including medication-based opioid use disorder treatment.[10]

Current provider perspectives and practices related to prescribing via telemedicine for mental/ behavioral health care are not well-characterized. However, a better understanding of telemental health care provider’s perspectives and experiences related to prescribing is needed to inform appropriate telemedicine program design, identify key research questions, pursue clinical practice guidelines, and develop curricula for professional educational programs. The perspectives and experience of practicing telemental health care providers should also inform policy decisions, such as the currently

pending U.S. DEA rules governing telemedicine prescribing of buprenorphine for opioid use disorder. The purpose of this study was to assess the perspectives of U.S. telemental health care providers related to their comfort and perceived safety in prescribing medications, including controlled substances, via telemedicine.

METHODS

Study Design. We conducted a web-based, cross-sectional survey of telemental health providers who prescribe via telemedicine, using non-probability, availability sampling of a telehealth research panel from February 13 to April 28, 2024.

Survey. The web-based survey, administered using Qualtrics, was created by the research team and designed to elicit perspectives and practices of U.S. mental/ behavioral health care providers related to prescribing via telemedicine. The survey consisted of 8 sections: Informed Consent (1 question), Verification of Eligibility (5 questions), Demographic and Practice Information (13 questions), Comfort and Safety (6 questions), Health History (7 questions), Physical Assessment & Diagnostic Testing (7 questions), Issuing a Prescription (8 questions), and Legal & Regulatory Environment (8 questions). A copy of the survey is provided in Appendix 1.

This study is focused on a subset of the survey items, including Likert-scale items that measured agreement with statements indicating comfort with prescribing in varied scenarios, including in-person (no telemedicine), via telemedicine, and via telemedicine with and without previous in-person care. We also analyzed Likert-scale items that measured agreement with statements of ability to safely prescribe medications, by U.S. Drug Enforcement Agency (DEA) scheduling. Recognizing that safe prescribing can depend upon individual patient characteristics and contextual factors aside from telemedicine use or

pharmacotherapy, we designed the Likert scale to measure how *often* medications of a given schedule can be prescribed safely via telemedicine. Optional open-ended items prompted participants to elaborate upon their responses.

Survey development. The interdisciplinary research team, which includes expertise in telemedicine, clinical pharmacology and advanced practice nursing in primary care, developed the initial survey based on a literature review. A small group of telemedicine practitioners reviewed an early draft of the survey and provided input on its content, format, and relevance for clinical practice. We then refined the survey according to their input. Before initiating data collection, we informally pre-tested and modified the survey within the research team, then formally pre-tested the survey with the target audience, five prescribing telemental health providers located in Utah and North Carolina who met the inclusion criteria. All five individuals who pre-tested the survey indicated that they strongly agree with the following statements: (1) The content and wording of the survey is appropriate, (2) The survey is easy to understand; (3) The survey is free of errors; (4) The time required to complete the survey is reasonable; and (5) The time required to complete the survey would be reasonable if the participants are compensated. Pre-testers completed the survey in a mean 11.9 minutes and recommended $25-50 as compensation for completing the survey. The survey was configured to assign completion codes, so that the process of participant compensation, which requires collecting additional personal information, could be managed separately from data collection.

Sampling and Recruitment. We implemented non-probability, availability sampling of a telehealth research panel. We calculated a target sample size of 382 for 95% confidence. We currently lack precise data describing the number of U.S. health care providers who (1) provide mental health care and (2) prescribe via telemedicine. Therefore, we based the target sample size HRSA estimates of the total number of U.S. mental health

care providers in prescribing roles.[11]

We recruited survey participants from the TelehealthEngage Research Panel, a panel of 7,134 telemedicine users who have consented to be contacted about opportunities to participate in research. Telehealth Engage includes individuals from 49 states who are active users of doxy.me, a commercial telemedicine platform. We invited all TelehealthEngage panelists who identified as a health professional in mental health, psychiatry, family practice, internal medicine, general practice, neurology, integrative medicine, or unknown fields or who identified as a physician, hospitalist, physician assistant, nurse practitioner, or nurse. Recruitment was initiated on February 13, 2024 and closed on April 28, 2024. We divided our two recruitment waves over the course of three days each: the first invite was sent to 2,343 unique panelists and the second to 3,490. We sent a reminder email to any panelist who had not opened the email invitation (1,491 in the first wave and 3,200 in the second wave) after three weeks. The survey was closed out two weeks after the last invitation reminder was sent out. We required responses to all categorical or numeric survey items to complete the survey and be compensated for participation with a $50 gift card.

Ethical considerations. This study was reviewed and approved by the BRANY Institutional Review Board (IRB00010793). To protect the anonymity of participants, we configured Qualtrics to assign a random completion code to each completed survey. Upon survey completion, a code was displayed to participants along with instructions to visit a separate Qualtrics survey to submit the code and contact information for compensation. In this way, we separated participants' responses from their contact information. We stored the data in a secure environment with access limited to essential study personnel.

Analysis. We analyzed all completed surveys. We calculated descriptive statistics and frequencies, visualized response distributions, and aggregated free-text responses for

qualitative analysis. Further, we assessed group differences in response distributions by licensure type (Physician v. Non-physician) and specialty type (Psychiatric v. Non-psychiatric) for items using Mann-Whitney U tests. We performed all statistical analysis using SPSS 29[12] and performed a qualitative, thematic analysis of open-ended items using MAXQDA 2024 [13]. The results of the quantitative analyses informed the way we organized codes from the thematic analysis.[14,15] One author coded the qualitative responses from surveys using the entire participant response as the unit of analysis. After three iterations of coding, a codebook was developed and honed with the help of all authors. We assigned each response one or more codes, and so the total number of codes exceeds the number of responses.

RESULTS

Participation and response. Three hundred fifty TelehealthEngage panelists accessed the survey. Of those, 336 (96%) completed all eligibility screening questions, and 121 of those screened (36.01%) were eligible. 115/121 (95%) of screened and eligible panelists completed the survey. There was no missing data in completed surveys given the requirement that all items be completed, except optional free text fields. Only four surveys were initiated but not completed, so we did not analyze the data or individual items for non-response bias. See Figure 1 for a diagram illustrating study participation results.

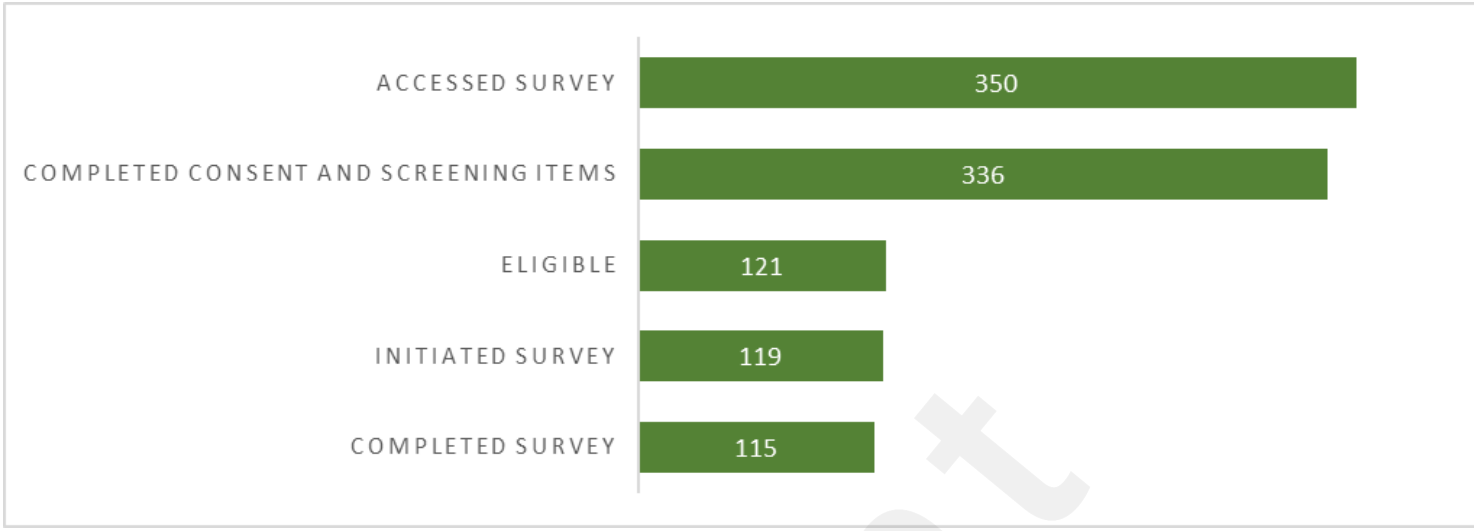


Figure 1. Participant count by stage.

Participant characteristics. Demographic characteristics of the participants are summarized in table 1 and figure 2. The participants were largely white, non-Hispanic, and female, with a mean age of 51.2 (SD=12.4) and primarily physicians and advanced practice nurses in smaller-sized practices. The most common specialties were psychiatry or psychiatry specialties. However, twenty-eight (24.3%) indicated non-psychiatry specialties. Geographically, the participants were distributed across 26 U.S. states (see figure 2).

Table 1. Demographic and practice characteristics of participants (N=115).

Characteristic	**n (%)**
Race	
American Indian or Alaska Native	1(.9)
Asian	9(7.8)
Black or African American	8(7.0)
Native Hawaiian or Pacific Islander	0
White	83(72.2)

More than one race	5(4.3)
Other Race	2(1.7)
Prefer not to Answer	7(6.1)
Unknown	0
Hispanic or Latino	
Hispanic or Latino	8(7.0)
Not Hispanic or Latino	97(84.3)
Prefer not to answer	6(5.2)
Unknown	4(3.5)
Gender	
Male	46(40.0)
Female	66(57.4)
Non-binary/ third gender	0
Prefer not to say	3(2.6)
Licensure	
MD or DO	69(60.0)
APRN or PA	40(34.78)
PhD Clinical Psychologist	4(3.48)
Pharmacist	0
Other	2(1.74)
Percent of Clients seen via telehealth	
None (0%)	0
Few (1-24%)	10(8.7)
Some (25-49%)	23(20.0)
Most (50-74%)	33(28.7)
Almost all (75-99%)	29(25.2)
All (100%)	20(17.4)
Practice Size	
Independent	53(46.1)
Small group (2-5 providers)	29(25.2)
Mid-size (6-15 providers)	20(17.4)
Large group practice (16+ providers)	13(11.3)

Setting*	
Academic	6(5.2)
Community	47(40.9)
Hospital	4(3.5)
Clinic	58(50.4)
School	0
Corrections	0
Federally Qualified Health Center	4(3.5)
Digital health care	17(4.8)
Other	6(5.2)
Specialty	
Psychiatry	63(54.8)
Addiction Medicine or Psychiatry	6(5.2)
Child & Adolescent Psychiatry	14(12.2)
Geriatric Psychiatry	4(3.5)
Forensic Psychiatry	0
Consultation Liaison Psychiatry	0
Family Practice	11(9.6)
Internal Medicine	6(5.2)
Pediatrics	3(2.6)
Other	8(7.0)
Years of experience, specialty	
0-5	24(20.9)
6-10	20(17.4)
11-15	23(20.0)
16+	48(41.7)
Years of experience, telehealth	
0 - 3.7 (since onset of COVID-19 pandemic)	70(60.9)
3.7-10	39(33.9)
11-15	3(2.6)
16+	3(2.6)

*Participants could select more than one descriptor.

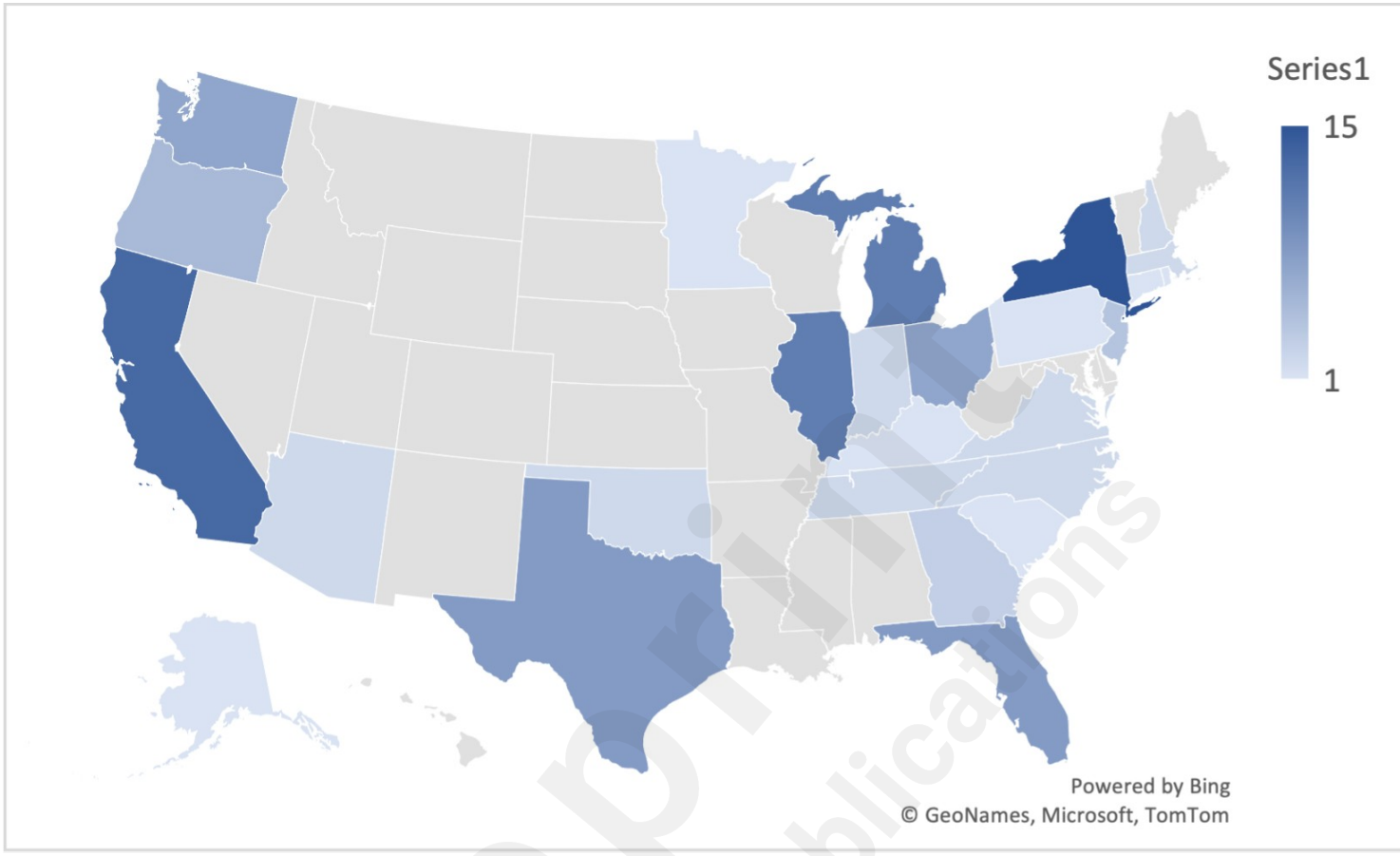


Figure 2. Geographic distribution of participants (N=115).

Main findings. Overall, participants indicated high levels of comfort with prescribing via telemedicine, with 84% (102/115) of providers indicating they strongly agree with the statement indicating comfort in prescribing medications via telemedicine. Only 5 participants somewhat or strongly disagreed (4.3%). However, participants indicated less comfort in prescribing if they have never seen a patient in-person, or if the patient is located out-of-state. Figure 3 shows a visualization of the response distribution; detailed descriptive statistics are provided in Appendix 2.

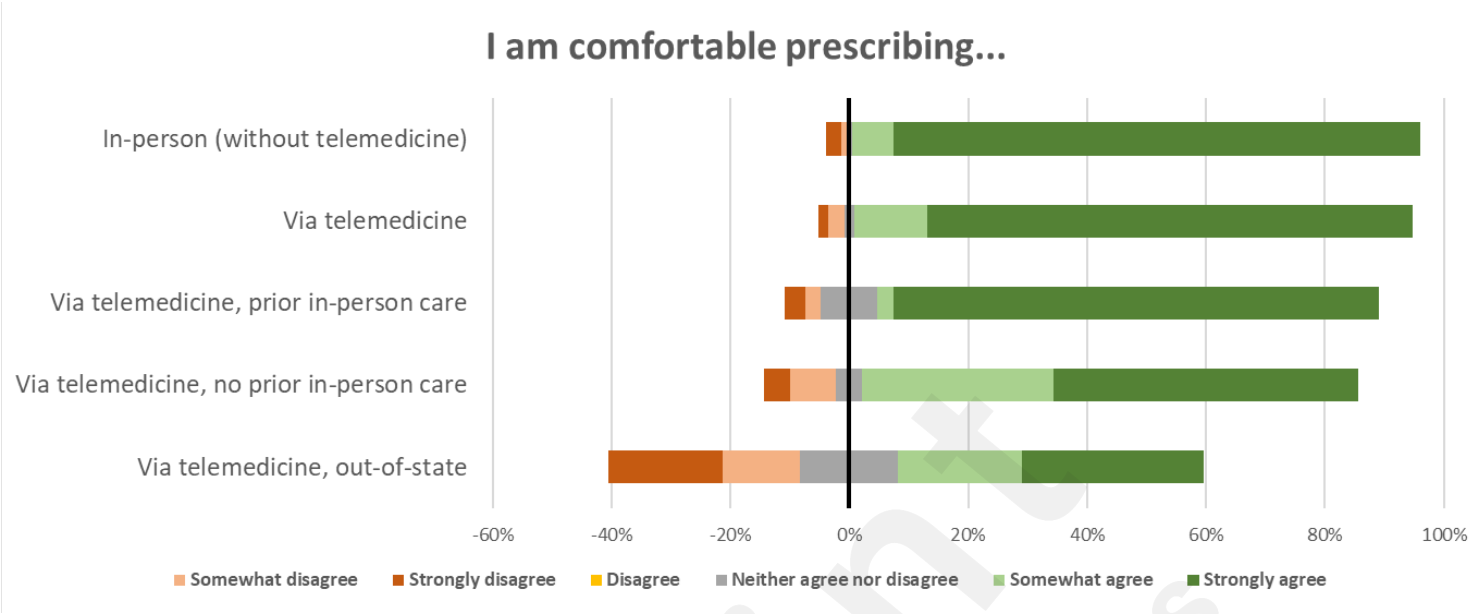
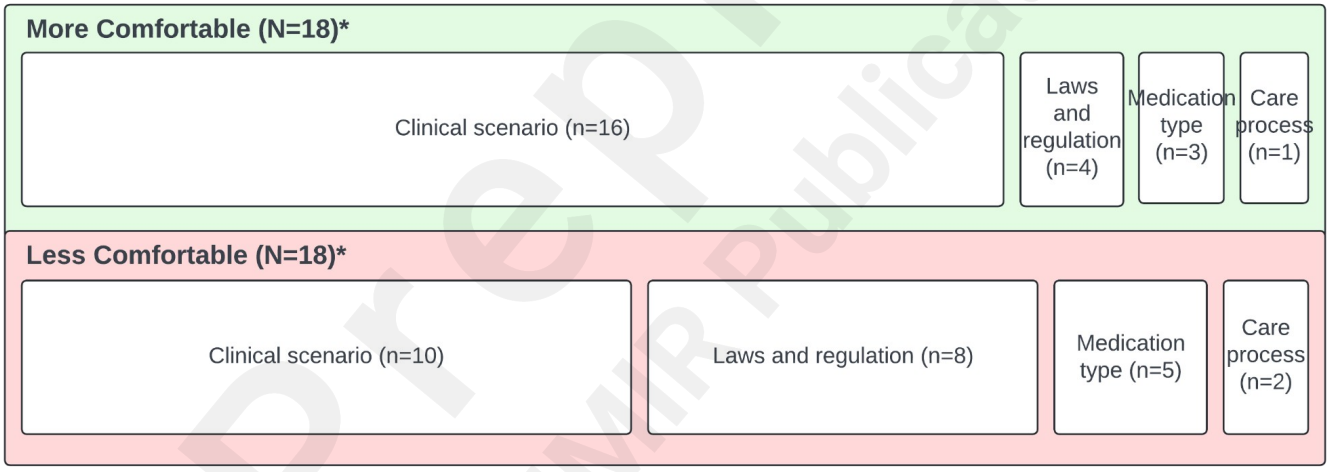


Figure 3. Participant agreement with statements of comfort in prescribing via telemedicine(N=115).

Fifty percent (58/115) of participants responded to the optional question “Please tell us more about the situations in which you feel comfortable or not comfortable prescribing”. We found three general categories of comments related to comfort: Comments related to feeling uncomfortable (1 instance), comfortable (17 instances), or more or less comfortable depending on the specific situation (conditionally comfortable, 36 instances).

The singular response that a provider unequivocally did not feel comfortable prescribing over telemedicine was in regard to controlled substances: “*Will not prescribe classified drugs or anything for ADHD online.*” Providers who noted they unequivocally felt comfortable prescribing over telemedicine (17 instances) also included some explanation of prescribing situations regarding labs and assessments, laws and regulations, and types of medication: “*All but one of my current patients I've met in person, but my practice is now solely telemedicine. I do my best to assess the patient's condition, personality, and response. I think I am as comfortable prescribing online as in person*." The majority (36 instances) of providers reported their comfort levels depended upon certain conditions. The

approximate distribution of condition types is depicted in Figure 6. Providers were more (18 codes) or less comfortable (18 codes) due to reasons relating to the clinical scenario (including patient characteristics or behavior); laws and regulations; types of medications; and the care process (characteristics of the patient's care plan or care delivery including specific types of visits, assessments, and labs). Numerous providers noted how an initial in-person intake (9 codes) or working with established patients (9 codes) affected their experiences and comfort: "*I felt comfortable after having an in person visits [sic] with the patient before telemedicine. I do a physical exam on all patients during the first visit snd sm [sic] not sure I feel comfortable prescribing without that initial physical encounter.*" Complete results of thematic analysis for this item are provided in Appendix 3.



*N refers to codes of more or less comfortable, depending upon conditions. n refers to code counts for the condition type. The total number of codes for condition type exceeds that of codes for comfort.

Figure 4. Condition types where providers feel conditionally more or less comfortable prescribing via telemedicine.

For telemedicine-based prescribing of controlled substances, the results are visualized in figure 6 (detailed descriptive statistics in Appendix 2). Most participants indicated that they can safely prescribe controlled substances via telemedicine, without having previously provided care to a patient in person. However, 14.8-19.1% of providers

(by schedule) felt that they could rarely or never safely prescribe controlled substances. Among controlled substance schedules, participants indicated the least perceived safety with schedule IV medications, and the most safety with schedule II and III medications.

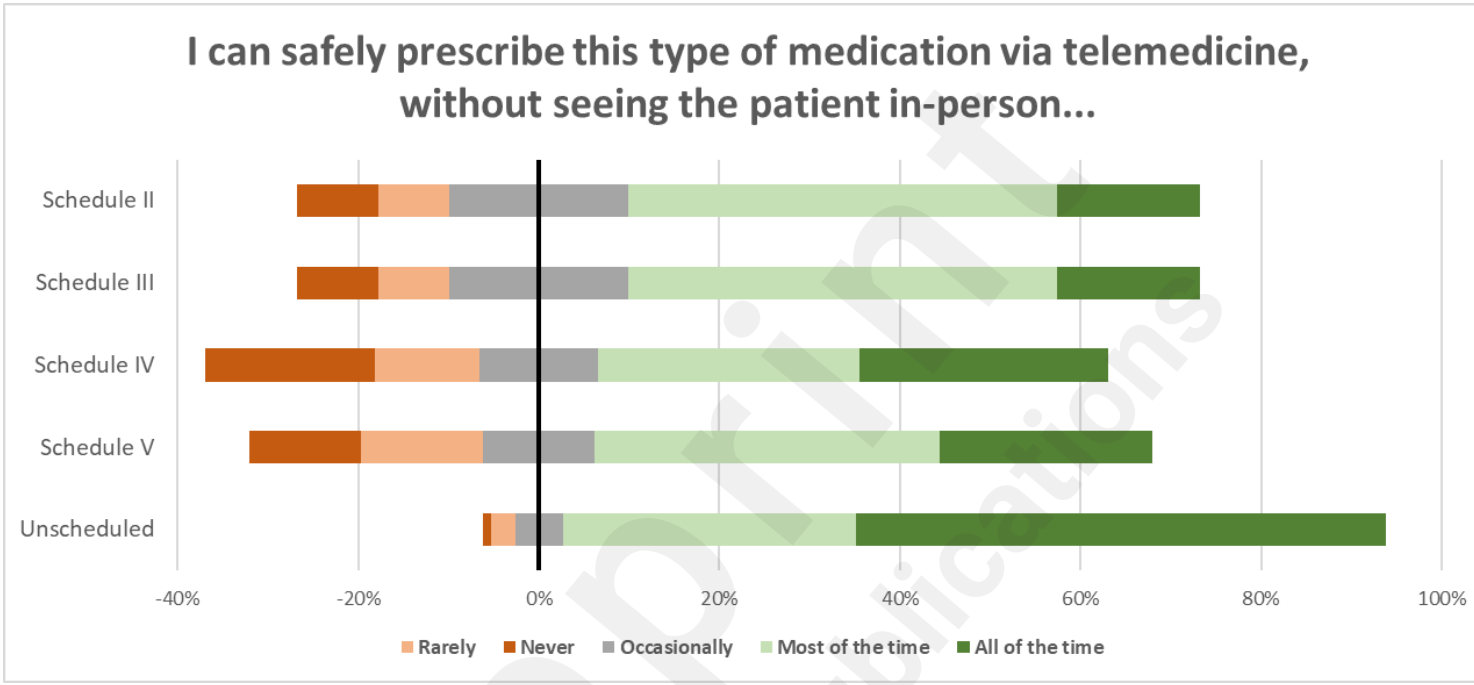


Figure 5. Perceived safety of telemedicine-based prescribing safety for medication types, by U.S. Drug Enforcement Agency (DEA) drug scheduling (N=115).

Fourty-four percent (51/115) of participants responded to the optional question "Tell us more about the types of medications you feel comfortable prescribing and/or monitoring via telemedicine, and the circumstances in which you feel an in-person assessment is appropriate…" We found two general categories of comments related to comfort: Comfortable (33 instances) and Not Comfortable (33 instances).

Providers reported they felt comfortable (33 instances) prescribing certain types of medications (22 codes), prescribing with given certain care activities or process(es) (12 codes), in relation to laws and regulations (2 codes), in certain clinical scenarios (2 codes), and other (1 code). One provider explained their requirements regarding medication types

for prescribing over telemedicine: "*No analgesics prescribed (no opiates, etc.) but I do prescribe stimulants for psychiatric reasons (ADHD, post-concussive pathology, as an adjunct for depression). My use of benzos is very conservative. Otherwise, I rarely prescribe anything but 'standard' psych meds–anti-depressants, mood stabilizers, non-benzo anxiolytics, at times anti-psychotics*." Providers reported not feeling comfortable (31 instances) due to prescribing certain types of medications (19 codes), certain clinical scenarios (16 codes), and preferring in-person prescribing (1 code). One provider noted how certain clinical scenarios and medication types affect their comfort: "*I would only feel uncomfortable prescribing controlled substances virtually if I was* [*sic*] *concerned about other illicit substance use or elevated blood pressure/heart rate. I would want to see* [the] *patient in person for vital signs and UDS* [urine drug screen]*. The* [state controlled substance database] *allows us to monitor controlled prescriptions our patients have obtained.*" Complete results of thematic analyis for this item are provided in Appendix 3.

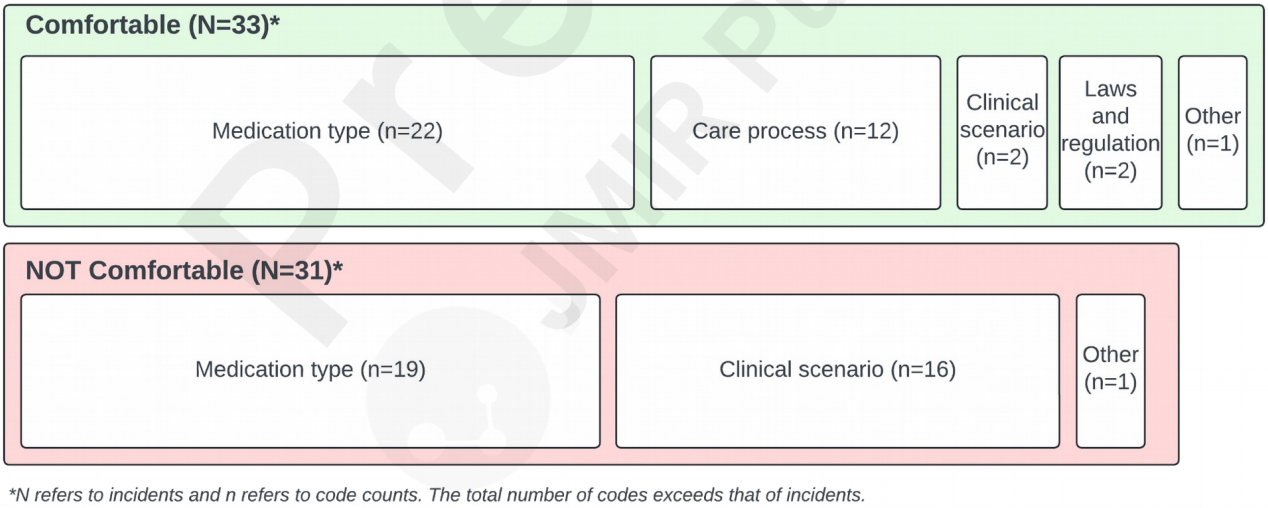


Figure 6. Comments on comfort with specific types of medications and need for in-person appointments.

Findings by Licensure and Specialty. Table 2 summarizes the results of the Mann-

Whitney U tests to determine whether response differed according to licensure type (Physician v. Non-physician) or Specialty (Psychiatry v. Non-psychiatry). We found that comfort in prescribing differed by licensure type for in-person prescribing (no use of telemedicine), (U=1857.5, *P*=.005, CL=0.59), with Physicians indicating stronger baseline agreement that they are comfortable with in-person prescribing (Mean rank of 61.92 vs. a Mean Rank of 52.12 for Non-physicians). We also found that Physicians differed from Non-physicians in perception of their ability to safely prescribe schedule V medications (U=2018.5, *P*=.011, CL=0.64), with visualization showing that Physicians indicated greater perceived safety (Mean rank 64.25 vs. 48.62). There were no other statistically significant differences in the distribution of responses to statements of comfort in prescribing by licensure type.

By specialty, we found that the distribution of responses for prescribers from psychiatric specialties differed from that of non-psychiatric specialty prescribers for comfort in prescribing via telemedicine when there has been no previous in-person care (U=1571, *P*=.012, CL=0.64)), with prescribers from psychiatric specialties indicating more comfort (Mean rank 62.06 vs. 45.39). Prescribers from psychiatric specialties also differed for the perceived safety of prescribing schedule III medications (U=880, *P*=.019, CL=0.36), with visualization showing that prescribers from psychiatric specialties indicated lower perceived safety for this type of medication (Mean rank 54.11 vs. 70.07). Every participant with a specialty of Addiction Medicine or Psychiatry (n=6) indicated that they can safely prescribe schedule III medications either “always” or “almost always”. However, the number of Addiction Medicine or Psychiatry specialists wasn’t sufficient to support testing of group differences.

Table. 2. Difference in distribution of responses by licensure type and specialty (N=115).

Item	Licensure (Physician or Non-physician)			Specialty (Psychiatric or Non-psychiatric)		
	U	*P*	CL*	U	*P*	CL*
I am comfortable prescribing medications…						
In-person (no telemedicine)	1857.5	.005*	0.59	1216	.981	0.50
Telemedicine	1796.5	.075	0.57	1292.5	.47	0.53
Telemedicine, prior in-person	1666	.503	0.52	1215.5	.981	0.50
Telemedicine, no prior in-person	1435	.341	0.45	1571	.012	0.64
Telemedicine, out-of-state	1651.5	.705	0.52	1039	.231	0.43
I can safely prescribe this type of medication via telemedicine, without seeing the patient in-person:						
Schedule II	1701.5	.495	0.54	1409.5	.192	0.58
Schedule III	1562	.879	0.49	880	.019	0.36
Schedule IV	1749	.34	0.55	1487.5	.07	0.61
Schedule V	2018.5	.011*	0.64	1063	.3	0.44
Unscheduled medications	1774.5	.222	0.56	1419.5	.134	0.58

*CL = Common Language Effect Size

DISCUSSION

In this survey of U.S. telemental health care providers, we examined provider perceptions of comfort and safety in prescribing medications via telemedicine. Largely white, non-hispanic, female, and middle-aged, the participants' demographic characteristics reflect the known demographics of the U.S. mental health care workforce.[16] Licensure type and medical specialty varied. Participant practice settings were primarily individual or small group, and non-academic. Most participants were physicians, advanced practice registered nurses (APRNs), or physician assistants (PAs), and psychiatry was the most common specialty. Geographically, participants were fairly distributed within the U.S. However, there was no representation of the mountain west.

Overall, we found that telemental health care providers were very comfortable

prescribing via telemedicine. However, they were slightly less comfortable when prescribing to a patient not previously seen in person, and even less comfortable prescribing to an out-of-state patient. Psychiatry specialists expressed more comfort than non-psychiatry specialists with providing care to patients not previously seen in person. The effect size was moderate for these differences. Qualitative analysis showed that individual prescriber comfort varied depending on the context, including the clinical scenario, types of medications being prescribed, laws and regulations, and care process. This finding is consistent with prior research indicating that a provider's discomfort in prescribing over telemedicine appear to be tempered by access to additional information regarding the patient and situation such as access to labs, in-person follow-up, and coordination of care[17,18]

We further examined the participants' perspectives on their ability to safely prescribe unscheduled medications as well as scheduled medications, which are controlled substances. Participants indicated that they are highly comfortable prescribing unscheduled medications. However, they varied in their comfort prescribing controlled substances. While participants in the study indicated they can usually prescribe schedule II-V medications safely, a minority indicated that they can rarely or never prescribe these medications safely. Variation in comfort by DEA scheduling may relate more to prescriber familiarity and experience with those medications, than with safety issues. For example, we found that physicians felt more comfortable than non-physicians in prescribing schedule V medications, with a moderate effect size. Examples of schedule V medications are pregabalin (Lyrica) and diphenoxylate/atropine (Lomotil). Given most psychiatric medications fall under schedules II-IV, this could reflect a broader medical practice of physicians in comparison to other licensure types. Psychiatry specialists were less comfortable than non-psychiatry specialists in prescribing schedule III medications with no

prior in-person care. Examples of schedule III medications include buprenorphine (Suboxone), testosterone, and ketamine. It is plausible that non-psychiatry specialists, unlikely to prescribe buprenorphine or ketamine in their practices, may have based their response on other medications within schedule III, medications with which they are more familiar.

All addiction psychiatry or medicine specialists indicated a high level of comfort prescribing schedule III medications. It is plausible that addiction specialists have cultivated practices that enhance safety and reduce harm, increasing their sense of safety with schedule III medications. A typical addiction specialist may enhance safety through a policy of checking controlled substance databases, requiring random drug toxicology screens and securing permission to speak with patients' families. Prescribers who routinely treat addiction also often have the advantage of intersecting with integrative partners such as substance use disorder treatment centers, court appointed case managers, etc…, which may enhance their sense of comfort and safety in prescribing. Addiction specialists may be better prepared to learn that a patient has diverted medications, sought additional prescribers, and/or knowingly taken drugs/prescriptions outside of their prescribed regimen, and could be less likely to fear these circumstances in the context of treatment.

In open-ended responses, participants described substantial tailoring of their individual prescribing practices and decision-making according to the clinical context and their comfort level in prescribing. This finding is indicative of individual adaptation of practice to perceived risks and uncertainties. Currently, best practices for prescribing via telemedicine are general in nature, and health care providers rely on local practice settings' rules and processes for guidance.[19] Individual prescribers may differ in how they approach virtual and hybrid (virtual and in-person) care, but likely adapt their practice within their comfort level through measures that include coordination of care, in-person follow-up

appointments, requirements for assessments and labs, and compliance with laws and regulations.[20] Ultimately, our findings show that telemental health care providers prescribe over telemedicine at their discretion, in the interest of their patients' health, and according to their individual sense of comfort. Our findings also initiate that prescribers implement care activities and processes that enhance safety.

Limitations. This study used a non-probability sampling approach; we recruited a convenience sample from a research panel of telemental health care providers. The sample size and study design do not support the generalizability of findings to all U.S. mental healthcare providers. However, these findings reflect the perspectives of a large, national sample of these providers. Telehealth Engage panelists are users of the Doxy.me telemedicine platform which is heavily used by solo and small clinic practices, and this is reflected in the participant demographics. Perspectives may differ for providers who are part of large enterprise settings or academic settings. Additionally, we may not have captured nuanced considerations of prescribing safety or the conditions under which prescribers feel comfortable prescribing via telemedicine. Medications within a single controlled substance schedule are used for different purposes and have different safety considerations. For example, the use of telemedicine to prescribe ketamine is currently highly controversial, as the mental health community continues to debate the appropriateness of using a medication that induces a dissociative state without the support of an in-person therapist or guide.

We also recognize that telemedicine implementation models vary and likely influence perspectives on prescribing comfort and safety. For example, a prescriber who provides telemental health care in the context of a hub-and-spoke model, where a registered nurse or medical assistant augments virtual care with an in-person assessment, may have perceptions of greater comfort and safety in prescribing than a prescriber practicing without

such a model. In ongoing work, we are conducting qualitative research that entails interviewing prescribers to more fully elucidate this information. However, this survey study allowed us to first characterize the overarching perspectives of a larger number of prescribers.

CONCLUSION

We conducted a national, cross-sectional survey of U.S. telemental health providers to assess their comfort and perceived safety in prescribing medications, including controlled substances, via telemedicine. The participants included physicians, advanced practice nurses, physician assistants, and clinical psychologists. These providers were highly comfortable prescribing both scheduled and unscheduled medications via telemedicine. Comfort and perceived safety with telemedicine prescribing varied somewhat by licensure type (Physician v. Non-physician) and Specialty (Psychiatry vs. Non-psychiatry). Perceived safety varied moderately for scheduled medications (controlled substances), especially for Schedule IV and Schedule V medications. Participants indicated use of adaptive strategies to prescribe safely depending upon the clinical context. In ongoing efforts, we are analyzing additional survey results and conducting qualitative research related to telemedicine prescribing. A strong understanding of prescriber perspectives and experience with telemedicine prescribing is needed to support excellent clinical practice and effective policy-making in the U.S.

DECLARATIONS

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individuals to pre-test the survey.

Competing interests: BMW is a shareholder, and MRC, JI, HS, EL and BEB are employees of Doxy.me Inc., a commercial telemedicine company. The authors declare no other competing interests.

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Ethical approval and consent to participate: The BRANY Institutional Review Board approved this study (IRB00010793).

Data availability: Supporting data is available upon request.

Author contributions: MRC and JI conceived and designed the study, obtained ethical approval, and conducted the statistical analysis. MRC developed the survey instrument and coordinated pre-testing. HS and JI implemented sampling, recruitment, and participant compensation. MRC conducted the statistical analysis. MRC, JI, BB, EL, ZR and BMW contributed to the literature search and interpretation of findings. MRC wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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ABBREVIATIONS

U.S. = United States

COVID-19 = Coronavirus Disease 2019

PHE = U.S. Public Health Emergency Declaration

DEA = Drug Enforcement Agency

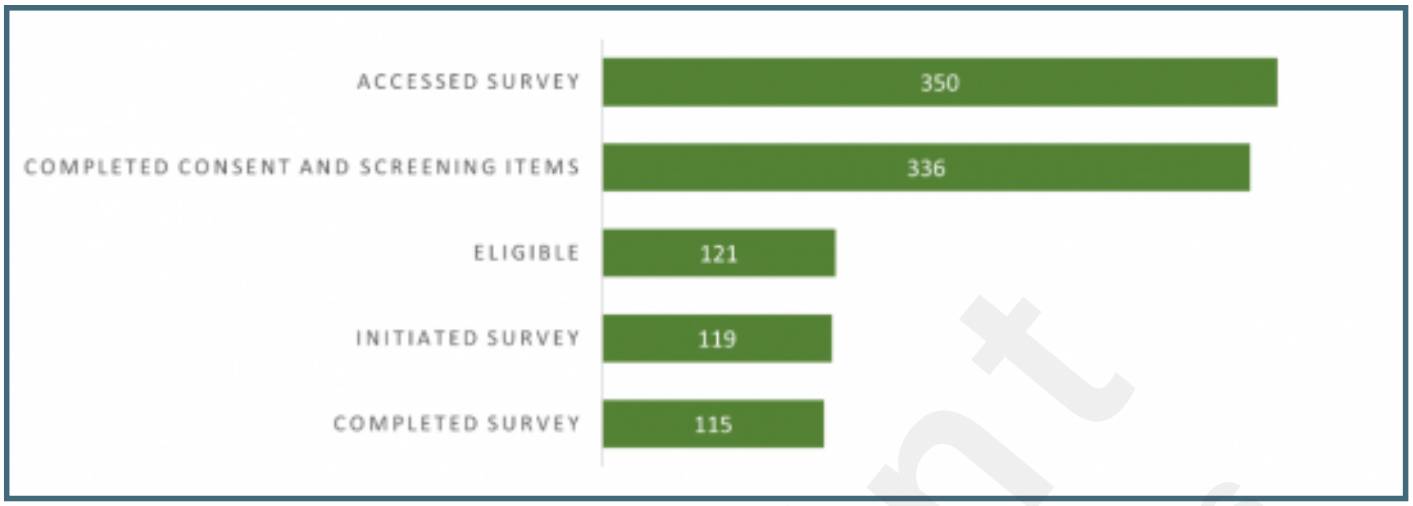
APRN = Advanced Practice Registered Nurse

PA = Physician Assistant

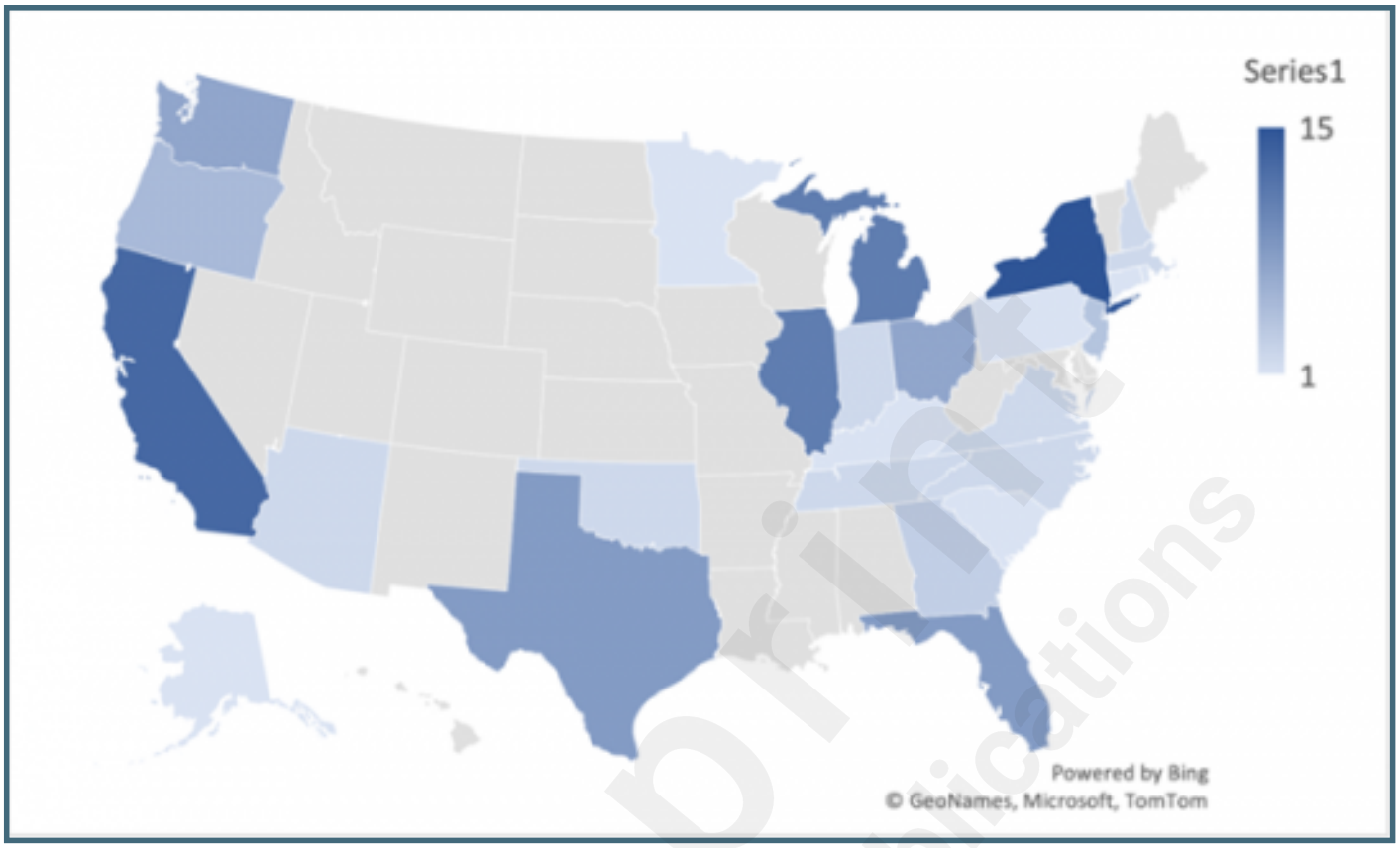
Supplementary Files

Figures

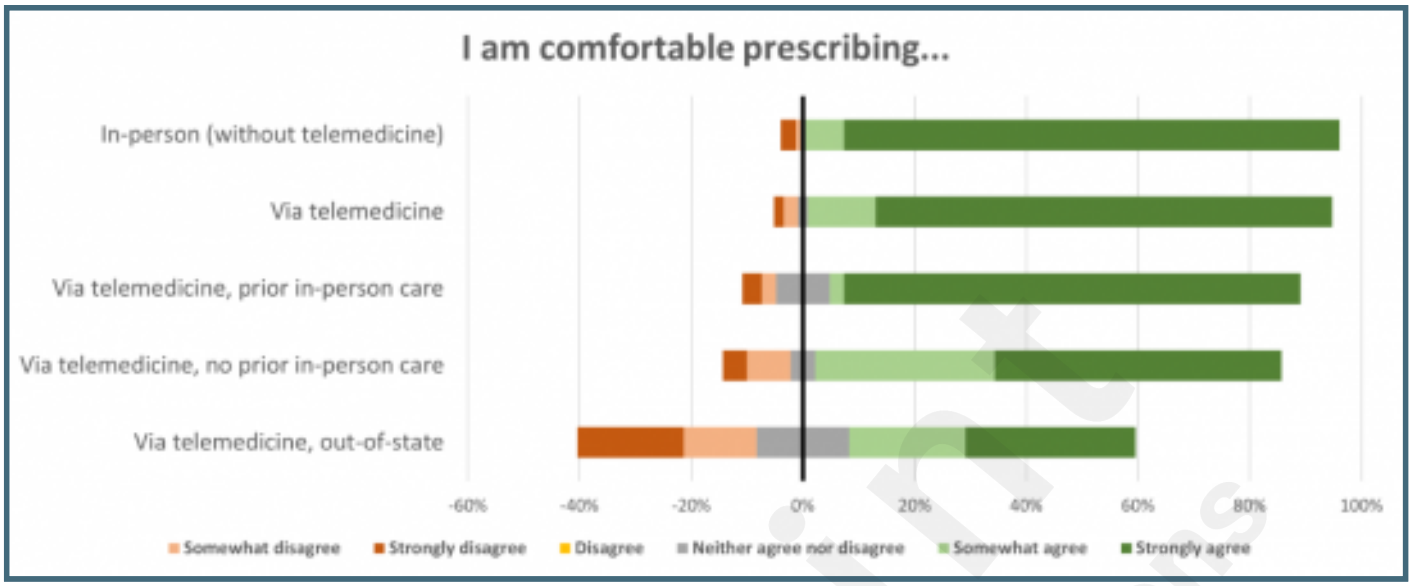
Participant count by stage.



Geographic distribution of participants (N=115).

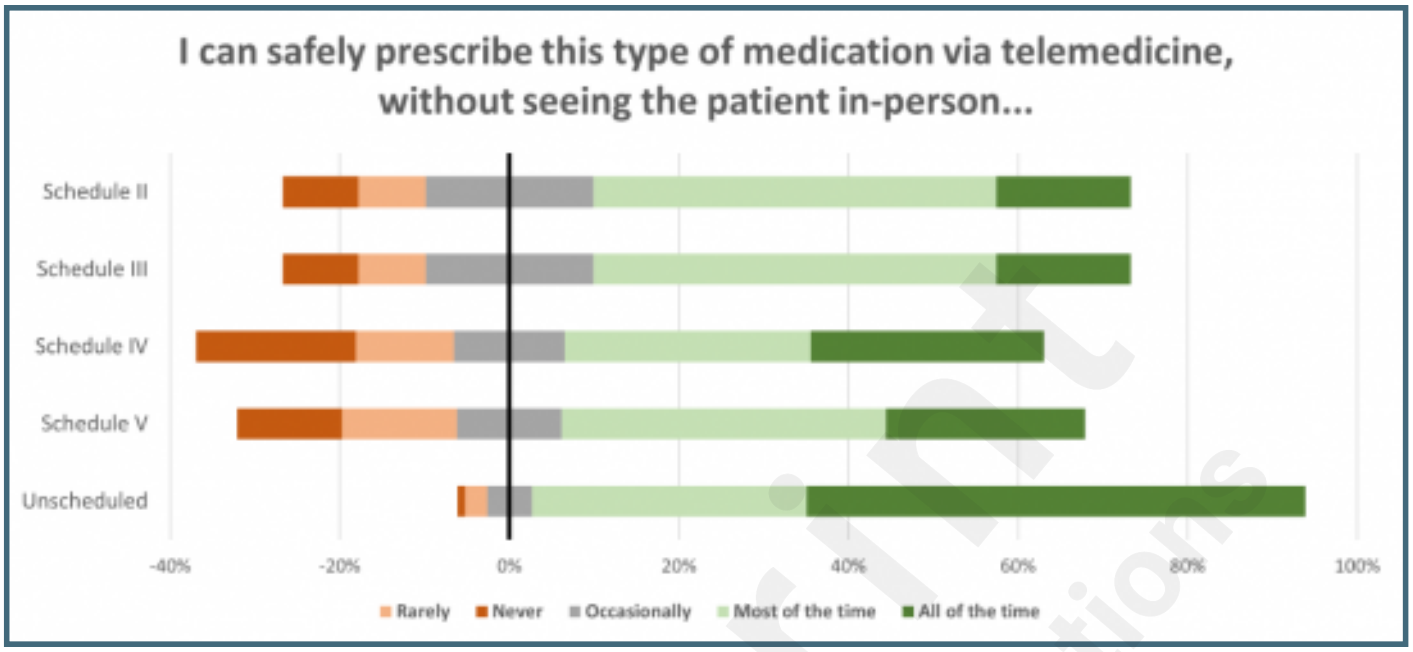


Participant agreement with statements of comfort in prescribing via telemedicine(N=115).

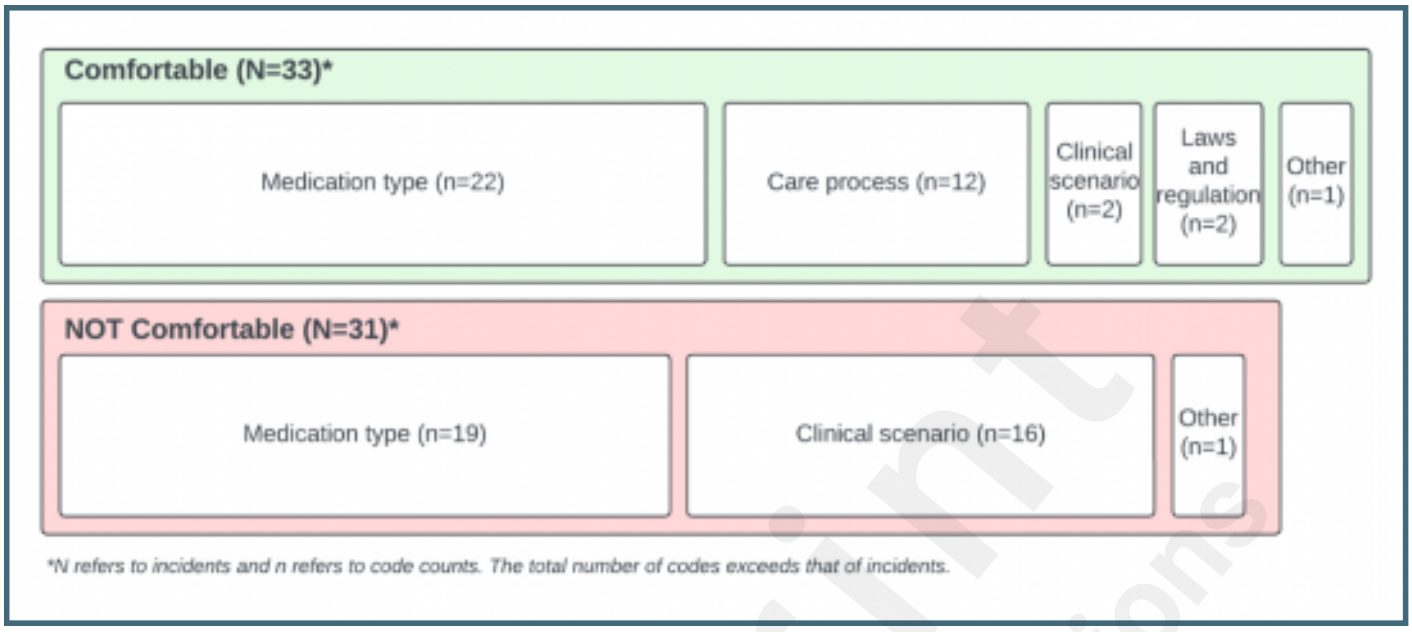


Condition types where providers feel conditionally more or less comfortable prescribing via telemedicine.

Perceived safety of telemedicine-based prescribing safety for medication types, by U.S. Drug Enforcement Agency (DEA) drug scheduling (N=115).



Comments on comfort with specific types of medications and need for in-person appointments.



Multimedia Appendixes

Survey Instrument.
URL: http://asset.jmir.pub/assets/ef71c8bc9b7356fbf60617b88d482ea4.pdf

Results of Frequency Analysis.
URL: http://asset.jmir.pub/assets/2d9ba110521d8bdf35ca5dfb50314c6d.docx

Results of Thematic Analysis.
URL: http://asset.jmir.pub/assets/4ca84f380dbc38c8eebf7ff57125c300.docx