Addictive Behaviors Reports 18 (2023) 100515

Contents lists available at ScienceDirect

Addictive Behaviors Reports

journal homepage: www.elsevier.com/locate/abrep

Short Communication

Access to medication for opioid use disorder supported by telemedicine and healthcare coverage: A web-based survey during the COVID-19 pandemic

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ARTICLE INFO

Keywords:
COVID-19 pandemic
medication for opioid use disorder
medication assisted treatment
telemedicine
healthcare coverage
treatment access

ABSTRACT

Background and Aims: Medications for opioid use disorder (MOUD) are highly effective in improving treatment outcomes and reducing overdose. Concerns about interrupted access to critical MOUD services led to expansion of telemedicine services during the COVID-19 pandemic in the US. The current study tested the hypothesis that telemedicine usage and healthcare coverage would be significantly associated with access to MOUD in the early phase of the COVID-19 pandemic.
Design: A cross-sectional online survey was administered to a non-probability sample from June 18-July 19, 2020 using the Amazon Mechanical Turk platform.
Setting: Northeastern United States during the early phase of the COVID-19 pandemic. At the time of the survey, federal regulators had waived the longstanding requirement for in-office visits for MOUD prescription receipt and provided guidance on increasing third-party payer reimbursement rates for telehealth visits in order to mitigate barriers to care associated with COVID-19 safety guidelines.
Participants: Individuals 18 years or older residing in Connecticut, Massachusetts, New Jersey, New York, or Rhode Island were eligible to complete the survey. The analytic sample was participants who reported using opioids not as prescribed by a physician in the past seven days.
Measurements: Demographics, telemedicine usage, and healthcare coverage were assessed as explanatory variables. The primary outcome was whether participants reported ability to access MOUD in the past four weeks.
Findings: In this sample of individuals who used illicit opioids in the past week (N = 191), one in two individuals who utilized telehealth or had healthcare coverage were able to access MOUD, whereas only one in five of their respective counterparts who did not have telehealth access or healthcare coverage were able to access these medications.
Conclusions: Telemedicine and healthcare coverage were associated with greater MOUD access early in the COVID-19 pandemic, when barriers to care were high. Such findings speak to the importance of not only extending but also formalizing temporary policy changes instituted during the pandemic to allow MOUD prescribing via telemedicine.

1. Introduction

Medications for opioid use disorder (MOUD) are the first-line intervention for opioid use disorder (OUD). MOUD include two opioid agonists, methadone and buprenorphine, as well as the opioid antagonist naltrexone (Madden et al., 2021). These medications improve treatment outcomes, such as relapse reduction and treatment retention (Lee et al., 2018; Mattick et al., 2009, 2014), with methadone and buprenorphine being particularly effective in reducing overdose in real-world settings (Wakeman et al., 2020).

Soon after the onset of the COVID-19 pandemic, experts expressed alarm that suspension of in-person clinical services and subsequent reduced access to MOUD would have serious ramifications for individuals with OUD. In response, federal lawmakers relaxed restrictions

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https://doi.org/10.1016/j.abrep.2023.100515
Received 24 April 2023; Received in revised form 28 August 2023; Accepted 6 September 2023
Available online 9 September 2023

outlined in the 2008 Ryan Haight Act, which had required in-person evaluations for prescription of controlled substances (Wang et al., 2020). Many states also loosened restrictions surrounding the use of telemedicine and mandated that third-party payers, such as insurance companies and Medicaid, cover and reimburse telemedicine services (Hughto et al., 2021). These federal and state level policy changes allowed clinics and providers to quickly pivot to the use of telemedicine to remotely prescribe and monitor MOUD treatment.

Prior to the pandemic, a handful of studies demonstrated the feasibility and effectiveness of using telemedicine to prescribe and monitor MOUD. Telemedicine for buprenorphine predicted lower illicit opioid use, greater patient retention, higher patient satisfaction, and overall better treatment outcomes among people who use opioids (Eibl et al., 2017; Lin et al., 2019; Zheng et al., 2017). Moreover, telemedicine may effectively address various barriers to care that patients may face, e.g., lack of specialized providers, transportation, etc. In one pilot study conducted in a locality with a low concentration of MOUD providers, 36% of respondents agreed or strongly agreed with the statement "I would not have received opioid treatment were it not for my telemedicine doctor" (Cole et al., 2021). As such, telemedicine was expected to be a viable alternative to in-person visits during the pandemic.

However, empirical evidence linking telemedicine usage and healthcare coverage to MOUD access during the pandemic is limited. In this brief report, we tested the hypothesis that telemedicine usage and healthcare coverage would be significantly associated with participants' ability to access MOUD in the early phase of the COVID-19 pandemic. Telemedicine usage was defined as participants' self-report of whether they had utilized telemedicine, telehealth, or a virtual doctor's appointment at least once over the last twelve months. Healthcare coverage was defined as participants' self-report of whether they had any form of healthcare coverage, e.g., health insurance, prepaid plans such as health maintenance organizations (HMOs), government plans such as Medicare, or Indian Health Service.

2. Methods

Survey Methodology and Participants: The survey was distributed using the Amazon Mechanical Turk (MTurk) platform, as described in detail in Monnig et al. (2021). Data collection was centered on five Northeast US states, specifically, Connecticut, Massachusetts, New Jersey, New York, and Rhode Island, as these were the states with the highest number of COVID-19 cases and deaths per capita (i.e., age-adjusted incidence rates per 100,000 people) at the time (Dong et al. 2020). Raw data on COVID cases and deaths at the time of the survey can be accessed within the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)'s data repository. The survey was released via MTurk to residents of these five states from June 18-July 19, 2020. Data cleaning was performed to remove surveys that did not pass validity checks or were duplicate responses (for more details, see Monnig et al., 2021). Eligibility criteria were as follows: 18 years of age or older; resident of CT, MA, NJ, NY, or RI; having an Amazon Mechanical Turk (MTurk) account, necessary for survey distribution. Participants in the current report were a subset of the full survey sample, as described below. Although MTurk account holders are not representative of the US population (Walters et al., 2018), there is evidence that MTurk participants produce higher-quality data than market panels (Kees et al., 2017; Thomas & Clifford, 2017; Zhang & Gearhart, 2020). To obtain a diverse sample, quotas for age, gender, race, and ethnicity were instituted (see Monnig et al., 2021 for details). Participants were paid $10 for survey completion. The study was reviewed by the Brown University Institutional Review Board and exempted from requiring approval due to minimal risk. Written informed consent was obtained from all participants.

Analytic Sample Selection. Participants in the current report were a subset of the full sample; only individuals who reported use of opioids in the past seven days were included in analyses. Past seven-day opioid use was assessed using the Timeline Followback measure (Sobell & Sobell, 1992), a calendar-based method of recording substance use over a specified period of time. Participants were instructed not to report any opioid drug that was taken as directed by a physician.

Assessment of Health Coverage and Telemedicine Usage: To assess telemedicine usage, we asked, "Have you ever used telemedicine, telehealth, or a video doctor's appointment in lieu of going to a doctor's office, hospital, emergency room, or urgent care clinic visit in the last 12 months?" (yes | no) (J.D. Power, 2019). "To assess heath care coverage, we asked, "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, government plans such as Medicare or, Indian Health Service?" (yes | no | don't know/not sure). For analysis, the answers "no" and "don't know/not sure" were combined into one category.

Assessment of MOUD Access: To measure the dependent variable, participants were asked, "During the past four weeks, were you able to obtain medication assisted treatment for opioid use disorder? This includes methadone, buprenorphine, or naltrexone" (Yes | No | Does not apply to me). Those who answered "Does not apply to me" were excluded from the analysis.

Statistical Analysis: Analyses were conducted in IBM SPSS Statistics, Version 27. Logistic regression tested the hypothesis that telemedicine usage and healthcare coverage related to greater likelihood of being able to obtain MOUD. The primary dependent measure was self-reported MOUD access in the previous four weeks (yes/no). Bivariate associations among all variables were calculated using Pearson (for continuous with continuous), point-biserial (for continuous with binary variables), or Phi (for binary with binary variables) correlations. The logistic regression included *a priori* sociodemographic covariates (age, household income, race, ethnicity, gender, education, home ownership). These covariates were included in our model because they have demonstrated relevance to MOUD access and/or barriers to care (Daley, 2005; Pilarinos et al., 2022; Rosales et al., 2022; Saini et al., 2022; Wells et al., 2001).

Adjusted odds ratios (AORs) with bias-correlated and accelerated bootstrapped 95% confidence intervals (CI) are reported. A variable was considered statistically significant if its bootstrapped CI did not include 1.000. Predictive probabilities were calculated at the mean of all covariates in the model.

3. Results

The sample included 191 survey respondents between the ages of 18–69 ($M = 38.3$, $SD = 11.8$) who reported using opioids not as prescribed by a doctor on at least one day in the past seven days. The sample was balanced in terms of sex assigned at birth (51.3% female) and was racially and ethnically diverse, with 41.4% of respondents identifying as a minoritized (non-White) race and 52.4% identifying as Hispanic/Latino ethnicity. The most common income category (35.6%) was $50,000-$74,999. The majority (89%) of participants had a college degree or higher. Thirty-seven percent of participants had used telemedicine in the past year, and 65% had healthcare coverage. Forty-nine percent both used telemedicine and had healthcare coverage. Forty-five percent of participants reported that they were able to access MOUD.

Unadjusted, bivariate correlations among all variables are shown in Table 1. Adjusted odds ratios are shown in Table 2. Sociodemographic covariates significantly associated with higher odds of ability to obtain MOUD were older age, less than college education, and Hispanic ethnicity. As hypothesized, telemedicine usage (AOR: 4.23; 95% CI: 1.65, 19.67) and healthcare coverage (AOR: 4.51; 95% CI: 1.67, 22.40) were associated with significantly higher odds of ability to access MOUD. The predicted probability of ability to access MOUD was 0.211 for individuals without healthcare coverage and 0.547 for those with healthcare coverage. Similarly, the predicted probability of a participant's ability to access MOUD was 0.223 for individuals who did not use telemedicine services and 0.548 for those who did.

Table 1
Correlations among focal study variables and covariates.

	1	2	3	4	5	6	7	8	9	10
1. Age	—	0.045	−0.004	0.124	−0.247**	−0.001	0.109	0.020	0.114	0.192**
2. Annual income		—	−0.043	0.203**	−0.168*	0.116	0.158*	−0.047	−0.020	−0.136
3. Race			—	−0.184*	−0.096	0.057	−0.125	0.141	0.043	0.116
4. Ethnicity				—	−0.098	0.034	−0.037	−0.056	−0.058	−0.189**
5. Sex assigned at birth					—	0.026	−0.068	−0.003	−0.024	−0.129
6. Education						—	−0.056	0.061	0.080	−0.119
7. Home ownership							—	−0.100	−0.099	−0.070
8. Healthcare coverage								—	0.316**	0.348**
9. Telehealth utilization									—	0.361**
10. Access to MOUD										—

* p <.05.
** p <.01.

Table 2
Fully adjusted logistic regression models testing associations with respondents' self-reported MOUD access.

	MOUD Access
	AOR (95% CI)
Age	**1.04 (1.001, 1.09)**
Annual income	0.83 (0.62, 1.05)
Race (Ref: White)	
Non-White	1.11 (0.49, 2.80)
Ethnicity (Ref: Hispanic/Latino)	
Non-Hispanic/Latino	**0.41 (0.19, 0.73)**
Sex assigned at birth (Ref: Male)	
Female	0.54 (0.25, 1.03)
Education (Ref: Less than college degree)	
College degree or higher	**0.25 (0.06, 0.72)**
Home Ownership (Ref: Does not own home)	
Owns home	0.74 (0.34, 1.50)
Healthcare Coverage (Ref: No or don't know/unsure)	
Yes	**4.51 (1.67, 22.40)**
Telemedicine (Ref: No)	
Yes	**4.23 (1.65, 19.67)**

Bolded adjusted odds ratios (AORs) are statistically significant, as indicated by 95% CIs that do not include 1.00.

4. Discussion

Telemedicine usage and healthcare coverage may be important gatekeepers for MOUD access. The present analysis explored this possibility during the early phase of the COVID-19 pandemic in five Northeast states with the highest rates of COVID-19 infection and deaths in the US at the time (Dong et al., 2020). As hypothesized, the probability of a participant's self-reported ability to access MOUD was significantly higher for those with healthcare coverage than those without. Similarly, the probability of a participant's self-reported ability to access MOUD was significantly higher for those who utilized telemedicine services than those who did not. Approximately one in five individuals without healthcare coverage self-reported ability to access MOUD, compared to half of individuals with healthcare coverage. Parallel findings emerged for telehealth usage. Although there was relatively high overlap between those who used telehealth and those who had healthcare coverage, each variable accounted for significant variance in MOUD access when adjusting for the other. These findings suggest that both healthcare coverage and usage of telehealth services were vital to MOUD access during the pandemic.

Findings of this brief report are largely consistent with the broader telemedicine literature which has demonstrated the viability of using such services to prescribe and monitor MOUD (Cole et al., 2021; Eibl et al., 2017; Lin et al., 2019; Zheng et al., 2017). Additionally, findings are in line with research suggesting that telemedicine can effectively address disparities in healthcare by increasing patient ability to access care (Cole et al., 2021). The present study expands upon the existing literature by providing empirical evidence linking telehealth usage and healthcare coverage to ability to access MOUD during a particularly turbulent time, i.e., the initial phase of the COVID-19 pandemic. In order to gain a more robust understanding future studies should explore sociodemographic covariates, particularly those that were significantly associated with ability to access MOUD in this study: age, education, and ethnicity.

5. Limitations

Our study surveyed a non-probability sample using a web-based platform. Generalizability of these results to other settings remains to be shown, and findings must be interpreted with the selected sample in mind. Data on respondents' interpretation of survey questions regarding MOUD access were not collected, nor were prescription data. Consequently, although healthcare coverage and telemedicine utilization were associated with greater odds of being able to access MOUD, our findings do not confirm that MOUD actually was obtained, as alternative interpretations of survey questions by respondents cannot be ruled out. Similarly, participants were not surveyed about their perception of whether or not they needed treatment, their willingness to obtain said treatment, or why they responded "No" versus "Does Not Apply to Me" when answering our survey question regarding MOUD access. These limitations must be considered when interpreting findings as they may have led to varying issues regarding interpretation of this survey question.

Only respondents who reported use of non-prescribed opioids in the past seven days were included in our analysis. This constitutes a significant limitation, and future evaluations may test whether results extend to individuals who were on MOUD and did not use non-prescribed opioids. Respondents' treatment status, i.e., whether they were maintaining existing MOUD treatment versus beginning MOUD treatment, was not collected. This constitutes a limitation since treatment status coupled with systemic factors, i.e., MOUD prescribing regulations at the time of the study and availability of providers able to accept new patients, may have influenced respondents' ability to access MOUD treatment independently of telehealth access or healthcare coverage. Finally, the assessment timeframe for independent variables and the MOUD access outcome overlapped, precluding inferences of causation. Respondents' hesitancy to self-disclose sensitive data was not considered to be a significant limitation, as the survey was both anonymous and computerized, two factors associated with significantly higher reporting of socially undesirable and stigmatized behaviors (Gnambs & Kaspar, 2015).

6. Conclusions

This study provides empirical evidence linking telemedicine usage and healthcare coverage to MOUD access in a diverse U.S. sample during the early phase of the COVID-19 pandemic. In this sample, one in two individuals who utilized telehealth or had healthcare coverage reported

being able to access MOUD, whereas it was only one in five of their respective counterparts who did not utilize telehealth or have healthcare coverage. These findings suggest that telemedicine and healthcare coverage supported MOUD access during a time when barriers to care were high. Implications extend beyond the current pandemic. Access to MOUD is a long-standing concern which predates the COVID-19 pandemic (Madras et al., 2020; Priest et al., 2020). In rural regions that historically have been hit hardest by the opioid crisis, the limited number of specialized prescribers is a major barrier to MOUD access. Our findings support the notion that telehealth may be a practical solution to alleviate such treatment disparities. Ultimately, findings speak to the importance of not only extending but also formalizing temporary policy changes instituted during the pandemic to allow MOUD prescribing via telemedicine.

Ethics approval and consent to participate

The study was reviewed by Brown University Institutional Review Board and exempted from requiring approval due to minimal risk. Written informed consent was obtained from all participants.

Availability of data and materials

The datasets analyzed during the current study are available from the corresponding author on reasonable request.

Role of funding sources

This project was supported by an Institutional Development Award from the National Institute of General Medical Sciences of the National Institutes of Health under grant P20GM130414 (Monti). Preparation of the report was supported by National Institutes of Health grants K23AA024704 (Monnig), K23AA024808 (Treloar Padovano), K08DA048137 (Sokolovsky), and K01AA026874 (Goodyear).

CRediT authorship contribution statement

Mollie A. Monnig: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing, Funding acquisition. **Samantha E. Clark:** Writing – original draft, Writing – review & editing. **Hayley Treloar Padovano:** Conceptualization, Methodology, Formal analysis, Writing – review & editing, Funding acquisition. **Alexander W. Sokolovsky:** Formal analysis, Writing – review & editing, Funding acquisition. **Kimberly Goodyear:** Formal analysis, Writing – review & editing, Funding acquisition. **Jasjit S. Ahluwalia:** Conceptualization, Methodology, Writing – review & editing. **Peter M. Monti:** Conceptualization, Methodology, Writing – review & editing, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The datasets analyzed during the current study are available from the corresponding author on reasonable request.

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