

The Impact of the COVID-19 Pandemic on Medications for Opioid Use Disorder Services in the U.S. and Canada: A Scoping Review

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Abstract

Since the arrival of the COVID-19 pandemic, preliminary evidence suggests that rates of opioid use and overdose in North America have only been exacerbated. During this time, healthcare services providing medications for opioid use disorder (MOUD) have faced heightened challenges, rapidly adjusting services in order to continue to provide access to treatment. To better understand the impact of the pandemic on MOUD services in the U.S. and Canada, this scoping review summarizes and synthesizes the existing literature on this topic. Articles were deemed eligible to be included in this review if they met the following three criteria: focused on MOUD services; situated within the COVID-19 pandemic; and situated within the U.S. or Canada. Common themes among the articles that met inclusion included the impacts of MOUD policy changes; the transition to telehealth; challenges to providing MOUD; innovative changes to services; and recommendations for policy and service changes. Many articles supported MOUD regulatory changes, with some finding these changes had increased access to MOUD for underserved populations. There is currently a pressing need to evaluate the impacts on MOUD services in greater depth, as recent changes could have lasting implications on future MOUD regulatory policies and treatment standards.

Keywords: opioid use disorder; medications for opioid use disorder; COVID-19 pandemic; substance use disorder treatment; scoping review

The Impacts of the COVID-19 Pandemic on Medications for Opioid Use Disorder Services in the U.S. and Canada

Over the past two decades, the opioid epidemic in the U.S. and Canada has become an increasing public health concern, as opioid use and mortality rates continue to rise nearly every year in both countries. In 2018 in the U.S., approximately 10.3 million (3.7% of the population), Americans aged 12 or older had misused opioids in the past year, and 2 million Americans met criteria for an opioid use disorder (OUD) (Substance Abuse and Mental Health Services Administration, 2019). Opioid overdose death rates in the U.S. have risen almost every year between 1999 and 2018, accounting for nearly 450,000 deaths (148.6 deaths per 100,000) during this time and totalling 49,860 deaths (15.1 deaths per 100,000) in 2019 alone (Centers for Disease Control and Prevention, 2021; Wilson et al., 2020). In Canada, opioid overdose deaths have also risen yearly between 2016 and 2020 (with the exception of 2019), resulting in more than 17,000 opioid-related deaths since 2016 (45.9 deaths per 100,000) (Special Advisory Committee on the Epidemic of Opioid Overdoses, 2021).

The Impacts of the COVID-19 Pandemic on Opioid Use

Just prior to the onset of the COVID-19 pandemic in North America in March 2020, both the U.S. and Canada had begun to experience a decrease in yearly opioid-related deaths (in 2018 and 2019, respectively). However, since the pandemic began, both countries have experienced a surge in opioid use and opioid-related deaths. In the U.S., data have predicted that national rates of drug overdose deaths in 2020 increased by 30% from the previous year, and increased a further 15% in 2021, with more than 75% of these overdose deaths involving opioids (Centers for Disease Control and Prevention, 2022). In Canada, the number of opioid overdose deaths rose to 14,198 in 2020 and 2021 combined, resulting in a 57% increase from the two years prior

(Special Advisory Committee on the Epidemic of Opioid Overdoses, 2022). The increases in opioid use and mortality rates over the past year have led some substance use disorder (SUD) specialists to characterize the situation in North America as an epidemic within a pandemic, with those who misuse opioids – an already vulnerable population – at even greater risk during the pandemic (e.g., Alexander et al., 2020). Furthermore, individuals in treatment for OUD are experiencing greater barriers to accessing services due to pandemic restrictions, such as the temporary suspension of in-person services and difficulties in acquiring OUD medications, prompting concerns of relapse and overdose (Russell et al., 2021).

Medications for Opioid Use Disorder

Medications for opioid use disorder (MOUD) (e.g., methadone, buprenorphine, and naltrexone) are currently considered the gold standard of care in OUD treatment. These medications are effective in treating OUD by reducing illicit opioid use and retaining patients (Connery, 2015), while also resulting in improved recovery rates (i.e., preventing relapse and overdose, and improving psychosocial functioning; Fullerton et al., 2014; Thomas et al., 2014). Yet, their adoption and implementation are often obstructed by a range of factors, including their associated stigma; providers' lack of training with or inability to prescribe medications; limited availability in rural areas; negative side effects; fears of illegal diversion; and preferences for abstinence-based treatment (Korthuis et al., 2017; Richard et al., 2020; Roman et al., 2011). The challenges to providing MOUD within OUD treatment have been documented among European countries as well (Bacha et al., 2010).

Racialized and vulnerable populations in North America can often face heightened barriers to accessing MOUD services. In the U.S., African American and American Indian and Alaskan Native (AI/AN) populations experience the some of the highest rates of overdose deaths

(Wilson et al., 2020), yet both face lower access to MOUD services (Lagisetty et al., 2019; Rieckmann et al., 2016). In Canada, lower rates of MOUD initiation among Indigenous Peoples have also been reported (Wood et al., 2007). Individuals who are incarcerated and individuals experiencing homelessness are also populations of concern with regard to MOUD access. Both populations are at higher risk of opioid overdose as compared to the general population (Binswanger et al., 2007; Yamamoto et al., 2019), while also experiencing heightened barriers to treatment access (Krawczyk et al., 2017; McLaughlin et al., 2021). Currently, with the arrival of the COVID-19 pandemic, many fear that the overdose rates and lack of access to MOUD services among underserved, marginalized, and vulnerable OUD populations will be exacerbated throughout these times of instability (Banks et al., 2021; Wendt et al., 2021).

MOUD Policy in the U.S. and Canada

MOUD have been tightly regulated in the U.S. and Canada for decades (Priest et al., 2019). In the U.S., methadone is federally regulated by the Substance Abuse and Mental Health Services Administration (SAMHSA) and, with limited exceptions, can only be dispensed at certified opioid treatment programs (OTP). OTPs are permitted to provide "stable" patients (i.e., with low risk of diversion or misuse) with 2-day take-home supplies of methadone, while "unstable" patients are required to visit OTPs daily to receive their dose (Substance Abuse and Mental Health Services Administration, 2015). Buprenorphine is also federally regulated, with providers required to obtain a federal "waiver" to prescribe it, and with limits on the number of buprenorphine clients they can treat at a given time (Davis & Samuels, 2020). Similar restrictions exist in Canada, although MOUD are regulated provincially, allowing for more flexibility such as MOUD dispensing through pharmacies (Priest et al., 2019). New MOUD clients are also closely monitored in Canada, often having to visit clinics daily for their dose;

although after a period of stabilization, providers can assign higher take-home doses ("carries") on a case-by-case basis (Morin et al., 2021).

With the onset of the COVID-19 pandemic, government agencies in the U.S. and Canada were quick to adjust MOUD regulatory policies in order to increase patient access to the medications, encourage socially distancing, and reduce the spread of the COVID-19 virus. In the U.S., on March 16, 2020, SAMHSA released new guidance allowing OTPs to dispense 28 days of take-home methadone doses for "stable" patients and 14 days of take-home methadone doses for "unstable" patients (Substance Abuse and Mental Health Services Administration, 2020a). OTPs were also granted more leniency by allowing family members or other trusted sources to pick up methadone for quarantined clients (Substance Abuse and Mental Health Services Administration, 2020b). On March 31, 2020, the U.S. Drug Enforcement Administration (DEA) waived several buprenorphine restrictions during the pandemic, authorizing providers the use of telehealth (via video or telephone) to conduct initial evaluations for buprenorphine prescription, a process previously required to be in-person (Drug Enforcement Administration, 2020). In Canada, similar MOUD guidelines were implemented during the pandemic. For example, in the province of Ontario, providers were recommended to allow for patients' increased MOUD take-home carries whenever appropriate, particularly for buprenorphine prescriptions. Assessments were recommended to be conducted remotely using telehealth methods whenever possible, and the role of urine drug screening and contingency management (the rewarding of abstinence and treatment adherence with reinforcers such as prizes or vouchers) in MOUD prescribing and dosing was temporarily de-emphasised (Centre for Addiction and Mental Health, 2020).

Rationale and Research Objectives

Given the recent and rapid impacts to MOUD policies and services in the U.S. and Canada due to the COVID-19 pandemic, a scoping review of the literature on these impacts could be of considerable importance. With numerous published commentaries and studies focused on MOUD services within the context of the pandemic, a scoping review is warranted at this time to synthesize these sources; identify the most prevalent themes; highlight contradictions between findings; and summarize the recommendations and opinions of OUD clinicians, researchers, and stakeholders on future directions in the field. As such, the primary objective of this review was to identify and document the ways in which the COVID-19 pandemic has impacted MOUD services in the U.S. and Canada. The following research questions were explored: 1) How have MOUD policy changes affected MOUD services? 2) What are the challenges and barriers MOUD services have faced during the pandemic, and what innovations have been created to overcome these? 3) What are the reported positive outcomes to MOUD services due to service changes? 4) How have MOUD services for vulnerable and racialized populations been affected by the pandemic, and what are some key considerations to improving services for these populations? 5) What key recommendations have OUD clinicians, researchers, and stakeholders suggested with regard to future MOUD policy, service changes, and research?

Method

This review was conducted using scoping review procedures, as outlined by the Joanna Briggs Institute (Peters et al., 2015) and the Preferred Reporting Items of Systematic Reviews and Meta-Analyses for Scoping Review (PRISMA-ScR) guidelines (Tricco et al., 2016). Key procedure from these guidelines include (but are not limited to) stating the research questions and objectives; defining inclusion criteria; developing extraction fields; extracting and charting the results; and providing a discussion, conclusion, and implications for practice and research.

Search Strategy

Articles on the impacts of the COVID-19 pandemic on MOUD services were identified using the electronic databases Medline (Ovid) and PsycInfo (Ovid). The search was designed to identify any studies from the U.S. or Canada that pertained to opioid use or opioid use treatment during the COVID-19 pandemic. The search was performed on August 19, 2021. Given the focus on the COVID-19 pandemic, the search was limited to 2019 and beyond. (See Supplementary Materials Appendix A for a complete summary of the search terms used.)

Inclusion and Exclusion Criteria

Following the completion of the search, citations of all the identified articles were uploaded to Zotero software and screened by two reviewers independently using the titles and abstracts. Articles were excluded in this first round of screening if it was clear from their title and abstract that they did not meet all three of the following inclusion criteria of this review: (1) focus on MOUD services; (2) situated within the COVID-19 pandemic; and (3) situated within the U.S. or Canada. Given the extensive amount of literature that was found on MOUD in our initial search, we decided not to report on the impacts to other harm reduction services related to opioid use (e.g., safe injection sites, safe supply), as this would have likely significantly widened our search. Following the first round of screening, a full-text review using the same inclusion criteria was performed by both reviewers independently. All forms of journal articles were eligible, which included quantitative and qualitative research, reviews, case studies, reports, commentaries, and opinion articles. Due to the current and rapidly shifting nature of the review topic, the decision was made to retain commentaries and opinion articles, as they could contain unique and timely information. Disagreements between reviewers at both stages of the study selection process were resolved through discussion or by using a third reviewer.

Data Extraction

Following the screening process, data from the articles meeting inclusion were extracted and charted by the reviewers using a Microsoft Excel spreadsheet. Data extraction categories were created a priori using extraction fields suggested by the Joanna Briggs Institute guidance on scoping reviews (Peters et al., 2015), although some categories were modified and new categories were created throughout the iterative process of data extraction and charting. Extraction categories were created for the purpose of identifying study characteristics and key information relevant to our research questions. Categories included the following: study details (authors, title, journal, year of publication, type of research, and specific populations); study aims; key findings; various impacts on MOUD services (policy impacts, barriers and challenges, positive outcomes, innovations to services, and impacts on unique populations); and future recommendations. Data from each charted category were then reviewed and summarized in the following results section.

Results

The results of the search are presented in a PRISMA-ScR diagram flow chart (see Figure 1). The initial search yielded 995 articles (Medline (N = 880) and PsycInfo (N = 115)), resulting in 886 articles after duplicates were removed. After the initial screening, 291 articles met criteria for inclusion. After the full-text review, 172 articles were included. (See Supplementary Materials Appendix B for a full reference list of the articles included in this review).

Article Characteristics

A full summary of the article characteristics is provided in Table 1. The majority of the articles (115) were published in 2021 (with the remaining 57 articles published in 2020) and reported on early stages of the pandemic (March 2020 to June 2020; 86 articles). The articles

were almost entirely focused specifically on the U.S. (150 articles), with only 9 articles focused specifically on Canada. Many of the articles (107) reported primary data regarding the impacts of the pandemic on MOUD services (i.e., data from research participants or authors reporting anecdotal experiences), while the remaining articles provided either commentaries, opinions, or recommendations. Commentaries were the most prevalent article type (69 articles). Five review articles were included in our search. The decision was made to retain these due to the possibility that they could generate unique information. However, we found that any relevant data from these articles had already been included in our review from the source articles, and thus, there are no secondary data included from these review articles in our results section.

Reported Impacts of the COVID-19 Pandemic on MOUD Services

Seventy-five articles reported on the pandemic's impact on MOUD services. Common themes included the impacts of MOUD policy changes (including changes to how MOUD was prescribed and dispensed); changes in MOUD prescription and use rates; the transition to telehealth; and other impacts to service logistics and operations (outside of telehealth).

The Impacts of MOUD Policy Changes

Among those reporting on the impacts on MOUD services, 26 articles reported on the impacts that recent MOUD policy changes had on services, with common impacts and changes including increased access to MOUD services; the initiation and prescription of buprenorphine using telehealth (video or telephone); changes to clients' MOUD take-home doses; the expansion of telehealth within treatment; and waiving or limiting urine drug screening to reduce in-person contact (Andraka-Christou et al., 2021; Brothers et al., 2021; Gustavson et al., 2020; Tracy et al., 2021; Uscher-Pines et al., 2020; L. Wang et al., 2021). The changes to MOUD policy were welcomed and supported by some authors who expressed that such changes have been long

overdue (Pena & Ahmed, 2020; Peterkin et al., 2021), highlighting the opportunity the pandemic has presented as "a natural experiment for clinicians, researchers, and advocates to study the impact of lower threshold treatment on patient health and overdose risk" (Krawczyk et al., 2020).

Several articles were focused on the impacts of increasing patients' MOUD take-home doses. McIlveen et al. (2021) reported on 20 OTPs in Oregon, in which MOUD take-home doses given to clients increased by 97%, while client visits to the clinics to receive MOUD declined by 33%, with no reported deaths related to these changes. Similarly, Joseph et al. (2021) found that OTP providers in the Bronx serving more than 3600 patients reported "drastically increasing" MOUD take-home doses after the policy changes (how much was unspecified), which then reduced the proportion of patients with 5–6 OTP visits per week from 47.2% to 9.4%, with no reported fatal overdoses among patients within the first three months of applying these changes. In New Jersey, 20 MOUD providers reported no increases in overdoses or evidence of increased diversion during the time of relaxed MOUD regulations (Treitler et al., 2021), while in North Carolina, Figgatt et al. (2021) reported low diversion rates among those receiving increased methadone take-home doses during the pandemic, with only four of the 87 methadone clients from the study's three OTPs reporting selling their extra doses.

MOUD policy changes were also reported to result in heightened telehealth use within services. Using client visit data from a rural MOUD service in the Appalachian region during the first 4 months of the pandemic, Hughes et al. (2021) found that the clinic's total MOUD visits had significantly increased with the use of telehealth while the number of incoming clients remained constant, findings the authors attributed to the telehealth policy changes. The ability to initiate buprenorphine prescriptions using telehealth was also reported to increase MOUD access for underserved populations. For example, a Chicago-based social services organization reported

engaging a physician possessing the necessary federally regulated "waiver" to prescribe buprenorphine, to prescribe the medications via telehealth to people experiencing homelessness, granting them greater access to MOUD than previously experienced (Leo et al., 2021). Similarly, several hospitals in New York City transitioned to providing buprenorphine clinics virtually to initiate MOUD services in underserved areas during the pandemic. After 8 weeks, these virtual services were found to be safe and feasible, providing higher levels of MOUD treatment than previously available, with low client drop-out rates (Tofighi et al., 2021).

Yet while some researchers detailed MOUD services actively implementing policy changes, others found variance among MOUD services in the degree to which they implemented changes during the pandemic. Reporting on eight OTPs in the U.S., Becker et al. (2021) found differences in how programs were defining "stable" clients eligible for greater take-home doses, as they reported that six of the programs were still implementing daily dosing for new clients and clients with positive urine tests in the past 30 days. Similarly, only 2/3 of the 57 primary care clinics in California surveyed by Caton et al. (2021) reported increasing buprenorphine prescriptions and reducing urine drug screenings in light of the policy changes.

Impacts on MOUD Prescription Rates

Eleven articles examined medical records to determine how rates of MOUD prescriptions have changed within the U.S. during the pandemic (there were no studies on the rates in Canada). The overall number of MOUD prescriptions generally stayed consistent during early stages of the pandemic, with some suggesting this as evidence for the effectiveness of policy changes (e.g., Cantor et al., 2021) although some also reported decreases in the initiation of new patients (e.g., Huskamp et al., 2020). In Texas, Thornton et al. (2020) found that buprenorphine prescription rates and the number of buprenorphine prescribers remained constant during the

early pandemic, while Cance and Doyle (2020) reported increases in the number of new patients receiving outpatient buprenorphine prescriptions during the early pandemic in Texas, and the number of overall existing patients experiencing a decline. However, a substantial decrease in buprenorphine prescriptions in California was associated with the statewide shutdown; data from 52 hospitals indicated a 48% decrease in the number of patients prescribed buprenorphine and a 53% decrease in the number of patients administered buprenorphine (Herring et al., 2021). These mixed findings may reflect variations in the impacts to MOUD prescribing and dispensing experienced state to state, and amongst the different types of MOUD services.

The Transition to Telehealth

How and to what extent MOUD services adopted and provided telehealth services during the pandemic was detailed in 33 articles. The transition to telehealth was often associated with the increased ability to initiate and prescribe buprenorphine using video or telephone, however, telehealth was also reportedly used in MOUD services to provide video counselling sessions and medical check-ups for clients, connect potential clients to services, and provide client education sessions (Becker et al., 2021; Caton et al., 2021; Collins et al., 2020; Harris et al., 2020). These latter services were likely previously offered in person, however there was no data provided as to whether their transition to telehealth increased access to the services or maintained the existing levels of engagement. While many articles reported how the transition to telehealth was found to result in increased access to care (Hughes et al., 2021; Leo et al., 2021; Tofighi et al., 2021) – particularly regarding buprenorphine prescribing (although no pre-post statistics were provided) – it was also reported to present some challenges to providing services (Buchheit et al., 2021; Castillo et al., 2020). One MOUD clinic reported an initial loss in patient volume in the first week of telehealth implementation, however this was followed by an increase in patient

engagement in the following weeks (Langabeer et al., 2020). In a survey of 457 SUD services in the U.S. during the pandemic, Molfenter et al. (2021) found that telehealth services had been adopted by over 70% of the organizations and was used for most of the offered services. Many of the organizations reported the intended continued use of telehealth services in the future, with the exception of buprenorphine therapy, for which they would use video-based services, but not telephone services – a decision the authors suggested may signal provider mistrust of clients.

Changes to Service Logistics and Operations

Additionally, 20 articles reported on other changes to service logistics and operations outside of telehealth. These included adjusting hours of operation (Collins et al., 2020; Russell et al., 2021); implementing physical distancing measures (Andraka-Christou et al., 2021; Bandara et al., 2020); modifying supervised injection spaces to adhere to physical distancing guidelines (MacKinnon et al., 2020); implementing curbside MOUD treatment (Cantor & Laurito, 2021); and implementing and adapting mobile MOUD services that facilitated the initiation of MOUD prescriptions and MOUD delivery (Leo et al., 2021; Tracy et al., 2021; Wenzel & Fishman, 2021). Articles mainly describe how these service adjustments were directly related to the pandemic, and thus, were not being implemented prior to its arrival, with the exception of the mobile delivery service reported by Wenzel & Fishman (2021), who described the service being modified in light of the pandemic, yet did not report on changes in use of this service. Some clients reported that the reduction in hours of operation impacted their access to the services, and sometimes resulted in their inability to receive the medications (Russell et al., 2021).

Reported Challenges and Barriers to MOUD Services

Twenty-two articles reported challenges or barriers in implementing, maintaining, and receiving MOUD services during the pandemic. Challenges with the transition to telehealth

among MOUD services included inadequate telehealth infrastructures; digital device and internet access issues; limited patient access to technologies; and lower rates of referrals using telehealth (Buchheit et al., 2021; Collins et al., 2020; Hser et al., 2021). Other challenges and barriers to providing services outside of telehealth included difficulties initiating new patients; less patient accountability; shorter patient visits; and the inability to do in-person group therapy (Hunter et al., 2021; Jones et al., 2021; Uscher-Pines et al., 2020). In surveying MOUD providers, Kelley et al. (2020) found that time constraints and inadequate staffing and support were reported as the greatest barriers (similar to pre-COVID findings), while virtual care was not perceived as a top barrier. Challenges to providing MOUD services in jails included implementing physical distancing; obtaining adequate personal protective equipment for staff; and planning for the continued care of MOUD inmates upon early release (Bandara et al., 2020; Donelan et al., 2020).

Several articles also reported on challenges and barriers to patients accessing MOUD services. Transitioning to and using telehealth was also described as a challenge for patients, particularly those with limited access to technologies, unreliable telephone and internet services, and limited privacy at home (Buchheit et al., 2021; Jones et al., 2021). Some MOUD patients reported that the use of virtual services reduced both the overall quality of OUD service and the frequency of communication with providers (Russell et al., 2021). Due to the challenges experienced around telehealth by both providers and clients, the need for establishing better guidelines for the use of telehealth was emphasized (Hser et al., 2021; Uscher-Pines et al., 2020). Other reported barriers to accessing MOUD services included reduced clinic hours and temporary closures; longer appointment wait times; and loss of public transportation (Collins et al., 2020; Gleason et al., 2021).

Reported Innovations in MOUD Services

In light of the challenges faced by MOUD services during the pandemic, 28 articles reported on innovations that were implemented during the pandemic in order to adapt and continue to provide services. With policy changes now allowing for buprenorphine assessment and prescription via virtual platforms, the creation of a telephone hotline in Rhode Island that functioned as a "tele-bridge" to link individuals with OUD to buprenorphine waivered providers was described in two articles (Clark et al., 2021; Samuels et al., 2020). Preliminary evidence from the program indicated that 74 new buprenorphine prescriptions were initiated from April to November 2020 and that the initial reception was positive among clients (who reported previous difficulties to accessing services) and provider, who felt it bridged a much-needed gap in MOUD services, particularly among vulnerable populations. Castillo et al. (2021) described a similar innovation to service, in which medical students transformed a clinic to provide "teleMOUD" services, coordinating appointments and initiating interviews with new patients, with a supervising physician interviewing patients and prescribing buprenorphine when appropriate.

One organization, which previously offered group-based opioid treatment (GBOT) to buprenorphine clients, transitioned to telehealth GBOT, and found that clients preferred this modality to the individual telehealth model, with client participation comparable to pre-COVID in-person groups. Additionally, providers' productivity using telehealth GBOT ranged between 3.5 and 5.75 patients an hour, while individual telehealth visits were approximately 2 patients an hour (Sokol et al., 2021). Outside of telehealth, reported innovations to increasing service access and promote social distancing included curbside MOUD treatment (Cantor & Laurito, 2021); the development of a smart-phone app to monitor MOUD use (Peavy et al., 2020); and a mobile van delivery service for buprenorphine among youth clientele (Wenzel & Fishman, 2021).

Reported Positive Outcomes Due to Impacts

In addition to reported innovations, 32 articles reported on positive outcomes within services as a result of the pandemic. Of these, 16 articles reported positive outcomes to services due to relaxed MOUD policy restrictions, including greater overall access and decreased barriers to MOUD services for clients (Leo et al., 2021; Nordeck et al., 2020); greater flexibility and convenience for clients due to higher MOUD take-home doses (Joseph et al., 2021; Russell et al., 2021); faster initiation of MOUD services without in-person evaluations (Gustavson et al., 2020; L. Wang et al., 2021); and a greater ability to tailor individualized care for MOUD clients (Treitler et al., 2021). Other reported positive outcomes included increased patient interest in initiating MOUD (Noyes et al., 2021); increased access to services via telehealth (Uscher-Pines et al., 2020); and telehealth's heightened convenience and ease of use among clinicians (Hunter et al., 2021). Several articles highlighted how the pandemic has also given OUD services an opportunity to re-evaluate its standards of care, questioning the necessity of routine urinary drug screens, and noting the effectiveness of decisions making at the organizational level, rather than the federal level (Gustavson et al., 2020; Peavy et al., 2020).

Impacts to MOUD Services Amongst Racialized and Vulnerable Populations

Sixteen articles reported on the pandemic's impact on MOUD services among racialized populations, with impacts often related to the recent MOUD policy changes. Joseph et al. (2021) reported how OTPs in the Bronx – serving primarily Hispanic/Latinx and African American clients – had increased unsupervised MOUD take-home doses and halted toxicology tests at the beginning of the pandemic. These shifts were reported to result in greater flexibility and improved patient-centered care within the clinics, with no reported fatal overdoses. In several other studies examining OUD programs that primarily serve African American clients, the use of telehealth resulted in higher rates of successful initiation and retention of buprenorphine

treatment among clients (Mehtani et al., 2021; Nordeck et al., 2020). Wendt et al. (2021) found that Indigenous-serving MOUD clinics had also adopted telehealth services and that recent regulatory changes had led to greater flexibility and accessibility to MOUD. The pandemic did however present a challenge for some Indigenous-serving clinics, as social distancing had restricted their ability to implement traditional healing practices within treatment, such as sweat lodges and smudging, although in some regions, drum circles were held over videoconferencing. Several articles called for further policy changes, such as loosening methadone restrictions and widening the scope of professionals able to prescribe buprenorphine, arguing that MOUD regulations disproportionately impact communities of color (Nguemeni Tiako, 2021; Peterkin et al., 2021). Through investigating the experiences of OUD patients during the pandemic, Mistler et al. (2021) found that racial/ethnic minority methadone clients reported greater financial burdens and more direct impacts from the pandemic as compared to White clients, while Q. Q. Wang et al. (2021) found that African Americans with OUD were at increased risk of having the COVID-19 virus and experienced more adverse outcomes related to the virus.

Five articles were focused on the impacts of the pandemic on MOUD services within prisons. In May 2020, Bandara et al. (2020) surveyed 16 carceral systems offering MOUD services within the U.S. to explore the effects of the pandemic. All systems reported continuing their MOUD programs during the pandemic, however, ten systems reported reducing the scale of their program (including the discontinuation of new participant enrollment). During the pandemic, prisons presented as a difficult environment in which to implement social distancing, with some states initiating the early release of prisoners to downsize the population (Duncan et al., 2021). Reporting on a jail in Massachusetts that mandated the early release of nonviolent individuals, many of whom were in the jail's MOUD program, Donelan et al. (2020) reported

difficulties arranging for community based MOUD programs for inmates upon release. Challenges were also reported in administering MOUD, which was previously done in groups, but had switched to individuals receiving medications in their cell. Conversely, Duncan et al. (2021) described a jail in Minnesota that reduced its population by 43% and reported that with a reduced jail census, and the ability to initiate buprenorphine prescriptions without in-person visits, the jail was able to better meet the MOUD needs of inmates than prior to the pandemic.

Six articles focused on the impacts of the pandemic on MOUD services for individuals experiencing homelessness. Leo et al. (2021) reported on the implementation of a mobile van service developed to connect people experiencing homelessness with MOUD services by initiating and prescribing buprenorphine using telehealth services from the van. This program, made possible by the recent MOUD regulatory changes, was reported to result in improvements in buprenorphine access for this population. Two additional studies also reported on the initiation of buprenorphine for individuals experiencing homelessness through the use of telehealth interviews provided by SUD clinics (Harris et al., 2020; Mehtani et al., 2021).

Recommendations for MOUD Policy and Services

Many of the articles (109) included in this review made recommendations regarding MOUD policy or services changes, which were categorized into the following recommendations: future MOUD policy and regulatory changes, and future MOUD service changes.

Recommendations for Future Policy and Regulatory Changes

Fifty-three articles provided recommendations regarding MOUD policy changes. Many of these articles expressed support for the current policy changes, with 22 articles (all focused on the U.S.) specifically calling for the long-term retention of the current policy changes. As such, some authors acknowledged the need for research on the effects of the current MOUD policy

changes on services to inform policy makers as to which changes may be appropriate to retain long-term (Del Pozo et al., 2020; Stringer et al., 2021). Notably, no articles recommended that MOUD policies should return to their pre-COVID-19 regulations after the pandemic has subsided. Furthermore, articles called for additional policy changes to be implemented in order to increase access to MOUD, including lifting the regulation requiring a waiver to prescribe buprenorphine (Davis & Samuels, 2020); removing in-person examinations for the initiation of methadone (Pena & Ahmed, 2020); and changing MOUD financial incentives for treatment providers (e.g., in some states, clinics are reimbursed each time they dose a client, thus larger take-home doses have the same reimbursement as a single dose and result in less revenue for the clinics; Peterkin et al., 2021).

Recommendations for Future Service Changes

Sixty-six articles made recommendations on service changes that are needed or should persist after the pandemic. Common themes here included continuing and increasing low-barrier access to MOUD (Nordeck et al., 2020); the continued use and expansion of telehealth services (i.e., for MOUD prescription, treatment for those in rural areas, and group telehealth; Mitchell et al., 2021; Sokol et al., 2021; Uscher-Pines et al., 2020); and maintaining novel forms of MOUD delivery outside of treatment centers, such as mobile vans and in house delivery (MacKinnon et al., 2020; Wenzel & Fishman, 2021). Of the recommendations put forward, the use of urine drug testing received conflicting opinions. Some articles recommended that OUD services stop using routine urine drug testing and only perform tests when needed, arguing that this practice is rooted in criminal justice (e.g., Pytell & Rastegar, 2021), while others reinforced the use of testing, arguing that a lack of monitoring decreases MOUD's effectiveness (e.g., Morin et al., 2021).

Ten articles also included recommendations regarding the allocations of resources and funding amongst MOUD services. Several articles emphasized the need for better training, education, and support for healthcare professionals regarding MOUD prescribing, along with better guidance for providers on how to best assist OUD patients (Ivey & Clifton, 2021; Kelley et al., 2020). Other recommendations included funding allocations to ensure that OUD patients have access to telehealth technologies and that underserved communities have adequate infrastructure to support online service platforms (Nguyen et al., 2021).

Discussion

In this scoping review on the impact of the COVID-19 pandemic on MOUD services in the U.S. and Canada, 172 articles were identified as reporting on this topic. The articles were primarily focused on the U.S. (87.2%), with half (50.0%) reporting on effects of the pandemic in the beginning stages (March 2020 to June 2020). They included quantitative and qualitative studies, commentaries, and brief organizational service reports. Throughout the process of the review and synthesis of the articles, the following themes were identified: 1) challenges and barriers to providing MOUD services during the pandemic; 2) positive outcomes to services brought about by the pandemic; 3) support for MOUD regulatory policies changes by those working in MOUD services, with many participants and authors advocating for these changes remain in place after the effects of the pandemic have subsided; 4) the impacts on MOUD services for underserved and marginalized OUD populations during the pandemic, with these vulnerable populations being even more at risk during pandemic times.

The Challenges and Barriers within MOUD Services During the Pandemic

The challenges and barriers to providing or receiving MOUD services during the pandemic was acknowledged in many articles. Specifically, the transition to, and use of,

telehealth was the most often reported challenge, with some providers experiencing inadequate telehealth infrastructures, and less patient connectivity and accountability (Collins et al., 2020; Uscher-Pines et al., 2020), while patients reported unreliable telephone and internet services, privacy issues at home, and a reduced quality of service (Buchheit et al., 2021; Jones et al., 2021; Russell et al., 2021). Yet while telehealth challenges during the pandemic stood out within this review, many of the reported challenges were similar with pre-pandemic findings regarding telehealth challenges (Lin et al., 2018), suggesting that these challenges may not be novel to the pandemic, but were instead exacerbated during this time. In recent years, the use of telehealth has become increasingly more popular in health care settings, with its potential benefits – such as improved outcomes, ease of use, low cost, and decreased travel times – seen to outweigh its barriers (Kruse et al., 2017). Thus, as telehealth will likely continue to play an increasingly important role in SUD services, reported challenges during the pandemic provide valuable insight into which areas are most in need of improvements. For example, Nguyen et al. (2021) addressed the need to improve technological access and infrastructure for both SUD services and clients, while Hser et al. (2021) emphasized the need for better telehealth guidelines within SUD services. Other reported challenges to MOUD services included reduced clinic hours; temporary closures; longer wait times; and loss of transportation (Collins et al., 2020; Gleason et al., 2021). While these challenges may have been addressed and reduced with the recent easing of pandemic measures and restrictions, they are important to acknowledge as they could easily reappear in subsequent pandemic waves, or other future pandemic situations.

Reported Silver Linings (Positive Changes to MOUD Services Due to the Pandemic)

Along with the challenges and barriers to services, positive changes and outcomes that have come about to services during the pandemic were also detailed in 32 articles. Positive

outcomes were found to be primarily related to telehealth, with articles reporting increases in access to services due to the expanded use of telehealth. The increased use of telehealth was noted to be particularly beneficial for services in rural areas, with clinics expanding their geographical regions of service and increasing the total number of MOUD client visits using telehealth services (Hughes et al., 2021; L. Wang et al., 2021). This increase in rural services is an important finding, as providing MOUD services in rural areas has long been a challenging aspect to OUD treatment. Prior to the opioid epidemic, opioid use in North America had primarily been an issue in urban regions, but as its use increased over the past two decades, particularly with prescription opioids (i.e., oxycodone), the rates of opioid misuse and overdose deaths began to disproportionately affect rural areas (Palombi et al., 2018). Yet, individuals living in rural areas face significantly lower access to OUD treatment, often lacking providers with the capabilities to prescribe MOUD (Haffajee et al., 2019). Accordingly, the expansion of telehealth within MOUD services was seen as an important step in increasing services to rural areas by some authors (Hser et al., 2021; Hughes et al., 2021).

The successful use of telehealth services for group therapy in OUD treatment was also a reported positive outcome during the pandemic (Sokol et al., 2021). Group therapy has been shown to play an important role in SUD treatment settings, with similar outcomes to individual therapy (Weiss et al., 2004). Thus, the use of tele-group therapy could be a valuable addition to OUD treatment in remote or rural areas and in further scenarios requiring social distancing.

The increase in MOUD take-home doses was another reported positive outcome of the pandemic, resulting in less client travel to obtain medications (Russell et al., 2021), and greater treatment flexibility and better patient-centered care (Joseph et al., 2021; Treitler et al., 2021). The required daily travel to obtain one's MOUD dose has been reported as a common barrier for

patients in OUD treatment for many years (Amiri et al., 2018). Several articles also described mobile/outreach innovations to receiving medications (Cantor & Laurito, 2021; Wenzel & Fishman, 2021), another innovation that could result in less client travel to obtain MOUD.

The Need for Continued and Expanded MOUD Policy Change

In light of these positive outcomes and innovations to MOUD services, recommendations for the current regulatory MOUD policy adjustments to remain in place after the pandemic has subsided were put forth by a substantial number (22) of articles. Furthermore, some authors felt that other MOUD policies – such as in-person examinations for methadone initiation, waiver requirements to prescribe buprenorphine, and limits on the number of buprenorphine patients a prescriber can treat – need further reform (Davis & Samuels, 2020; Pena & Ahmed, 2020). Perhaps even more telling was the absence of any articles supporting the need to return to pre-pandemic MOUD policies (although some voiced concerns with the lack of urine drug testing during the pandemic, e.g., Morin et al., 2021). The support for U.S. MOUD policy change may not come as a surprise to many already working within the OUD field, as clinicians, researchers, and stakeholders have been calling for policy changes since before the arrival of the pandemic, arguing that the strict MOUD policies create substantial barriers to accessing MOUD (e.g., Davis & Carr, 2019). Previous regulation changes in the U.S. have been shown to reduce MOUD barriers, with a 9% increase in buprenorphine prescriptions within one year after policy changes allowed nurse practitioners and physician assistants to obtain prescription waivers in 2016 (Roehler et al., 2020). Peterkin et al. (2021) noted that U.S. MOUD policies lag behind other countries, as the UK, Australia, and Canada have increased access to methadone by allowing pharmacies to dispense it (Calcaterra et al., 2019). Accordingly, some authors conceptualized the pandemic as an opportunity to overhaul outdated MOUD policies (e.g., Stringer et al., 2021),

calling for researchers to evaluate treatment changes and produce data driven results to determine which policy changes can and should remain permanently (e.g., Del Pozo et al., 2020).

Preliminary findings in some articles included in this review could support such calls. Several articles reported that the recent increases in MOUD take-home doses and decreased drug testing in some OTPs had not led to any reported fatal MOUD overdoses related to these changes (Brothers et al., 2021; McIlveen et al., 2021). Others found MOUD providers reported no evidence of increased MOUD diversion despite higher client take-home doses (Treitler et al., 2021), while patients reported very low diversion rates after receiving higher take-home doses (Figgatt et al., 2021). Although these authors acknowledged the need for more robust research on these topics, their preliminary findings are relevant to MOUD regulations that are often cited to be related to concerns of diversion and overdose (Brothers et al., 2021; Treitler et al., 2021).

The service changes spurred by the pandemic were also seen as an opportunity to re-evaluate and destigmatize current OUD treatment standards of care. Researchers have long argued that much of the MOUD policy making is based on stigma rather than science, and often further stigmatizes OUD patients (e.g., Davis & Carr, 2019). Thus, the pandemic was seen as an opportunity to address problematic MOUD policies enforced by strict regulations, frequent monitoring, and fears of diversion and misuse, and to reimagine OUD treatment philosophies and standards of care to be less rigid and stigmatizing (Alexander et al., 2020; Davis & Samuels, 2020). The destigmatization of OUD care was acknowledged to be particularly important among underserved, vulnerable, and racialized populations, who are often the most affected by the barriers and stigma brought about by MOUD policies and structural racism (Nguemeni Tiako, 2021; Wendt et al., 2021).

The Impacts to Underserved and Vulnerable Populations Using MOUD

How MOUD policy and services changes brought about by the pandemic could potentially benefit vulnerable and underserved populations was an important consideration for some authors (Leo et al., 2021; Nguemeni Tiako, 2021). Prior to the pandemic, African Americans, Indigenous Peoples, incarcerated individuals, and individuals experiencing homelessness have all been shown to experience elevated rates of OUD and overdose (Mancher et al., 2019; Wilson et al., 2020; Yamamoto et al., 2019), while also facing greater barriers to MOUD access (Lagisetty et al., 2019; McLaughlin et al., 2021; Rieckmann et al., 2016). As such, researchers have long advocated for the removal of systemic barriers and improved access to MOUD services among these populations, particularly in areas with lower availability of in-person services (i.e., rural and underserved urban areas) (Stevens-Watkins, 2020; Venner et al., 2018). As many of these populations continue to disproportionately experience heightened barriers to healthcare access generally during the pandemic, (Lima et al., 2020; Webb Hooper et al., 2020), several authors noting a specific need for attention to MOUD services (Banks et al., 2021; Peterkin et al., 2021). Yet within our review, there were reports of service changes made by organizations that improved access to MOUD for underserved populations, including observed high enrollment and retention rates among clients when transitioning to telehealth for buprenorphine treatment (Nordeck et al., 2020; Tofighi et al., 2021); greater flexibility and improved person-centered care among clientele through increased MOUD take-home doses and suspended urine testing– with no recorded fatal overdoses in this time (Joseph et al., 2021); and increased MOUD access for individuals experiencing homelessness through mobile van services and telephone-based OUD management programs (Leo et al., 2021; Mehtani et al., 2021).

As much of the research on the effects of the pandemic is still in early stages, we still do not know how, or even if, MOUD services for underserved populations improved during the

pandemic, with many of these populations experiencing heightened barriers to healthcare access generally during this time. Yet the pandemic appears to have brought about some valuable lessons and examples about how to improve access to MOUD services for underserved populations in the future, particularly with the use of telehealth, relaxed buprenorphine prescription regulations, and increased MOUD take-home doses. Thus, vulnerable and marginalized populations, and the organizations that serve them, may have the most to gain in the long run from the impacts and changes to MOUD services brought on by the pandemic.

Limitations

Several limitations of this review must be noted. First, due to the large number of articles accessed in the preliminary searches, the review was limited to the U.S. and Canada. Articles from other countries may describe novel challenges and innovations that may be transferable to services in the U.S. and Canada. Second, much of the data and recommendations in this review pertain to the early pandemic period. As the pandemic continues to develop and change, these articles should be considered in the context of the early pandemic and may not be as applicable to later pandemic periods. Finally, given that this was a timely review (aiming to rapidly capture the impacts of the pandemic in a relatively short time frame), and numerous articles meet our inclusion criteria, we decided to exclude any grey literature from our search and use only two databases (Medline and PsycInfo), which we felt were the most pertinent to this topic.

Future Research Directions

Our review identified several gaps in the literature examining the impacts of the COVID-19 pandemic on MOUD services, particularly with regard to MOUD policy regulations changes. For example, the effects of larger MOUD take-home doses needs to be examined. Many organizations reported increasing take-home doses, yet there was little data on the effects of

overdoses or diversion due to these changes. Several articles reported observing no lethal overdoses and low diversion in light of the take-home dose increases (Brothers et al., 2021; Figgatt et al., 2021; Treitler et al., 2021); however, they used survey data and anecdotal reporting, and were limited to a short time frame (three months). Research employing more robust methods may be needed to retain or shift MOUD regulatory changes after the pandemic. Similarly, research exploring buprenorphine initiation and prescription via telehealth, and changes to drug urine screening, is also needed. The expansion of telehealth was reported to substantially impact MOUD services – particularly for underserved and marginalized populations, and those living in rural areas (Hughes et al., 2021; Leo et al., 2021) – and thus further research on the expansion of telehealth in MOUD services is needed, as are the development of more thorough guidelines for providers and clients around the use of telehealth. Furthermore, as this review focused on the beginning stages of the pandemic, articles were primarily reporting on the impacts to services providing MOUD and accessibility to MOUD in light of pandemic restrictions and policy changes, and they reported little to no information on how these impacts affected clients' quality of life (as improvements to quality of life are an essential goal of MOUD). Thus, there is also a need for research investigating the long-term impacts of the pandemic regarding changes to aspects of MOUD clients' lives (e.g., changes to quality of life, acquisition of disease, criminal activity, and adherence to MOUD). Lastly, the low number of articles focused on Canada was concerning. While Canada has roughly one ninth of the population of the U.S., the number of articles focused on Canada was disproportionate to those focused on the U.S. (one Canadian article for every 21.5 U.S. articles). Although MOUD research may be moderately transferable between the two countries, Canada has its own MOUD policies, and unique medical, political, and geographical considerations to MOUD services, and

the low number of Canadian articles suggests that more research examining the impacts of the pandemic on MOUD services in Canada is needed.

Conclusions

Preliminary evidence indicates that rates of opioid use and overdoses have risen in the U.S. and Canada during the COVID-19 pandemic. Accordingly, MOUD providers have had to rapidly adjust their services to allow for continued access to medications and treatment, while simultaneously minimizing the effect of the pandemic. In light of this, we sought to summarize and synthesize the existing literature on the impact that the COVID-19 pandemic has had on MOUD services in the U.S. and Canada. Despite the challenges faced by MOUD services, our findings highlight positive outcomes and innovations to services as a result of the pandemic, largely related to the relaxing of MOUD regulatory policy and an increased use of telehealth. Due to this, many authors and participants supported these regulatory changes and advocated for their retention post-pandemic. Some articles also highlighted the impact that the pandemic has had on vulnerable and underserved MOUD populations, and shared insights into how current and future changes might help to increase their access to OUD care. As emphasized in many articles, more in depth studies of the effects of the pandemic on the MOUD services are needed. Researchers can use the opportunity that this current natural experiment has presented to produce data-driven results that could significantly impact MOUD regulatory policy and service changes, and help to increase low-barrier service access to MOUD throughout North America.

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