

Strategies to aid self-isolation and quarantine for individuals with severe and persistent mental illness during the COVID-19 pandemic: A systematic review

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Background: Individuals with severe and persistent mental illness (SPMI) have a higher risk of contracting COVID-19 than individuals without SPMI. In combination with physical distancing, hygiene protocols, and vaccines, quarantine and self-isolation are primary means of viral containment. However, individuals with SPMI may experience more difficulties with mandated quarantine or self-isolation because of their illness(es), stigma, and marginalization. To date, there is a lack of consensus on strategies that could aid such individuals in completing isolation.

Aim: This review aimed to synthesize evidence for interventions to support self-isolation and mandated quarantine for COVID-19 among individuals with SPMIs.

Methods: We followed the PRISMA guidelines, searching 19 electronic databases (9 published literature registries and 10 gray literature sources). We looked for relevant randomized controlled trials, quasi-experimental studies, and program evaluations of the effectiveness of relevant psychosocial, pharmacological, harm reduction, and addiction management strategies to support isolation settings or quarantine requirements for individuals with any SPMI (e.g., any mental disorder, substance use disorder, or their combination).

Findings: Of 10,298 total records that were located, 5582 were duplicate citations. Upon screening the remaining 4716 unique records by title and abstract, we excluded a further 3562 records. Only one original article met our inclusion criteria after reviewing the full texts of the

remaining 1154 citations. To support individuals experiencing homelessness during the COVID-19 pandemic, San Francisco developed an isolation hotel that reduced COVID-19 hospital strain for 1009 participants (25% had a mental health disorder and 26% had a substance use disorder). While 81% completed their hotel stay, 48 patients had behavioral health needs that exceeded the hotel's capabilities. No other studies met our review's eligibility criteria. Most articles located by the search simply proposed solutions or discussed the challenges brought by COVID-19 for people with SPMIs. While some documents went a step further (e.g., shelter guidance documents to support individuals experiencing homelessness), these rarely addressed individuals with SPMIs directly.

Conclusions: This systematic review evaluated evidence from published and gray literature on interventions to support self-isolation and mandated COVID-19 quarantine for individuals with SPMIs. Only one study met our inclusion criteria. This study found a beneficial effect of a dedicated isolation hotel for individuals experiencing homelessness and COVID-19—where approximately 25%–50% of the study sample had a mental or substance use disorder. While there has been an abundance of COVID-19 protocols in general, information for SPMIs is lacking. As the pandemic continues and we better prepare for future pandemics, developing protocols for supporting SPMIs in this context is imperative.

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As of March 2020, the World Health Organization declared the respiratory disease caused by SARS-CoV-2 coronavirus (COVID-19) a global pandemic (1). As a result, governments mandated various containment procedures, such as self-isolation or quarantine lasting up to 2 weeks, regional lockdowns, travel restrictions, and physical distancing requirements to slow the spread of the virus. However, while these measures mitigated the risk of spread, there were harmful impacts on mental health (2–8).

To that end, the literature has extensively reviewed the psychological impact of isolation and quarantine (9–13). However, the effects of quarantine and self-isolation on individuals with severe and persistent mental illnesses (SPMIs)—such as psychotic, mood, and substance use disorders (SUDs)—are unclear (14). Compared to individuals without SPMIs, individuals with SPMIs are at greater risk for acquiring COVID-19 (15–17) due to several co-occurring risk factors. First, individuals with SPMIs have more limited healthcare access within their respective communities, making it more challenging to access routine COVID-19 screening facilities (18). Second, individuals with SPMIs carry a disproportionately more significant burden of comorbid conditions, including disorders that increase their vulnerability to acquiring COVID-19 and experiencing severe COVID-19 illness (19). Third, individuals with SPMIs are more likely to have poorer social determinants of health, such as unstable housing (20), stigma, marginalization, and fewer resources to practice physical distancing and basic hygiene (21). Fourth, individuals with SPMIs residing in crowded spaces, particularly those in criminal justice settings and shelters, are at higher risk for acquiring COVID-19 (22). These circumstances and low treatment adherence raise the risk for contracting COVID-19 and may worsen compliance with public health protocols for COVID-19. For example, impaired cognition could decrease awareness of the need for physical distancing (21).

Interim clinical guidance from several medical agencies aims to provide recommendations to support SPMIs and people who use drugs throughout the COVID-19 pandemic (23). While there are pharmacotherapy and harm reduction protocols for some psychoactive substances (24), there is a need for specific guidance around concurrent behavior management beyond overdose and withdrawal risk for individuals with SPMIs. In addition, targeted quarantine support strategies for individuals with SPMIs, particularly those who try to leave self-isolation prematurely, are needed, as these create significant behavior management issues, putting staff, and others in the community at risk.

Given the expected longevity of the COVID-19 pandemic and the possibility that similar situations may occur in the future, developing guidance for deciding how to manage concerns would prioritize limiting outbreaks and the spread of the virus. Therefore, the present

HIGHLIGHTS

- Individuals with severe and persistent mental illness (SPMI) have a higher risk of contracting COVID-19 than individuals without SPMI.
- This review aimed to synthesize evidence for interventions to support self-isolation and mandated quarantine for COVID-19 among individuals with SPMIs.
- Only one study met our inclusion criteria. This study found a beneficial effect of a dedicated isolation hotel for individuals experiencing homelessness and COVID-19—where approximately 25%–50% of the study sample had a mental or substance use disorder.
- While there has been an abundance of COVID-19 protocols in general, information for SPMIs is lacking.
- As the pandemic continues and we better prepare for future pandemics, developing protocols for supporting SPMIs in this context is imperative.

systematic review aimed to synthesize the evidence of pharmacological and psychosocial interventions for supporting isolation among individuals living with SPMIs.

METHODS

Protocol and Registration

We prospectively registered this review with PROSPERO (CRD42020208155). We adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (25). As a systematic review of previously published studies, the University of Calgary Conjoint Health Ethics Board determined the study was exempt.

Eligibility Criteria

We used the population-intervention-comparison-outcome-study design (PICOS) framework to determine eligibility criteria (26). Eligible populations were any individuals with SPMIs who are facing COVID-19 isolation conditions. While there is no standard definition of SPMIs (27), we considered all major psychiatric disorder categories (e.g., mood, anxiety, psychotic, personality, substance, and neurocognitive disorders). We did not place any restrictions on individuals' type of disorder, symptom severity, or treatment status. Eligible interventions were those aiming to support self-isolation or mandatory quarantine for COVID-19, including harm reduction strategies, pharmacotherapy (e.g., opioid agonist therapy for treating opioid withdrawal due to forced isolation), psychotherapies (e.g., cognitive behavioral therapy), or other psychosocial interventions (e.g., isolation hotels). We did not implement a comparator requirement. However, we considered comparisons (e.g., if a study compared two or more interventions against each other). Eligible outcomes were containment

measures (e.g., proportion who remain in isolation before and after the studied intervention) and effectiveness/efficacy measures (e.g., change in infection risk behaviors and infection transmission rates). There were no restrictions based on study design, language, or year of publication.

Information Sources

We consulted a health sciences research librarian to develop a comprehensive search strategy for peer-reviewed published literature and gray literature, such as government documents, guidelines, rapid clinical guidance documents, and relevant websites. Electronic databases for the peer-reviewed literature search included PubMed, MEDLINE, PsycINFO, Cochrane, and EMBASE. Gray literature sources included websites from leading addictions and psychiatric institutions, such as the American Psychiatric Association (APA), the Canadian Psychiatric Association, British Columbia Center for Substance Use, the American Society of Addiction Medicine (ASAM), and the Canadian Society of Addiction Medicine. We also searched the reference lists of included studies and related reviews for other studies that may meet eligibility criteria. Finally, we searched for unpublished, ongoing trials using the FDA website (www.clinicaltrials.gov) as well as the World Health Organization International Clinical Trial Registry (www.who.int/ictrp/en).

Search Strategy

We present our full search strategies for all databases, registers, and websites, including filters and limits used, in the online supplement (Appendix 1 in Supporting Information S1). We include additional references for review as an online supplement (Appendix 2 in Supporting Information S2).

Selection Process

We used Cochrane's Covidence, a web-based systematic review manager, to remove duplicate citations and screen records (28). One co-author (AB) independently screened all articles and gray literature results against the pre-specified eligibility criteria by title and abstract, and then in full. A second co-author (DC) reviewed a subset of 150 randomly selected abstracts and titles to ensure the fidelity of the process. The resulting agreement was sufficient ($\kappa > 99\%$), justifying the use of a single reviewer in combination with automated screening.

Data Collection Process

Using Covidence, one co-author (AB) extracted data from reports. We contacted study investigators to obtain and confirm data where necessary. We used automation tools supplied by Covidence to find the key PICOS characteristics of each included study.

Data Items

We extracted the following PICOS data items from relevant studies using Covidence, including study name,

location, sample characteristics (age, sex, SPMI type, sample size), intervention, comparator (if used), measured outcomes, and study design.

Study Risk of Bias Assessment

One co-author (AB) independently appraised study quality using the Cochrane Risk of Bias Tool for randomized controlled trials (29) and the risk of bias in non-randomized studies (ROBIN-I) for non-randomized trials (30). In addition, we used Covidence's automated risk of bias feature to support the identification of individual risk of bias domains in each study (e.g., randomization quality, allocation concealment, blinding, selective reporting). We also collected information on study registration and report of funding sources.

Synthesis of Results

We undertook a descriptive synthesis as a meta-analysis was not possible given available data.

RESULTS

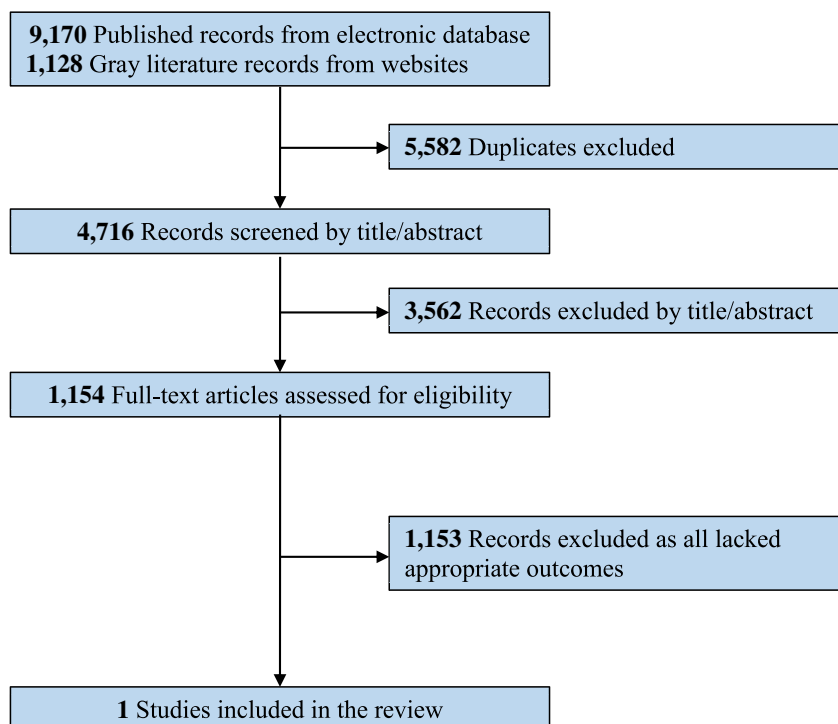
Study Selection

Of the 10,298 total records found by our search strategy, 5582 were duplicate citations. Upon screening the remaining 4716 unique records by title and abstract, we excluded a further 3562 records. Thus, only one original article met our inclusion criteria after reviewing the full texts of the remaining 1154 citations (Figure 1).

Study Characteristics

In San Francisco, Fuchs et al. (31) retrospectively evaluated the effectiveness of an isolation hotel for individuals experiencing homelessness during the COVID-19 pandemic before vaccines became available. Of the 1009 participants included in the study, 225 (25%) had a diagnosed mental health disorder, 236 (26%) had a diagnosed substance use disorder, and 91 (10%) had been in jail in the past year. In total, 81% completed their hotel stay, and the factors associated with premature discontinuation of isolation conditions were unsheltered homelessness and requiring quarantine as a close contact. However, the study did not report whether the factors associated with discontinuation were the same across individuals with or without SPMIs. In addition, although direct transfers to isolation hotels from the emergency and outpatient departments were associated with averting hospital admissions, 48 patients had behavioral health needs that exceeded the hotel capabilities; for these individuals, their ultimate disposition was unclear. For these reasons, according to the ROBINS-I tool, the study had a serious risk of bias due to missing data (as described for individuals with SPMI) and selection bias. Consequently, strategies to improve guest retention and address behavioral health needs not met in hotel settings are intervention priorities, as described by the study authors.

FIGURE 1 PRISMA flow diagram



Other Findings

Despite finding many potentially relevant articles, no other articles met our review's eligibility criteria. Instead, most reports proposed solutions or discussed the challenges brought by COVID-19 for people with SPMIs. While some documents went a step further (e.g., shelter guidance documents to support individuals experiencing homelessness), these rarely addressed individuals with SPMIs directly. However, in some of these shelter guidance documents obtained from the gray literature search, sections were devoted to psychosocial supports and protocols for people with mental disorders, which we will summarize below.

Alberta Health Services developed a rapid review guidance document for preventing, controlling, and managing COVID-19 for homeless shelter operators, staff, and volunteers to prepare and know what will happen during an outbreak (32). Recommendations for psychosocial support to individuals with pre-existing or COVID-related mental illness were outlined, including offering designated bedrooms and bathrooms, limiting visitors, maintaining physical distance from ill individuals, avoiding sharing of household items, frequent hand hygiene and sanitation, and self-monitoring for COVID-19 symptoms. In addition, psychosocial supports for individuals with pre-existing addiction or mental health concerns were described, including the risk of becoming more acutely ill, unplanned detox, increased stress, and grief. Furthermore, the document outlined a

protocol for providing a private hotel unit or a designated isolation space and adequate psychosocial and medical/pharmacy support for highly vulnerable clients. Finally, the article references an outbreak team, which guides the shelter and isolation units on how to manage clients who leave the shelter space prematurely, and including providing such clients with additional supports, but does not go into detail to describe the nature or extent of those supports or an evaluation of their effectiveness.

In a similar vein, a policy briefing report prepared by the Royal Society of Canada outlined the vulnerability of people experiencing homelessness during COVID-19. The report described the impact upon those who experience homelessness and those who serve them and made recommendations to reduce or prevent further negative consequences of this or another similar crisis (33). Specifically, the policy brief provides a series of recommendations to inform shelter care for individuals with mental illness, based on informal feedback from clients in shelter care during COVID-19. In addition, the authors developed a list of potential "rewards" they could offer to incentivize adherence to isolation protocols based on client feedback and the support workers; these included access to snacks, drinks, cash-equivalent vouchers, cigarettes, cannabis, alcohol, and other substances. To that end, the authors recommended implementing co-location of onsite programs for supporting mental health and substance use as an essential strategy for improving retention. One example

was harm reduction resources, including intravenous or oral opioid replacement programs and overdose prevention services on site.

To maximize the available data, our review also examined peripheral populations and looked for data on individuals with SPMI, including incarcerated individuals, homeless populations, and rapid medical guideline documents (Appendix 2 in supporting information S1). Most outlined general concerns about COVID-19 and mentioned that supporting mental health throughout the pandemic is a priority. For example, the literature covered by our review points to group counseling, contingency management, and residential dual diagnosis treatment as three potentially effective interventions for homeless individuals with SUDs. However, from the perspective of our review question, the issue is that these interventions focus on improving substance use outcomes and not how to support individuals with SPMI temporarily housed in isolation settings. From commentaries, there was also a lack of consensus about how to promote self-isolation in this population.

DISCUSSION

To our knowledge, the present review is the first to synthesize the state of evidence for interventions in supporting COVID-19 isolation and mandatory quarantine for individuals with SPMI. For individuals with SPMI entering quarantine, the goal is to improve retention and prevent certification and mandated hospital stay on a public health warrant. We identified many proposed strategies that could enhance the likelihood of self-isolation or quarantine, such as safe supply, withdrawal management, virtual care platforms, mobile response teams, institution-based programming (e.g., for incarcerated individuals or those experiencing homelessness), isolation hotels, and stable housing. The common thread aligning these interventions was the emphasis on continuity of treatment, making them likely helpful to the overall care of individuals with SPMI, regardless of whether specific data show they support mandated quarantine or isolation. Only one study met our eligibility criteria across the 4716 unique studies identified by our review (31). However, even that study did not directly address SPMI, but homeless individuals, where roughly one-quarter had a mental disorder or a substance use disorder. While the isolation hotel halved the hospital stay for homeless people with COVID-19, most SPMI had behavioral needs exceeding what the hotels could provide. Therefore, strategies to improve retention and address unmet behavioral health needs in isolation hotel settings remain an intervention priority.

COVID-19 substantially impacts researching interventions supporting self-isolation and quarantine for individuals with SPMI, such as participant recruitment, reduced staff availability, inconsistent access to

treatment, less health literacy, stigma, and discrimination. Future research should develop such guidance, explore whether interventions improve isolation retention, and embed findings into risk stratification strategies. For example, for individuals with substance use disorders, one approach may parallel ASAM's Patient Placement Criteria 2 Revised, which addresses substance use severity, types of substances used, method of use, stage of change around use, intoxication/withdrawal risk potential, medical comorbidity/complications, history of intrusive/aggressive behavior, risk of flight, mental illness (especially psychosis), relapse potential, and client perception of the need to physically distance (insight) (34).

Consequently, we can make educated suggestions based on clinical guidance and the limited available research data. Historically, pandemic responses blame and stigmatize marginalized groups, including individuals with SPMI (35). Geography is also an important consideration, and, consequently, the best strategies involve utilizing evidence-based information to mitigate fear and stigma in the local context (36). Potential interventions for supporting self-isolation for people with SPMI should be mindful of their mental health needs, acknowledge limited trust and proneness to paranoia, avoid coerciveness, improve engagement, supply a safe environment, and limit the potential for substance withdrawal and supporting immediate health needs (37, 38). Oral pharmacotherapy to help manage agitation, irritability, withdrawal, and sleeplessness might also be helpful alongside coordinated medical care (37, 39). Culturally appropriate and trauma-informed mental and physical health services remain helpful in this context (40–42). We support interventions designed to engage patients with SPMI in treatment. Some form of contingency management, where rewards can incentivize the desired behavior, would likely help individuals with SPMI stay isolated (24).

Strengths and Limitations

To our knowledge, this study is the first review of interventions to support COVID-19 self-isolation and quarantine for individuals with SPMI. However, only one study met our eligibility criteria. While this reflects the current span of the literature on this topic, we may have missed relevant studies. Second, we broadly defined SPMI and included participants with any mental health problems. However, most definitions of SPMI include some measure of disability and duration, such that transient increases in anxiety and depressive symptoms associated with COVID-19 would typically not be considered SPMI. Third, we were unable to conduct a quantitative meta-analysis. Although we did not restrict articles by language in the present review, it is still possible that our findings are biased because we used databases that are geared towards finding English language articles (e.g.,

PubMed, MEDLINE, EMBASE). Finally, we limited the search strategy to the current pandemic. While there may be a benefit in widening the search criteria to other pandemics or disasters, the results of a widened search may be of limited clinical applicability to the current situation.

CONCLUSION

This systematic review evaluated interventions to support self-isolation and mandated COVID-19 quarantine for individuals with SPMIs. Only one study met our inclusion criteria, which found a beneficial effect of a COVID-19 isolation hotel for individuals experiencing homelessness, where approximately half the sample had a mental or substance use disorder. There is a need for added research on this topic and a need for consensus on related research priorities.

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