

Current Advances in Adherence Support for Patients Experiencing Homelessness in America: A Scoping Review

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Abstract

Introduction: The number of people in America experiencing homelessness reached an all-time high in 2024. While housing remains the first priority, improving treatment adherence is expected to reduce the disease burden in this population and facilitate better integration with social support services. **Methods:** A scoping review was performed using PRISMA-ScR guidelines. The literature search was conducted via the databases PubMed, EMBASE, and Web of Science, as well as via the government registry ClinicalTrials.gov. We identified 249 records, after duplicate removal, which were screened by title and abstract, then by full-text review. Our inclusion criteria were trials published in English, between 2015 and 2025, in a peer-reviewed journal, with an intervention targeting treatment adherence improvement, and American participants described as either homeless or with a sample subset of participants described as homeless. **Results:** Twenty records met inclusion criteria for this review, although these represented only sixteen different trials, owing to three trials which spread data across multiple publications. Of these final sixteen, six are described here as psychosocial interventions, five are described here as direct action interventions, two were smartphone-based mobile health (mHealth) interventions, one was a contingency management trial, one was a trial of MAT managed by ED physicians, and the last was a trial of urine biomarker testing. **Conclusions:** The interventions with the strongest evidence for improving treatment adherence in homeless Americans were those described here as direct action. Conversely, the smartphone-based interventions showed the weakest evidence for adherence improvement. A common theme which emerged in this comparison was that interventions which did more to proactively engage patients and provide face-to-face support appeared to obtain better adherence.

Keywords

Homeless, Unhoused, People Experiencing Homelessness, Unstably Housed, Treatment, Adherence, Psychosocial, Direct Action, Mobile Health, mHealth, Smartphone

1. Introduction

According to the Annual Homeless Assessment Report (AHAR) put together by the US Department of Housing and Urban Development, in 2024 America saw the largest number of people experiencing homelessness since record-keeping began (HUD, 2024). This places an enormous humanitarian and economic burden on communities in the United States, which can be ameliorated by effective programs which support rehousing (Culhane, 2008). However, many homeless Americans experience health challenges beyond the problem of shelter (Hanlon et al., 2018; Lebrun-Harris et al., 2013). From psychiatric illness to infectious diseases, there is a wide array of comorbid conditions which often present additional challenges for people already struggling to reintegrate socially (Hanlon et al., 2018; Hird et al., 2024; Lebrun-Harris et al., 2013).

Current literature supports prioritizing the housing problem, specifically through Housing First programs, but medical comorbidities can complicate a person's ability to engage with these programs (Peng et al., 2020). While nothing precludes simultaneous treatment of comorbid conditions, obtaining adherence in this population has historically been very difficult for multiple reasons (Fazel et al., 2014; Hird et al., 2024; Willison et al., 2024). Therefore, addressing patient adherence represents a key challenge on the path towards improving homelessness overall.

The most recent AHAR shows that 16.4% of homeless Americans are currently in rural or largely rural areas, but it remains unknown whether this population is represented in current trials (HUD, 2024).

The purpose of this review is to identify recent efforts to improve treatment adherence among people experiencing homelessness in America. A scoping review method is well suited for this task because, at present, the literature concerning treatment of homeless patients is not well unified. This scoping review will lay the groundwork for a more systematic approach to this topic in the future.

2. Methods

We conducted a scoping review without the assistance of research software. The review design was based on the Arksey and O'Malley framework described in JBI, and PRISMA-ScR guidelines. Literature searches were performed via the databases PubMed, EMBASE, and Web of Science, as well as ClinicalTrials.gov, the current US government registry for clinical trials.

The search terms used were (homeless AND adherence AND trial). Variations

and synonyms of these search terms were attempted, such as with “unhoused”, “unsheltered”, “unstably housed”, etc., but this did not add novel results, as all studies using varied terminology also included the word “homeless”. Variations and synonyms of “adherence” were not considered. The most common, “compliance”, represents an approach to treatment which is opposed to the idea of seeking adherence; this difference is more than semantic, as it reflects the view of the investigators towards their participants. Variations on “trial” were not considered, as this is a central concept to the present review. However, the word “trial” was omitted from the registry search, given that all results were trials by nature of the registry. Search results were date limited to the range of the inclusion criteria.

Search results were screened by title and abstract, then by full text, based on the following inclusion criteria:

- 1) Original research articles from Jan 1, 2015 to Mar 24, 2025;
- 2) Published in the English language;
- 3) Published in peer-reviewed journals;
- 4) Trialed on American participants;
- 5) With either all participants described as homeless, or a clearly distinguished subset corresponding to participants described as homeless or any variation on this term;
- 6) With an intervention targeting treatment adherence.

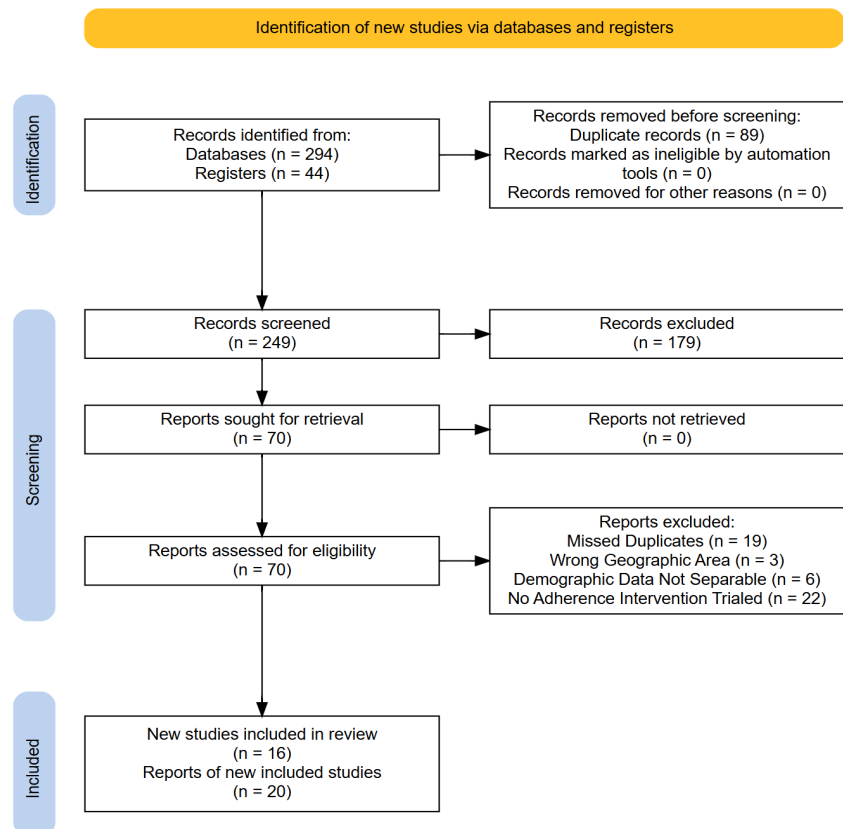


Figure 1. PRISMA flow diagram for study selection
(<https://doi.org/10.6084/m9.figshare.33289446>).

Records not meeting all these criteria were excluded. This review is directed towards present action in the United States, for which we believe recent (≤ 10 years old) evidence from that region is of particular relevance. A preset form was used to extract data from all studies identified using these criteria. The form, with data as extracted, can be found in Supplemental **Figure 1**. The form was used to catalog all studies which met inclusion criteria, along with their study designs, target problem, intervention, sample size, follow-up timing, outcomes, and limitations, if any. Further, each study was analyzed to discover whether its participants were in urban, rural, or both types of environments, if known. With respect to outcomes, only statistically significant findings relevant to treatment adherence were recorded. The protocol, as performed, is described completely here; it was not registered with any online database.

3. Results

This review identified 20 total publications corresponding to 16 trials. The numeric discrepancy stems from three trials reviewed here which were associated with multiple identified publications. A list organizing these details and presenting characteristics relevant to the present review can be found in **Table 1**. A PRISMA flow diagram illustrating the selection of these publications can be found in **Figure 1**. This figure was produced using PRISMA2020 software (Haddaway et al., 2022).

Table 1. Summary of trials assessing adherence improvement in Americans experiencing homelessness.

Study	Design	Target	Intervention	Sample Size	Outcome
Sajatovic et al., 2016, 2017; Collins et al., 2018	Prospective, uncontrolled trial	Psych (schizophrenia and schizoaffective d/o)	Customized Adherence Enhancement + paliperidone palmitate LAI	30	Adherence to LAI up (to 92.9%, but post-hoc analysis reveals $p = 0.36$), oral TRQ improved ($p = 0.02$), psy admissions down ($p = 0.03$), fewer days in sub-optimal housing ($p = 0.05$)
Haake & Krieger, 2020	Pilot program, pharmacy	Psych	Weekly pharm clinic at VA facility	52	ED visits decreased and med adherence increased among participants
Langabeer et al., 2020, 2021	Uncontrolled clinical trial	Opiate Use D/o (OUD)	ED initiated buprenorphine	324	Of all participants, 88% cont'd behavioral tx, 39% cont'd MAT
Tsui et al., 2021	Pilot randomized controlled trial	Opiate Use D/o (OUD)	Directly Observed Therapy (DOT) via smartphone video	78	The mean doses confirmed by video was 31%. In intention-to-treat analysis, the average percentage of weekly opioid negative UDT was 50% (95% CI: 40% - 63%) in the intervention arm versus 64% (95% CI: 55% - 74%) among controls; RR = 0.78 (95% CI: 0.60 - 1.02, $p = 0.07$).
Khalili et al., 2022	Prospective, uncontrolled trial	Hep C	Shelter-based integrated testing and treatment program	766	772/1199 (64.4%) clients agreed to participate; 66/107 (61.7%) HCV cases detected initiated treatment; 54/66 achieved SVR and 8 of remaining 12 were still adherent to treatment for 62/107 (57.9%) overall adherence

Continued

Ojo-Fati et al., 2016	Secondary analysis from RCT	Tobacco Cessation	MI x 6 + 8 wks NRT vs. advise to quit + 8 wks NRT (SoC)	430	People experiencing both homelessness and depression (PHQ-9 ≥ 10) were significantly less likely than non-depressed people to adhere to NRT (OR = 0.58 [0.38 - 0.87] $p = 0.01$)
Ellison et al., 2020	Randomized Clinical Trial	Housing Stability	Peer Specialist Support vs SoC	166	No significant differences between treatment and control groups
Morris et al., 2023	Nonrandomized Clinical Trial	Hep C	Rapid testing and treatment of homeless patients	492	363/492 (73.8%) screened got test results; 69/87 (79.3%) enrolled HCV(+) pts completed treatment (significant improvements vs controls)
Novak et al., 2023	Randomized Controlled Trial	Alcohol Use D/o (AUD)	Contingency management (CM)	152	119/152 (78.3%) participants completed the trial; 57/62 (91.9%) on CM arm, 43/57 (75.4%) on SoC arm
Vickery et al., 2023, 2024	Pilot program, feasibility study	T2DM	Personalized coaching	10	HgbA1C and ARMS-D (med adherence) assessed at baseline and post-tx, neither showed statistically significant changes
Gabrielian et al., 2024	Pre-implementation study, mixed methods design	Housing Stability	Social skills training (per Kurtz & Mueser, 2008)	35	"...participants attended an average of one-third ($4.0 \pm 2.8/12$, range 1 - 10) of groups; stably housed participants attended more groups than homeless participants (5.1 ± 3.6 vs. 3.8 ± 2.5)."
Santa Maria et al., 2024	Feasibility and acceptability study	HIV PrEP	PrEP adherence tracking with biomarker urine tests	44	No participants remained adherent throughout the study, though biomarker studies corresponded well with reported adherence
Nyamathi et al., 2021	Controlled nonrandomized trial	TB (latent)	RN/CHW-led treatment team delivering care on the street vs historical clinic group	50	Completion defined as 11/12 doses within 16 weeks; 91.8% of part's completed treatment, vs 66% completion in historical clinic-based group
Nyamathi et al., 2023	Randomized Controlled Trial	Hep C	RN/CHW-led treatment team delivering care on the street vs SoC clinic group	10	Part's random'd to RN/CHW arm vs cbSoC arm; 3/4 (75.0%) of RN/CHW arm completed treatment vs 4/6 (66.7%) of SoC arm
Towe et al., 2019	Randomized Controlled Trial	HIV	Enhanced Housing Placement Assistance for homeless people living with HIV	225	Intervention arm was significantly more likely to achieve or maintain viral suppression (adjusted odds ratio 2.1; 95% CI 1.1 - 4.0) which can be taken as proxy for treatment adherence
Kershaw et al., 2022	Randomized Controlled Trial	Outpatient care engagement and medication adherence	Intervention arm rec'd text msgs with appt reminders and med adherence tips, while control arm rec'd text msgs with only generic health tips	62	No statistically significant differences between intervention and control groups

Abbreviations: (LAI) Long Acting Injectable, (TRQ) Tablets Routine Questionnaire adherence metric, (VA) Veterans Administration, (MI) Motivational Interviewing, (NRT) Nicotine Replacement Therapy, (MAT) Medication Assisted Treatment, (PrEP) Pre-exposure Prophylaxis, (SoC) Standard of Care, (RN/CHW) Registered Nurse with Community Health Workers.

Regarding study participant demographics and geography, 81.25% (13/16) of the studies considered here addressed urban populations explicitly. The remaining three studies did not specify participant location, but each was administered out of major urban centers (Ellison et al., 2020; Novak et al., 2023; Ojo-Fati et al., 2016). None of the studies identified by this review addressed treatment adherence in rural or semi-rural contexts. Most of the studies reviewed here used the US

federal definition of homelessness from the Housing and Urban Development Department: “an individual or family living in a supervised publicly or privately operated shelter designated to provide temporary living arrangements” or “an individual or family with a primary nighttime residence that is a public or private place not designed for or ordinarily used as a regular sleeping accommodation for human beings, including a car, park, abandoned building, bus or train station, airport, or camping ground.” Assessing studies for the inclusion of people experiencing homelessness was complicated by participants experiencing frequent moves and changes in housing status. Generally, all studies reviewed here included anyone with unstable housing as “homeless” and made reasonable efforts to follow-up with all participants.

In addressing treatment adherence, the studies under review clustered around interventions for a small number of problems that correspond to key public health challenges. Broadly, these problems were:

- Addiction pathology (including alcohol, tobacco, and opiate use disorders) (Lan-gabeer et al., 2020; Novak et al., 2023; Ojo-Fati et al., 2016; Tsui et al., 2021)
- Type 2 Diabetes Mellitus (Vickery et al., 2023, 2024)
- Hepatitis C Virus (Khalili et al., 2022; Morris et al., 2023; Nyamathi et al., 2023)
- HIV treatment and pre-exposure prophylaxis (Santa Maria et al., 2024; Towe et al., 2019)
- Housing stability (Ellison et al., 2020; Gabrielian et al., 2024)
- Psychiatric illness (Collins et al., 2018; Haake & Krieger, 2020; Sajatovic et al., 2016, 2017)
- Primary care (Kershaw et al., 2022)
- Tuberculosis (Nyamathi et al., 2021)

In their approach towards these problems, the interventions under review fell into several broad categories worth treating separately because it is here that the trends between studies become clearest. Given the heterogeneity of trial designs, outcomes, and sample groups, quantitative subgroup analysis of the reviewed studies is not feasible. Instead, we have presented here a narrative summary of the categories observed in the currently available studies.

3.1. Psychosocial Interventions

The largest group of recent trials, with six studies described across at least nine publications, trialed what can be thought of as psychosocial interventions. These ranged from motivational interviewing and peer specialist interventions to enhanced social work programs meant to proactively reach out to homeless patients. Of these, only two led to significant improvements in treatment adherence. These were the study utilizing Customized Adherence Enhancement with Long-Acting Injectables (CAE-L) (Collins et al., 2018; Sajatovic et al., 2016, 2017) and the study utilizing Enhanced Housing Placement (Towe et al., 2019). In both cases, the enhancements refer to additional, proactive social work services offered on top of standard care.

3.2. Direct Action

The next largest group of trials reviewed here represent efforts to provide services as directly as possible within communities of homeless people, thus we will refer to these methods as direct action. Nyamathi et al. had nurses and community volunteers delivering testing and treatment for HCV and latent TB directly to homeless people on the street, and both trials resulted in more treatment completion versus clinic-based efforts (Nyamathi et al., 2021, 2023). Morris et al. took a similar approach by setting up a temporary HCV clinic in an area known to be heavily trafficked by people at high risk for HCV (Morris et al., 2023). Khalili et al. did the same with HCV clinics at large homeless shelters (Khalili et al., 2022). They obtained testing engagement of 73.8% and 64.4%, respectively; from the positive cases identified, they obtained 79.3% and 61.7% treatment completion rates, respectively (Khalili et al., 2022; Morris et al., 2023). These two studies did not have control data for comparison. Nyamathi's control data suggests a baseline value of 66.7%, but that value was based on only six patients receiving standard clinic-based care (Nyamathi et al., 2023). Finally, Haake and Krieger ran a weekly pharmacy clinic at a VA shelter to increase follow-ups, referrals, and medication adherence. This reportedly led to a decrease in ED visits and an increase in medication adherence among participants (Haake & Krieger, 2020). However, none of the studies in this subsection were able to demonstrate statistical significance.

3.3. Emergency Department Management

Langabeer et al. trialed an intervention which had emergency department physicians manage multidisciplinary teams for rapid initiation of buprenorphine for OUD (Langabeer et al., 2020, 2021). This study was not specifically designed to address homeless patients, but only 33.95% of their participants were stably housed (Langabeer et al., 2021). At 30-day follow-up, 88% of the patients had continued behavioral treatment, and 39% had continued medically assisted treatment (Langabeer et al., 2020).

3.4. Contingency Management

Contingency management is a longstanding approach to addiction treatment which offers small monetary rewards for abstinence from substance use and has a history of demonstrated efficacy (Higgins, 2023; Pfund et al., 2022). Novak et al. trialed a CM program for people experiencing homelessness and alcohol use disorder which provided small cash rewards for alcohol abstinence (Novak et al., 2023). Although this study reported major disruption due to the COVID-19 pandemic, the authors were still able to demonstrate statistically significant improvements in alcohol abstinence and employment duration. They were not, however, able to demonstrate an improvement in stable housing duration (Novak et al., 2023).

3.5. Smartphones for Mobile Health

Smartphone-based approaches, also known as mobile health, or mHealth, have

been the focus of multiple trials. Tsui et al. trialed a directly observed therapy (DOT) program for opiate use disorder, using smartphones to accomplish DOT remotely. The therapy in question was buprenorphine for OUD, but the trial failed to demonstrate a significant difference between the DOT program and their control group (Tsui et al., 2021). Kershaw et al. trialed a program which provided appointment reminders and customized medication adherence tips via text message, compared to a control group that received text messages with generic health tips. However, this trial also failed to demonstrate a significant difference between intervention and control groups (Kershaw et al., 2022).

3.6. Biomarker Surveillance

Santa Maria et al. trialed a program which used urine testing to monitor HIV PrEP uptake among homeless youth. While their biomarker test was found to accurately assess PrEP levels, adherence in the trial was down to 45.5% by one-month follow-up, and 0.0% by nine months (Santa Maria et al., 2024).

3.7. Open/Unfinished Trials

Table 2. Registered clinical trials without published data to date.

ClinicalTrials.gov ID	Submission Date	Trial Title
NCT03399500 (Homeless Care Management App (Link2Care), 2017)	2017	m-Health to Increase Service Utilization in Recently Incarcerated Homeless Adults
NCT03127358 (Smartphone Based aDOT Treatment With Fixed-Dose Elbasvir and Grazoprevir in PWIDs, 2017)	2017	Smartphone Based Automated-Directly Observed Treatment Improves Adherence and SVR to Fixed-Dose Elbasvir and Grazoprevir in PWIDs: A Randomized Control Trial
NCT03561103 (Impact of Representative Payee Services on ART Adherence among Marginalized People Living with HIV/AIDS, 2018)	2018	Impact of Representative Payee Services on ART Adherence Among Marginalized People Living With HIV/AIDS
NCT05187013 (Uncontrolled Hypertension Among the Homeless, 2021)	2021	mHealth to Address Uncontrolled Hypertension Among Hypertensive Homeless Adults
NCT04961762 (Navigator Program for Homeless Adults, 2021)	2021	Effect of a Navigator Program on Post-Hospital Outcomes for Homeless Adults: A Pragmatic Randomized Controlled Trial
NCT04973254 (Improving Treatment and Retention Adherence in Nontraditional Settings (I-TRAINS), 2021)	2021	Cabotegravir-Rilpivirine Long Acting (CAB-RPV LA) Implementation Strategies Among High-Risk Populations
NCT05616026 (Texts for Diabetes Control Among Homeless Persons, 2022)	2022	Short-messaging Services (SMS) Text for Uncontrolled Diabetes Among Persons Experiencing Homelessness
NCT05365867 (Interactive Care Coordination and Navigation: RCT To Assess the Impact of a mHealth Intervention for Homeless Individuals (iCAN), 2022)	2022	mHealth Technology to Connect and Empower People Experiencing Homelessness to Improve Health and Social Need Outcomes
NCT06723093 (Evaluation of a Supportive Housing Program for Adults Who Are Unhoused and Have Complex Health Needs, 2024)	2024	Impact of a Social Medicine Housing Program on the Health and Healthcare Utilization of Adults Who Are Unhoused and Have Complex Health Needs
NCT06870019 (Hepatitis C Tracker Study, 2025)	2025	Effects of GPS Tracking on Patient Adherence to Hepatitis C Treatment Among People Experiencing Unsheltered Homelessness

This review found 10 relevant clinical trials registered with the US government which had not, as of this writing, resulted in any published data. The trial registrations can be found summarized in **Table 2**. Of note, 50% (5/10) of these unpublished trials used smartphone-based approaches.

4. Discussion

The field of interventions targeting treatment adherence among people experiencing homelessness has been highly active over the past ten years. We can see that the interventions grouped well into a small number of categories. In particular, psychosocial and direct action interventions, together, account for 11 of 16 recent trials. The data extracted in the course of this review provide enough information to make recommendations for future studies targeting treatment adherence among homeless adults in America.

Psychosocial interventions represent the largest group of trials in this review, at 6 of 16, but only two demonstrated statistical significance. This was likely due to a variety of causes. Peer specialist support (Ellison et al., 2020), personalized coaching (Vickery et al., 2023, 2024), and social skills training (Gabrielian et al., 2024) trials were limited by availability of personnel, participants, and space, respectively. Beyond improving those material factors, the studies which did find significant results can perhaps point to further ways to optimize psychosocial strategies. In both Towe et al. (Towe et al., 2019) and the series of CAE-L trials (Collins et al., 2018; Sajatovic et al., 2016, 2017), we can see that psychosocial approaches were paired with an additional treatment with known efficacy; a Housing First program in the former, and a Long-Acting Injectables program in the latter. This seems to indicate that psychosocial approaches work best as an adjunct to a larger program. Further, these interventions were proactive. While the studies which failed to demonstrate significance relied on patients to come to them, Towe et al. and the CAE-L trials provided support measures which reached out to patients and helped them keep appointments (Collins et al., 2018; Sajatovic et al., 2016, 2017; Towe et al., 2019). This level of proactive effort may be resource-intensive but appears to be necessary based on these trials. Consider also the trial run by Ojo-Fati et al., which did pair a psychosocial approach, motivational interviewing, with another efficacious approach, nicotine replacement therapy, yet still failed to find a significant improvement in the adherence variable of interest (Ojo-Fati et al., 2016). It is worth considering that what differentiates this from more successful trials is the degree to which their psychosocial intervention was less proactive towards its patients.

The value of proactive approaches is driven home further by the class of interventions referred to here as direct action. In these trials, researchers met patients directly on the streets (Nyamathi et al., 2021, 2023), or created pop-up clinics in homeless shelters (Haake & Krieger, 2020; Khalili et al., 2022) or heavily trafficked areas (Morris et al., 2023). All trials in this category reported improvements in their respective adherence rates (Haake & Krieger, 2020; Khalili et al., 2022;

Morris et al., 2023; Nyamathi et al., 2021, 2023). An interesting question on this point, however, is raised by Khalili et al. in their paper. They were able to obtain results which compared well to similar studies, but could not reach remission rates like that seen in one major trial which obtained a 97% remission rate among homeless people with HCV (Barocas et al., 2017; Khalili et al., 2022). Khalili et al. raise the point that the very high remission rate obtained in this prior study was the result of a program which only included participants who made it through multiple organizational hurdles to pre-emptively screen for adherence in their participants (Khalili et al., 2022). Is it reasonable to compare such results to a pop-up clinic trying to engage historically nonadherent patients? The answer is clearly no, which provides a stronger basis for the importance of separating traditional clinic-based studies from what is described in this review as direct action. Older studies (Mehta et al., 2008) suggest that treatment engagement and adherence rates outside of curated study samples were previously very low, on the order of <1% per year. This paints the numbers achieved by Khalili et al. and others in a very different light.

The trials which utilized contingency management of alcohol use disorder and emergency management of opiate use disorder complete the list of things that appear to work well. Langabeer et al.'s trial of emergency buprenorphine induction for OUD produced results in line with similar trials in Canada (Lakkadghatwala et al., 2024; Langabeer et al., 2020, 2021). These successes highlight the importance of finding opportunities to engage marginalized patients as proactively as possible. The success Novak et al. found with their contingency management program highlights the diversity of potentially effective engagement strategies (Novak et al., 2023).

On the other hand, we can see clear indications of what kinds of treatment strategies are not likely to improve adherence. The failure of text message systems in Kershaw et al. (Kershaw et al., 2022), and of video DOT in Tsui et al. (Tsui et al., 2021), seems to indicate that a remote approach is less effective at reaching this patient demographic. Moreover, while some of the unfinished trials identified in this review are recent enough that data would not be expected yet, a large proportion of unfinished trials related to smartphone-based mobile health interventions are all at least three years old. We can see the oldest two unfinished mHealth trials are now eight years old, with no published data. Both of the completed trials provided study phones and screened for participant literacy and technical ability beforehand (Kershaw et al., 2022; Tsui et al., 2021). A high-quality review from Heaslip et al. highlights this issue of comfort with technology as a possible confound (Heaslip et al., 2021). They cite data indicating that people experiencing homelessness are more likely than age-matched peers to have a cell phone, though they ultimately conclude that no mHealth studies in this population have yet yielded statistically significant results. They report communication and connectedness as critical to surviving homelessness. However, simply possessing a phone does not necessitate the skills and willingness necessary to engage with mHealth

support. There exists a generational divide, seen currently around age 65, where the older generation often lacks the technical literacy to engage with mHealth interventions (Heaslip et al., 2021). Further, they cite participant skepticism across all age groups and multiple studies regarding the privacy and usage of mHealth data. While these concerns and limitations may shift over time, presently this seems to argue strongly against mHealth as a viable modality for homeless Americans.

Taken altogether, this review represents strong evidence that improving the adherence of homeless patients to a wide variety of treatment modalities is absolutely possible. However, some approaches appear more effective than others. Interventions which seek to maximize personal contact with homeless patients appear to demonstrate better adherence improvements. That may be through helping them get to appointments, ensuring follow-up for long-acting injectables, setting up clinics within homeless shelters, or meeting them out on the street; these approaches have all shown significant results. Conversely, the opposite appears to be true: leveraging technology to provide care remotely does not provide comparable results. In the future, our research efforts can benefit from heeding these lessons. The trials included in this present review can provide valuable data as we seek to establish more rigorous, quantitative baselines. Additionally, future trials can benefit by focusing effort on the modalities highlighted in this review.

5. Limitations and Future Directions

The ambiguity of what constitutes a reasonable baseline for comparison is a common theme throughout the trials in this review. Randomization into intervention and control arms is often not appropriate, and we can easily see how using reference data for comparison is often misleading. This ambiguity represents the largest limitation of the present review. Additionally, while most studies follow the definition of homelessness provided by the United States Department of Health and Human Services, all participants may not have met this definition throughout the course of each study, and there are likely also people in unstable living situations not captured by this definition that would benefit from programs supporting the homeless. The ambiguous realities of marginalized life in America present unique challenges to rigorous, quantitative investigation. These challenges will likely remain a limitation both to the present review and to future research. Moreover, it is important to note that the present review is intentionally limited to the American cultural context; these results may not generalize well to all locales. Even within the United States, the present review may not represent all locations well. The participant demographics in the trials reviewed here were all either explicitly or implicitly urban. This may bias evidence in favor of urban-centric solutions. Finally, many of the studies cited here had very low sample sizes, often with 50 or fewer participants. While they offer important evidence to inform the direction of future research, these small sample sizes do limit generalizability of their conclusions.

We recommend future studies address adherence improvement in homeless populations outside large urban centers. We recommend further that the results presented here be compared with similar analyses from other global regions.

6. Conclusion

This review demonstrates that while treatment adherence among people experiencing homelessness remains an evolving field of research, rough categories have emerged from current studies which can inform our efforts going forward. Three key points stand out as especially relevant to future research. First, interventions appear more likely to improve adherence to whatever extent the intervention proactively engages the patients. Second, psychosocial interventions show significant benefit when paired with additional evidence-based services. Finally, leveraging communications technology (e.g. smartphones) does not currently appear to produce significant results in this patient population, even when phones are provided.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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