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The life-enhancing alcohol-management program: Results from a 6-month nonrandomized controlled pilot study assessing a community based participatory research program in housing first

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Abstract

A 2-arm, 6-month, nonrandomized controlled pilot trial was conducted to test the initial effectiveness of the Life Enhancing Alcohol-management Program (LEAP) as an adjunct to Housing First (HF; e.g., permanent supportive housing) on alcohol and quality-of-life (QoL) outcomes. The LEAP entails resident-driven leadership opportunities, meaningful activities, and pathways to recovery aimed at reducing alcohol-related harm and improving QoL. Data analyses were conducted to test between- and within-subjects effects of the LEAP on self-reported alcohol and QoL outcomes among HF residents. At the 6-month follow up, between groups analysis revealed nonsignificant findings for alcohol quantity or alcohol-related harm (ps > 0.06); however, LEAP participants reported significantly more engagement in meaningful activities than control participants ($p < .001$), and within-subjects analyses indicated that high levels of LEAP programming engagement predicted significant reductions in alcohol quantity and alcohol-related harm (ps < 0.01). The LEAP was associated with increased engagement in meaningful activities, and greater involvement in the LEAP programming was associated with reduced alcohol use and alcohol-related harm. Planning is underway for a future, large-scale randomized controlled trial to

establish the efficacy of this approach, its generalizability across HF programs, and potential mechanisms of action.

KEYWORDS
alcohol, community-based participatory research, harm reduction, Housing First

1 | INTRODUCTION

Although they represent only 15% of the larger homeless population (US Department of Housing & Urban Development, 2017), people experiencing chronic homelessness use substantially more services (Kushel, Perry, Bangsberg, & Clark, 2002; Larimer et al., 2009; Poulin, Maguire, Metraux, & Culhane, 2010). This finding is understandable because chronic homelessness is characterized by long or frequent episodes of homelessness paired with medical, psychiatric, and substance use disorders (US Housing & Urban Development, 2007). Although epidemiological data for this subgroup are scarce, studies conducted with the larger homeless population indicate that 80% of people experiencing homelessness report current alcohol use (Velasquez, Crouch, von Sternberg, & Grosdanis, 2000), and 38% have severe alcohol use disorders (AUDs; Fazel, Khosla, Doll, & Geddes, 2008). This disproportionately problematic use results in alcohol-attributable mortality that is 6–10 times higher than in the general US population (Baggett et al., 2015; Hwang, Wilkins, Tjepkema, O'Campo, & Dunn, 2009).

Housing First (HF), also referred to as "harm-reduction housing", has shown promise in effectively addressing chronic homelessness and AUDs (Kirst, Zerger, Misir, Hwang, & Stergiopoulos, 2015; Larimer et al., 2009; Malone, Collins, & Clifasefi, 2015; D. Padgett, Stanhope, Henwood, & Stefancic, 2011; Tsemberis, Gulcur, & Nakae, 2004). HF entails the provision of immediate, permanent, low-barrier, supportive housing that does not require abstinence from substances, psychiatric stability, or treatment attendance (Malone et al., 2015). Research has shown that HF is associated with reductions in alcohol-related harm, publicly funded service utilization, and associated costs for people experiencing chronic homelessness (Clifasefi, Malone, & Collins, 2013; Collins, Malone et al., 2012; Larimer et al., 2009; Mackelprang, Collins, & Clifasefi, 2014; Stergiopoulos et al., 2015; Tsemberis & Eisenberg, 2000; Tsemberis et al., 2004). Despite these positive outcomes, many HF residents also continue to experience alcohol-related harm (Collins, Clifasefi et al., 2012; Stahl, Collins, Clifasefi, & Hagopian, 2016). HF residents have also indicated they are interested in community-based, creative, and meaningful activities to promote community cohesiveness and resident-driven recovery and growth (Clifasefi, Collins, Torres, Grazioli, & Mackelprang, 2016).

In response to these expressed needs, we formed a community-academic partnership that brought together academic researchers with HF residents, management and staff at a local, nonprofit agency to codevelop, implement, and pilot test the effectiveness of a Life-Enhancing Alcohol-management Program (LEAP) as an adjunct to single-site HF (Collins et al., 2018). The goal of the LEAP was to reduce alcohol-related harm and improve the quality of life (QoL) for HF residents through the provision of resident-driven programming.

The LEAP was developed using a community-based participatory research (CBPR) approach, which aims to equitably involve community members, researchers, and other stakeholders in the research process, recognizing the unique strengths that each bring (Wallerstein, Duran, Oetzel, & Minkler, 2017). Interventions generated using a CBPR framework have been effective in improving health across a wide variety of populations and health outcomes (O'Mara-Eves et al., 2015) and have been shown to improve outcomes for community members involved in the research process (Jagosh et al., 2012; Khodyakov et al., 2011).

The present project comprised three primary phases. In the first phase, we conducted needs assessments with HF residents, staff, and management at a local, nonprofit agency that owns and manages HF programs to identify

potential points for program enhancement. During this phase, residents expressed an interest in a) collaboratively developing and overseeing programming through leadership opportunities, b) engaging in meaningful activities, and c) having support on their self-defined pathways to recovery (Clifasefi et al., 2016).

In the second phase, we brought these findings to a newly formed community advisory board (CAB) that was made up of voted upon and appointed residents, staff, and management from the nonprofit agency and was facilitated by the researchers. This board oversaw the development, implementation, and evaluation of the LEAP. Using the findings from the first phase, we worked as an integrated team to develop the LEAP values, processes, and components (Collins et al., 2018.). LEAP components included (a) administrative leadership opportunities, (b) meaningful, nondrinking activities, and (c) self-defined pathways to recovery. After careful consideration of different design options and consistent with federal standards for Stage I treatment development research, we concluded that the LEAP may be best initially evaluated in the context in which it was developed to maximize the probability of detecting a significant intervention effect where one truly exists (Rounsaville, Carroll, & Onken, 2001).

Thus, in the third phase, we conducted a 2-arm, 6-month nonrandomized controlled trial to compare alcohol and QoL outcomes for LEAP participants (study participants who were living at the HF site where the LEAP was offered) versus control participants (study participants who were living at HF Sites where the LEAP was not offered). Of residents living at the HF site where the LEAP was offered, 80% (66/83) agreed to formally participate in the research procedures and meet with research staff for baseline, 1-, 3-, and 6-month follow-up assessments. Further, the majority, 86% (58/66), of LEAP participants attended at least 1 LEAP activity during their time in the study, and research records indicated that LEAP participants attended a mean of 16.76 (SD = 24.27) LEAP activities through their 6-month follow-up.

It was expected that, compared to control participants, LEAP participants would evince significantly increased engagement in meaningful activities, decreased alcohol use and related harm, and improved QoL across the 6-month follow up.

2 | METHODS

2.1 | Participants

Participants (N = 116) were HF residents who had a history of chronic homelessness and AUD. Inclusion criteria were a) being at least 21 years of age and b) residing in 1 of 3 designated HF study sites. Exclusion criteria were a) refusal or inability to consent to participation in research assessments or release of agency records; b) constituting a risk to the safety and security of other residents or staff; c) being unable to give written, informed consent due to cognitive impairment; and d) unable to understand and communicate in English. The UCSD Brief Assessment of Capacity to Consent (UBACC) is a 10-item, 3-point Likert-scale measure that was used during the informed consent process to assess participants' cognitive capacity to provide consent (Jeste et al., 2007). Out of the 117 participants who were initially consented, only 1 participant was ultimately excluded due to the person's inability to understand and communicate in English.

Participants in the sample had an average age of 52.66 (SD = 8.82) years and reported primarily male sex assigned at birth (16% female; n = 19). Of the overall sample, 13% self-identified as American Indian/Alaska Native, 21% as Black/African American, 58% as White/European American, and 8% as Multiracial (all of whom identified as AI/AN plus another race). One individual had missing data for the race. Regarding ethnicity, 9% (n = 11) of the sample identified as Hispanic/Latinx. Demographics of the sample are reported in Table 1.

TABLE 1 Group differences at baseline and propensity score weighting balance check

Variables	LEAP group $n = 66$ $M(SD)/\%(n)$	Control group $n = 50$ $M(SD)/\%(n)$	p for initial analysis	p for ATE check
Age	53.67 (7.50)	51.31 (10.22)	.17	.33
Sex assigned at birth (female)	11% (7)	24% (12)	.06	.13
Hispanic/Latinx ethnicity	8% (5)	12% (6)	.43	.33
Race			.25	.25
American Indian/Alaska native	17% (11)	8% (4)		
Black/African American	15% (10)	29% (14)		
More than one race	9% (6)	6% (3)		
White/European American	59% (39)	57% (28)		
Homelessness in past year	32% (21)	18% (9)	.10	.21
Military veteran	22% (14)	35% (17)	.12	.19
Attending substance use treatment	5% (3)	16% (8)	.05	.07
Attending 12-step meetings	23% (15)	16% (8)	.37	.35
Alcohol use in past month	92% (61)	86% (43)	.27	.29
Drug use in past month	64% (42)	78% (39)	.10	.18

Note: "Average treatment effect check" refers to the balance check after the application of the average treatment effect propensity score weight. Ordinary least squares regression, binary logistic and multinomial logistic regressions were used to test group differences at baseline and after the propensity score weighting balance check.
Abbreviations: ATE, average treatment effect; LEAP, life-enhancing alcohol-management program.

2.2 | Setting

The study was conducted at three single-site HF programs in Seattle, Washington that are owned and operated by a local, nonprofit housing agency. In single-site HF, individuals are offered a unit within an apartment building, where they can elect to receive onsite case management and other supportive services (i.e., medical, mental health, substance use counseling). There are no requirements for treatment engagement or abstinence from substances.

2.3 | Measures

2.3.1 | Sociodemographic data for sample description

A set of single-item sociodemographic questions assessed participants' age, sex assigned at birth, race, ethnicity, highest level of education, and other substance-use treatment and mutual-help group attendance.

2.3.2 | Alcohol outcomes

Quantity and frequency of alcohol use was measured via the Alcohol Quantity and Use Assessment, an open-ended, self-report measure of alcohol quantity used to record the number of standard drinks consumed on typical drinking days in the past 30 days (Collins et al., 2014; Collins et al., 2015; Collins, Malone et al., 2012; Larimer et al., 2009); and a modified version of the *Addiction Severity Index—5th Edition* (McLellan, Kushner, Metzger, & Peters, 1992) to

assess for frequency. Given the starkly bimodal distribution of alcohol frequency, with most participants drinking daily, we recorded frequency to dichotomously reflect the incorporation of any nondrinking days into the past 30 days.

Alcohol-related harm was assessed using the Short Inventory of Problems (SIP-2A), a 15-item, Likert-scale questionnaire that yields a summary score reflecting participants' past-month experience of social, occupational, and psychological harm related to alcohol use (Miller, Tonigan, & Longabaugh, 1995).

2.3.3 | Quality-of-life outcomes

The Meaningful Activity Participation Assessment (MAPA; Eakman, Carlson, & Clark, 2010) is a 28-item tool that yields a summary score measuring level of engagement in general activities that bring meaning to people's lives (e.g., socializing, writing, physical exercise, reading, prayer/meditation, community organization, computer use, etc.).

The Quality of Life Scale (QOLS; Burckhardt & Anderson, 2003) is a 7-point Likert-type measure that yields a summary score reflecting general QoL across various domains, including material and physical well-being; relationships; social, community, and civic activities; personal development and fulfillment; and recreation.

2.3.4 | LEAP engagement

For participants living at the HF site where the LEAP was offered, activity attendance was tracked using sign-in sheets collected by study staff. Number of activities attended were categorized into low (0–2 activities; 0–25th percentile), medium (3–21 activities; 25th–75th percentile), and high (>22; 75th–100th percentile) activity attendance, which served as the primary predictor of LEAP exposure in within-subjects analyses.

2.4 | Intervention conditions

2.4.1 | HF as a usual control condition

Control participants were living at the two HF sites that did not offer the LEAP but attended regular assessment sessions at the same intervals as LEAP participants. Services as usual at all three study sites were not altered, withheld or limited in any way during the study, and were thus fully available to participants across both conditions.

With the exception of the LEAP (only offered at one site), all HF study sites offered the following services to their residents: 24/7 support staff, nutritional services including dinner service, medication monitoring, on-site clinical services such as case management and mental health care, and various community activities such as food bank trips, BINGO, and so forth.

2.4.2 | Life enhancing alcohol-management program

The LEAP itself comprised three primary components (a) administrative leadership (e.g., participation in the monthly meetings of the primary governing board for the study; attendance at broader house-wide meetings to discuss the research, shape the research design, and give feedback about research programming; and participation in a resident-led welcoming committee), (b) nondrinking, meaningful activities (e.g., visual art, music, writing groups, gardening, outings, game nights, potlucks, poetry readings, talent shows), and (c) self-defined pathways to recovery (e.g., individual and group harm-reduction treatment, talking circles, mindfulness meditation groups).

2.5 | Research staff

Day-to-day LEAP oversight was provided by the first two authors (SLC, SEC) and a meaningful activities coordinator. The meaningful activities coordinator was interviewed and hired by the CAB with deference to resident input and was supervised by the first two authors. Postbaccalaureate research assistants, clinical psychology, and nursing graduate students conducted assessment interviews on the project under the supervision of the first two authors. Before participant contact, all research staff completed at least 20 hr of training on the research protocols, harm-reduction philosophy and practice, cultural humility, boundaries, ethics, and research integrity. These topics were continually addressed in weekly research staff supervision, and the first two study authors supervised research staff using audio recordings of assessment and other, selected program sessions.

2.6 | Procedures

Research staff posted flyers about the study at the three sites and led house-wide information sessions. Interested residents were then scheduled for a one-on-one information session at which research staff provided information about study procedures and participants' rights and administered the UBACC to establish the capacity to provide informed consent. Written informed consent for the study was obtained, and participants completed a 45–60 min baseline assessment using the above measures. Follow-up assessments occurred 1, 3, and 6 months after the bulk of LEAP programming was instituted, and the same timing was instituted at the other control housing programs. Participants received $20 for each assessment. All procedures were reviewed and approved by the University of Washington Institutional Review Board.

2.7 | Data analysis plan

Analyses entailed a series of population-averaged generalized estimating equation (GEE) models conducted in STATA 13 (Zeger & Liang, 1986). GEEs were used because they can accommodate propensity score weighting, alternative distributions (e.g., negative binomial, logistic), and correlated data (e.g., repeated measures). We specified negative binomial distributions with the log link for alcohol outcomes, which were positively skewed and overdispersed. We used Gaussian distributions for QoL outcomes, which were normally distributed. We assumed unstructured correlations to accommodate uneven, repeated measures on individuals, the latter which served as the sole clustering variable (Hardin & Hilbe, 2003). To enhance the interpretability of negative binomial model parameters, resulting effect sizes were exponentiated and reported as incident rate ratios (IRRs), where IRRs < 1 indicate an inverse association, IRRs = 1 indicate no association and IRRs > 1 indicate a positive association. Alphas were set to $p = .05$. Confidence intervals were set to 95%.

2.7.1 | Between-groups analyses

A series of GEE models were used to test associations between intervention group and alcohol and QoL outcomes. Predictors included: a) time (coded 0 =baseline, 1 = 1-month follow-up, 3 = 3-month follow-up, 6 = 6-month follow-up); b) intervention group (0 =control, 1 =LEAP); c) time × group interactions; and d) months spent in housing during the study period to control for housing effects and thus potential exposure to the settings and interventions.

Given the nonrandomized design, propensity scores representing the average treatment effect (ATE) were included in analyses as sampling weights to more evenly balance the groups. In constructing propensity score weights, we first used a generalized boosted regression to predict the conditional probabilities of being a member

of the control or LEAP groups as predicted by hypothesized key variables (i.e., age, birth sex, ethnicity, race, homelessness status, military service, substance use treatment attendance, 12-step meeting attendance, dichotomous record of past month alcohol and drug use). Generalized boosted regression employs an automated, data-adaptive algorithm that fits several models by way of a regression tree and then merges the predictions of these various models (Guo & Fraser, 2015).

Next, we created a weighting variable to estimate the ATE, which is the between-subjects' difference or the average effect of moving an untreated population to a treated population. The ATE was constructed using $1/p$ for LEAP participants and $1/(1-p)$ for control participants, where p is the propensity score (Austin, 2011; Guo & Fraser, 2015). We then conducted balance checks, which comprised a series of ordinary least squares, logistic and multinomial logistic regressions testing whether propensity scores improved the balance between the control and LEAP groups. ATE was used as a sampling weight in between-groups analyses.

2.7.2 | Within-groups analyses

A series of GEE models were used to test associations between participants' level of exposure to LEAP programming and alcohol and QoL outcomes through the 6-month follow-up. Analyses included LEAP participants only. Predictors included a) time; b) 2 dummy-coded variables accounting for the level of LEAP exposure (medium and high vs. low); c) time × exposure interactions; and d) months spent in housing.

3 | RESULTS

3.1 | Initial group differences at baseline and propensity score balancing check

Regression modeling indicated only one significant group difference in demographic and substance-use variables at baseline between LEAP and control participants (see Table 1 for group comparisons). The group balance check indicated that the propensity score weighting adequately balanced the groups (see Table 1).

3.2 | Attrition analyses

Overall, participant retention was 88%, 79%, and 75% at the 1-, 3-, and 6-month follow-ups, respectively (see Figure 1 for retention by the group). Missingness on the alcohol and QoL outcomes was not associated with the primary parameter of interest: the time × group interaction (ps > 0.11). Missingness occurring completely at random cannot be directly tested because the probability of missingness on the outcome variable is assessed as a function of the values of both predictors and outcome variables. However, these analyses suggested that the missingness mechanism may be considered "ignorable" for the primary analyses (Allison, 2001).

3.3 | Between-groups analyses testing intervention effects

3.3.1 | Alcohol outcomes

Omnibus models were not significant for alcohol quantity or alcohol-related harm (ps > .06); however, the model was significant for the presence of nondrinking days, Wald $\chi^2(4, N = 105) = 23.01$; $p < .001$. Specifically, there was a significant main effect for the intervention group, which indicated lower odds of nondrinking days (OR = 0.25;

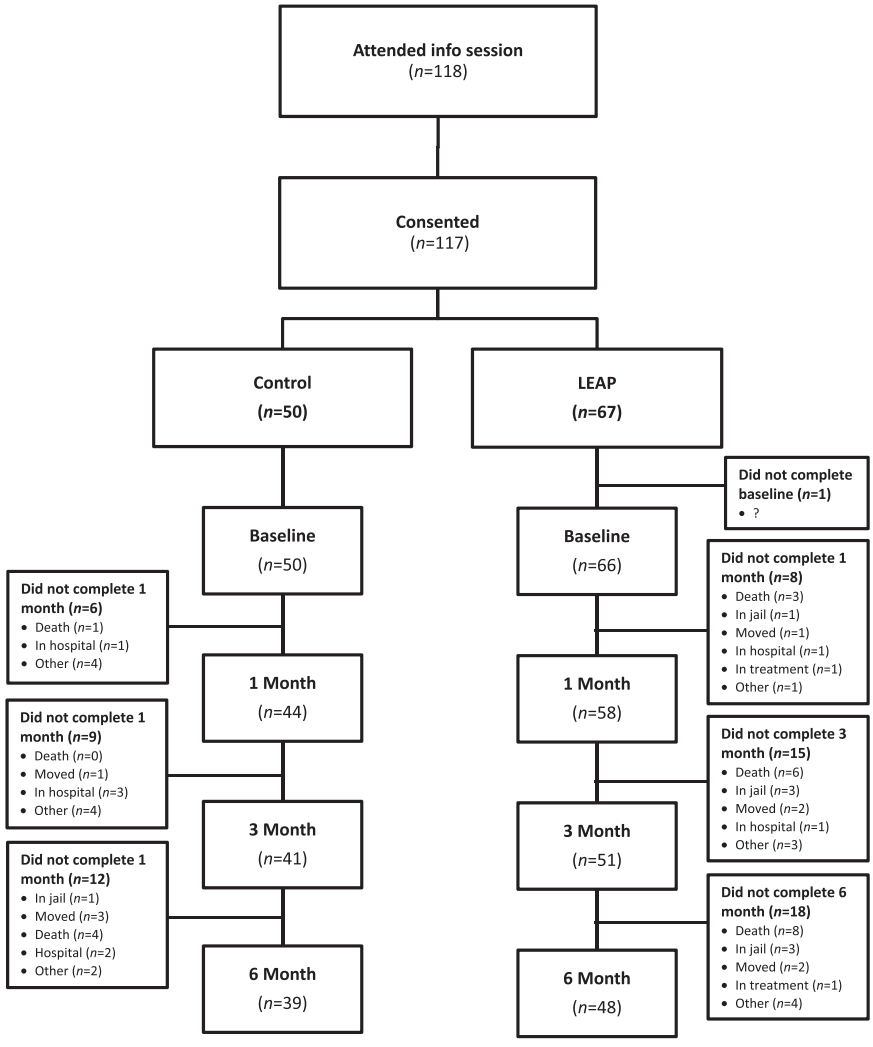

FIGURE 1 Life enhancing alcohol-management program consort table

robust $SE = 0.11$; $p = .002$) at baseline for LEAP versus control participants. The time × group interaction, however, was not significant ($p = .71$).

3.3.2 | Quality-of-life outcomes

The meaningful activities model was significant, Wald $\chi^2(4, N = 105) = 15.12$; $p = .005$. Within that model, linear time was a significant predictor ($B = -7.36$; robust $SE = 2.13$; $p = .001$), which was modified by the group in the significant time × group interaction ($B = 9.92$; robust $SE = 2.85$; $p < .001$). For each month that passed in the follow-up, control participants showed a decrease of 7.36 points on the MAPA summary score, whereas LEAP participants showed an increase of 2.61 points (see Figure 2). The omnibus model for overall QoL was not significant ($p = 0.68$).

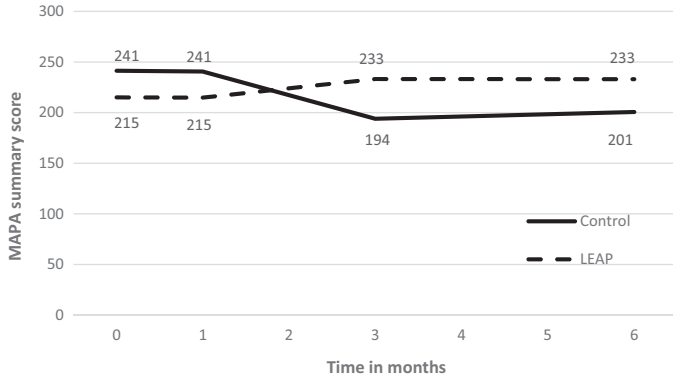

FIGURE 2 Participants' self-reported engagement in meaningful activities across the 6-month follow-up

3.4 | Within-groups analyses testing dose-response effect of LEAP exposure

3.4.1 | Alcohol outcomes

The omnibus model for nondrinking days was not significant ($p = .35$); however, the models for alcohol quantity, Wald $\chi^2(6, N = 60) = 17.48$; $p = .008$, and alcohol-related harm, Wald $\chi^2(6, N = 60) = 13.49$; $p = .04$, were. As shown in Table 2, the level of exposure to LEAP activities predicted changes in these outcomes over the 6-month follow-up (see Table 2 for model parameters). Specifically, participants who engaged in a high level of LEAP activities (≥2 activities a month), reported drinking 16% less for each month that passed in the program compared to people who

TABLE 2 Model parameters for secondary, within-subjects analyses

Predictors	IRR	Robust *SE*	CI (95%)	*Z*	*p*
Alcohol quantity					
Time	1.04	.05	(0.94, 1.14)	0.70	.48
Medium LEAP attendance	1.09	.27	(0.67, 1.76)	0.33	.74
High LEAP attendance	1.06	.29	(0.62, 1.80)	0.22	.83
Time × medium LEAP attendance	.92	.05	(0.82, 1.03)	−1.46	.15
Time × high LEAP attendance	.84	.05	(0.74, 0.95)	−2.75	.01
Months in housing	1.03	.02	(0.99, 1.08)	1.33	.18
Constant	13.67	3.47	(8.31, 22.47)	10.31	<.001
Alcohol-related harm					
Time	1.07	.03	(1.02, 1.12)	2.68	.01
Medium LEAP attendance	1.27	.36	(0.73, 2.21)	0.84	.40
High LEAP attendance	1.56	.49	(0.85, 2.88)	1.43	.15
Time × medium LEAP attendance	.92	.03	(0.87, 0.98)	−2.67	.01
Time × high LEAP attendance	.90	.03	(0.84, 0.96)	−3.07	.002
Months in housing	.97	.03	(0.90, 1.04)	−0.93	.35
Constant	18.60	8.34	(7.72, 44.81)	6.52	<.001

Note: Most participants (86%; $n = 57/66$) attended at least one activity during the LEAP intervention period, and 27%, 47%, and 26% participants evinced low (0–2 activities; 0–25th percentile), medium (3–21 activities; 25th–75th percentile), and high (>22; 75th–100th percentile) LEAP activity attendance, respectively.

Abbreviations: LEAP, life enhancing alcohol-management program; IRR, incident rate ratio; SE, standard error.

were minimally exposed (0–2 activities throughout the entire program). Similarly, participants who engaged in medium and high levels of LEAP activities reported 8% and 10% lower levels of alcohol-related harm for each month that passed in the program compared to those who were minimally exposed.

3.4.2 | Quality-of-life outcomes

The omnibus model for overall QoL was not significant, Wald $\chi^2(6, N = 60) = 3.69$; $p = 0.72$. Although the omnibus model for meaningful activities was, Wald $\chi^2(6, N = 60) = 58.13$; $p < .001$, the time × LEAP activity levels interactions were not (ps > 0.06).

4 | DISCUSSION

The findings from this nonrandomized controlled pilot trial show promise, albeit not definitive efficacy, for the LEAP as a programmatic adjunct to HF. LEAP activities included access to community leadership, meaningful activities, and AUD-specific pathways to recovery. Although it was harm-reduction oriented and did not require alcohol abstinence for participation, the LEAP provided HF residents with means of engaging in community-building activities that did not involve alcohol. This intent—increasing participants' involvement in meaningful activities—was realized in the study findings. Specifically, LEAP participants reported significantly more engagement in meaningful activities than control participants.

Contrary to hypotheses, there were no between-groups effects of LEAP on alcohol outcomes. That said, LEAP participants did show significant within-subjects reductions in alcohol-related harm over the 6-month follow-up. Additionally, there was a dose-response effect based on participants' exposure to LEAP activities: Compared to low-attendance participants, high-attendance participants reported a 10% reduction in alcohol-related harm and a 16% reduction in typical alcohol quantity for each month that passed in the 6-month follow-up.

In a few ways, the present findings align with the findings from other community-based intervention studies involving substance-using populations. For example, research on the community reinforcement approach has shown that access to alternative, community-based activities that do not involve alcohol can help reduce drinking among people experiencing homelessness and AUD (Miller, Meyers, & Hiller-Sturmhofel, 1999; Smith, Meyers, & Delaney, 1998; Smith, Meyers, & Miller, 2001). Other studies evaluating the impact of meaningful activities have shown that that recreational activities provide a sense of self-worth, normalcy, and social reintegration for people experiencing homelessness (Harrington & Dawson, 2016), and engagement in meaningful activities can be one of the factors most likely to contribute to recovery from mental illness for formerly homeless people (D. K. Padgett, Smith, Brown, Tiderington, & Mercado, 2016). As a potential explanation for these findings: behavioral economics research suggests that access to valued, nondrinking reinforcers helps people decrease their preference for alcohol (Vuchinich & Tucker, 1988). Future research should specifically explore meaningful activities participation as a mechanism of change.

4.1 | Limitations

Although there was a significant between-group effect for engagement in meaningful activities, we did not observe between-groups differences in alcohol or QoL outcomes. This finding could have resulted from a lack of a significant group effect or from the relatively small and heterogeneous nature of the present sample, which may have created barriers to finding a statistically significant effect.

Further, given the practical limitations of the sites and the design, it was not possible to randomize housing programs or participants. Although propensity score weighting helped balance initial group differences, the potential impact of these differences on the outcomes cannot be dismissed. Future research using larger samples and stronger comparative research designs is warranted to address these issues.

4.2 | Lessons learned

In addition to these limitations, we have also identified lessons learned that we believe can be applied to future follow up trials to maximize the efficacy of the LEAP on future key outcome measures. Specifically, (a) participants in the LEAP pilot cited having autonomy and input into hiring decisions for the research project as key for their investment in the LEAP; (b) researchers learned that ensuring that residents' concerns, ideas, and suggestions were heard, incorporated and advocated for (even if unrelated to the research), was key to moving towards acceptability and engagement with the LEAP; (c) The consistency of researchers' involvement in various house activities—both research (e.g., meeting attendance, participation in programming) and nonresearch-related (e.g., support for community meetings, advocacy to management, visits to residents in the hospital)—was also essential to building long-term, trusting and productive relationships that contributed to the success of the study (see Collins, 2018 #22).

4.3 | Conclusions and future directions

This nonrandomized controlled pilot indicated promise for LEAP as an adjunct to existing HF programs. Findings indicated that the LEAP helped increase participants' engagement in meaningful activities above and beyond services as usual typically offered through single site HF. Further, the level of LEAP exposure was a predictor of key alcohol outcomes: engagement in more than two activities per month was associated with statistically significant decreases in alcohol quantity and alcohol-related harm. Future, large-scale randomized controlled trials are necessary to ensure adequate power and a more rigorous test of the efficacy of the LEAP.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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REFERENCES

Allison, P. D. (2001). Missing data, Thousand Oaks, CA: Sage.

Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behavioral Research*, *46*, 399–424. https://doi.org/10.1080/00273171.2011.568786

Baggett, T. P., Chang, Y., Singer, D., Porneala, B., Gaeta, J., O'Connell, J., & Rigotti, N. (2015). Tobacco-, alcohol-, and drug-attributable deaths and their contribution to mortality disparities in a cohort of homeless adults in boston. *American Journal of Public Health*, *105*, 1189–1197. https://doi.org/10.2105/AJPH.2014.302248

Burckhardt, C. S., & Anderson, K. L. (2003). The quality of life scale (QOLS): Reliability, validity, and utilization. *Health and Quality of Life Outcomes*, *1*, 60.

Clifasefi, S. L., Malone, D., & Collins, S. E. (2013). Exposure to project-based Housing First is associated with reduced jail time and bookings. *International Journal of Drug Policy*, *24*, 291–296. https://doi.org/10.1016/j.drugpo.2012.10.002

Clifasefi, S. L., Collins, S. E., Torres, N. I., Grazioli, V. S., & Mackelprang, J. (2016). Housing first, but what comes second? a qualitative study of resident, staff and management perspectives on single-site housing first program enhancement: Housing first, but what comes second? *Journal of Community Psychology*, *44*(7), 845–855. https://doi.org/10.1002/jcop.21812

Collins, S. E., Malone, D. K., Clifasefi, S. L., Ginzler, J. A., Garner, M. D., Burlingham, B., … Larimer, M. E. (2012). Project-based housing first for chronically homeless individuals with alcohol problems: Within-subjects analyses of 2-year alcohol trajectories. *American Journal of Public Health*, *102*, 511–519. https://doi.org/10.2105/AJPH.2011.300403

Collins, S. E., Clifasefi, S. L., Andrasik, M. P., Dana, E. A., Stahl, N. E., Kirouac, M., … Malone, D. K. (2012). Exploring transitions within a project-based housing first setting: Qualitative evaluation and practice implications. *Journal of Health Care for the Poor and Underserved*, *23*, 1678–1697. https://doi.org/10.1353/hpu.2012.0187

Collins, S. E., Saxon, A. J., Duncan, M. H., Smart, B. F., Merrill, J. O., Malone, D. K., … Ries, R. K. (2014). Harm reduction with pharmacotherapy for homeless people with alcohol dependence: Protocol for a randomized controlled trial. *Contemporary Clinical Trials*, *38*, 221–234. https://doi.org/10.1016/j.cct.2014.05.008

Collins, S. E., Duncan, M. H., Smart, B. F., Saxon, A. J., Malone, D., Jackson, T., & Ries, R. (2015). Extended-release naltrexone and harm reduction counseling for chronically homeless people with alcohol dependence. *Substance Abuse*, *36*, 21–33. https://doi.org/10.1080/08897077.2014.904838

Collins, S. E., Clifasefi, S. L., Stanton, J., The LEAP Advisory Board, Straits, K. J. E., Gil-Kashiwabara, E., … Wallerstein, N. (2018). Community-based participatory research (CBPR): Towards equitable involvement of community in psychology research. *American Psychologist*, *73*, 884–898. https://doi.org/10.1037/amp0000167

Eakman, A. M., Carlson, M. E., & Clark, F. A. (2010). The meaningful activity participation assessment: A measure of engagement in personally valued activities. *International Journal of Aging & Human Development*, *70*(4), 299–317.

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). The prevalence of mental disorders among the homeless in western countries: Systematic review and meta-regression analysis. *PLOS Medicine*, *5*, e225. https://doi.org/10.1371/journal.pmed.0050225

US Housing and Urban Development. (2007). Defining chronic homelessness: A technical guide for HUD programs, Washington DC: Office of Community Planning and Development, US Department of Housing and Urban Development.

Guo, S. Y., & Fraser, M. W. (2015). *Propensity score analysis: Statistical methods and applications* (2nd Edition.). LA: SAGE Publications, Inc.

Hardin, J. W., & Hilbe, J. M. (2003). *Generalized estimating equations*. Boca Raton, FL: Chapman & Hall/CRC.

Harrington, M., & Dawson, D. (2016). Trajectories of recovery among formerly homeless adults with serious mental illness. *Psychiatric Services*, *67*(1), 610–614. https://doi.org/10.1176/appi.ps.201500126

Hwang, S. W., Wilkins, R., Tjepkema, M., O'Campo, P., & Dunn, J. R. (2009). Mortality among residents of shelters, rooming houses and hotels in Canada: 11 Year follow-up. *BMJ*, *339*, b4036. https://doi.org/10.1136/bmj.b4036

Jagosh, J., Macaulay, A. C., Pluye, P., Salsberg, J., Bush, P., Henderson, J., … Greenhalgh, T. (2012). Uncovering the benefits of participatory research: Implications of a realist review for health research and practice. *The Milbank Quarterly*, *90*, 311–346.

Jeste, D. V., Palmer, B. W., Appelbaum, P. S., Golshan, S., Glorioso, D., Dunn, L. B., … Kraemer, H. C. (2007). A new brief instrument for assessing decisional capacity for clinical research. *Archives of General Psychiatry*, *64*, 966–974.

Khodyakov, D., Stockdale, S., Jones, F., Ohito, E., Jones, A., Lizaola, E., & Mango, J. (2011). An exploration of the effect of community engagement in research on perceived outcomes of partnered mental health services projects. *Society and Mental Health*, *1*, 185–199. https://doi.org/10.1177/2156869311431613

Kirst, M., Zerger, S., Misir, V., Hwang, S., & Stergiopoulos, V. (2015). The impact of a Housing First randomized controlled trial on substance use problems among homeless individuals with mental illness. *Drug and Alcohol Dependence*, *146*, 24–29. https://doi.org/10.1016/j.drugalcdep.2014.10.019

Kushel, M. B., Perry, S., Bangsberg, D., & Clark, R. (2002). Emergency department use among the homeless and marginally housed: Results from a community-based study. *American Journal of Public Health*, *92*, 778–784. https://doi.org/10.2105/AJPH.92.5.778

Larimer, M. E., Malone, D. K., Garner, M. D., Atkins, D. C., Burlingham, B., Lonczak, H. S., … Marlatt, G. A. (2009). Health care and public service use and costs before and after provision of housing for chronically homeless persons with severe alcohol problems. *Journal of the American Medical Association*, *301*, 1349–1357. https://doi.org/10.1001/jama.2009.414

Mackelprang, J. L., Collins, S. E., & Clifasefi, S. L. (2014). Housing First is associated with reduced use of emergency medical services. *Prehospital Emergency Care*, *18*, 476–482. https://doi.org/10.3109/10903127.2014.916020

Malone, D. K., Collins, S. E., & Clifasefi, S. L. (2015). Single-site Housing First for chronically homeless people. *Housing, Care and Support*, *18*, 62–66.

McLellan, A. T., Kushner, H., Metzger, D., & Peters, R. (1992). The fifth edition of the Addiction Severity Index. *Journal of Substance Abuse Treatment*, *9*, 199–213. https://doi.org/10.1016/0740-5472(92)90062-S

Miller, W. R., Tonigan, J., & Longabaugh, R. (1995). The drinker inventory of consequences (DrInC): An instrument for assessing adverse consequences of alcohol abuse [Monograph Series]. Test manual Vol. 4. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.

Miller, W. R., Meyers, R. J., & Hiller-Sturmhofel, S. (1999). The community reinforcement approach. *Alcohol Research & Health*, *23*, 116–121.

O'Mara-Eves, Brunton, G., Oliver, S., Kavanagh, J., Jamal, F., & Thomas, J. (2015). The effectiveness of community engagement in public health interventions for disadvantaged groups: A meta-analysis. *BMC Public Health*, *15*, 129. https://doi.org/10.1186/s12889-015-1352-y

Padgett, D., Stanhope, V., Henwood, B. F., & Stefancic, A. (2011). Substance use outcomes among homeless clients with serious mental illness: Comparing housing first with treatment first programs. *Community Mental Health Journal*, *47*, 227–232. https://doi.org/10.1007/s10597-009-9283-7

Padgett, D. K., Smith, B. T., Brown, M. C., Tiderington, E., & Mercado, M. (2016). Trajectories of recovery among formerly homeless adults with serious mental illness. *Psychiatric Services*, *67*(6), 610–614. https://doi.org/10.1176/appi.ps.201500126

Poulin, S. R., Maguire, M., Metraux, S., & Culhane, D. P. (2010). Service use and costs for persons experiencing chronic homelessness in Philadelphia: A population-based study. *Psychiatric Services*, *61*, 1093–1098. https://doi.org/10.1176/appi.ps.61.11.1093

Rounsaville, B. J., Carroll, K. M., & Onken, L. S. (2001). A stage model of behavioural therapies research: Getting started and moving on from Stage I. *Clinical Psychology: Science and Practice*, *8*, 133–142.

Smith, J. E., Meyers, R. J., & Delaney, H. D. (1998). The community reinforcement approach with homeless alcohol-dependent individuals. *Journal of Consulting and Clinical Psychology*, *66*, 541–548. https://doi.org/10.1037//0022-006X.66.3.541

Smith, J. E., Meyers, R. J., & Miller, W. R. (2001). The community reinforcement approach to the treatment of substance use disorders. *American Journal on Addictions*, *10*, 51–59. https://doi.org/10.1080/10550490190942515

Stahl, N., Collins, S. E., Clifasefi, S. L., & Hagopian, A. (2016). When Housing First lasts: Exploring the lived experience of single-site Housing First residents. *Journal of Community Psychology*, *44*, 484–498.

Stergiopoulos, V., Gozdzik, A., Misir, V., Skosireva, A., Connelly, J., Sarang, A., … McKenzie, K. (2015). Effectiveness of housing first with intensive case management in an ethnically diverse sample of homeless adults with mental illness: A randomized controlled trial. *PLOS One*, *10*, e0130281.

Tsemberis, S., & Eisenberg, R. F. (2000). Pathways to Housing: Supported housing for street-dwelling homeless individuals with psychiatric disabilities. *Psychiatric Services*, *51*, 487–493. https://doi.org/10.1176/appi.ps.51.4.487

Tsemberis, S., Gulcur, L., & Nakae, M. (2004). Housing first, consumer choice and harm reduction for homeless individuals with a dual diagnosis. *American Journal of Public Health*, *94*, 651–656. https://doi.org/10.2105/AJPH.94.4.651

The United States Department of Housing and Urban Development, Office of Community Planning and Development. (2017). *The 2017 annual homelessness assessment report to Congress: Part 1 point-in-time estimates of homelessness*. Retrieved from https://www.hudexchange.info/resources/documents/2017-AHAR-Part-1.pdf

Velasquez, M. M., Crouch, C., von Sternberg, K., & Grosdanis, I. (2000). Motivation for change and psychological distress in homeless substance abusers. *Journal of Substance Abuse Treatment*, *19*, 395–401.

Vuchinich, R. E., & Tucker, J. A. (1988). Performance attributions and changes in self-esteem following self-handicapping with alcohol consumption. *Journal of Social and Clinical Psychology*, *6*, 88–103.

Wallerstein, N., Duran, B., Oetzel, J., & Minkler, M. (2017). Community-based participatory research for health: Advancing social and health equity (3rd edition.). San Franciso: Jossey Bass.

Zeger, S. L., & Liang, K. -Y. (1986). Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*, *42*, 121–130. https://doi.org/10.2307/2531248

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