

Recovery from addiction in two types of sober living houses: 12-Month outcomes

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Abstract

Objective: Sustained abstinence for many alcohol- and drug-dependent persons might be enhanced by providing an alcohol- and drug-free living environment that supports recovery. Sober living houses (SLHs) are alcohol- and drug-free living environments for individuals attempting to maintain abstinence. Costs are covered by resident fees and residents can stay as long as they wish.

Method: The present study examined 300 individuals who entered: (1) SLHs associated with an outpatient treatment program ($N = 55$) or (2) freestanding SLHs not affiliated with formal treatment ($N = 245$). A repeated-measure design examined alcohol, drug, and other problem areas at baseline, 6 months, and 12 months. Mixed model regressions were used to assess how problems changed for individuals within each type of SLH over the 3 time points.

Results: Residents in both types of houses made significant reductions in the maximum number of days of substance use per month between baseline and 6 months and these reductions were maintained at 12 months. On Addiction Severity Index (ASI) scales that assessed alcohol, drug, employment, and legal problems residents either made significant improvement or maintained low baseline severity of problems at 6 and 12 months. On other measures, residents entered the houses with moderately high severity that did not improve (ASI Medical and Family/Social severity) or improved modestly (psychiatric symptoms on the Brief Symptom Inventory).

Conclusion: Addiction recovery systems should recognize the potential utility of SLHs and examine the types of houses that are feasible in specific communities.

Keywords: *Housing, sober living houses, residential treatment, recovery houses*

Introduction

Practitioners in most alcohol and drug treatment programs try to create a social and physical environment within the program that is supportive of recovery. At the same time, they

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encourage clients to establish social supports outside the program that discourage substance use and encourage abstinence. Clients are, therefore, instructed to avoid individuals who use substances, build a social support system of individuals who are either in recovery, or who at least will dissuade them from relapsing, and avoid high-risk situations that precipitate substance use (Marlatt 1985). Unfortunately, these suggestions are not always easy to implement or maintain when clients live in unstable or chaotic living environments that undermine their ability to maintain abstinence.

Numerous studies have shown the importance of addressing social environment factors in the treatment of addictions and social support measures have consistently predicted whether individuals maintain abstinence (e.g., Beattie and Longabaugh 1999; Zywiak et al. 2002; Bond et al. 2003; Moos and Moos 2006). For example Beattie and Longabaugh (1999) found that having individuals in one's social network who provided general social support was associated with better drinking outcome. However, the best outcomes were predicted by alcohol-specific social support that discourages drinking. Similarly, Zywiak et al. (2002) found that patients with social networks with a higher number of abstainers and recovering alcoholics had the best prognosis after treatment, an effect that persisted at the 3-year follow-up. Moos and Moos (2006) studied a mix of treated and untreated individuals with alcohol-use disorders ($N = 461$) over a 16-year period and concluded that social support for recovery was important in achieving successful abstinence. Bond et al. (2003) reached a similar conclusion in their 3-year follow-up study on 655 alcohol-dependent individuals who were seeking treatment. Abstinence from alcohol was consistently associated with social support for sobriety and involvement in Alcoholics Anonymous. In papers that summarized the impact of social support on drinking outcome Moos (2006, 2008) not only reiterated the important role of social support in outcome, he also proposed mechanisms of action (i.e., how social support influences positive change). He suggested that various characteristics of social support were active ingredients that promoted change (e.g., social control, behavioral economics, and social learning).

A major challenge for practitioners and the clients they serve in terms of establishing social support for sobriety is finding a long-term, stable, living environment that promotes sustained recovery. Polcin et al. (2004) described how practitioners in residential settings frequently struggle with the question, "Where are they going to live?" as clients approach completion of treatment. The question is particularly difficult for practitioners who work with clients who are homeless or reside in high-crime areas. There are often few housing options available for these individuals that provide the social support necessary to continue the gains made in treatment.

In outpatient settings, practitioners often feel that their efforts are undermined by destructive environments where clients reside (Polcin, 2009). Despite the best intentions to develop a program of recovery, the odds of success are low for clients residing in housing situations where social support systems encourage substance use. A common solution to this dilemma is to refer these clients to residential treatment programs. However, two problems with this solution include the lack of a sufficient number of programs to serve those clients who need residential treatment and the inevitable question of where they are going to live after completing the inpatient program.

Sober living houses

Sober living houses (SLHs) are a relatively recent innovation designed to help individuals with alcohol and drug problems establish sustained sobriety (Wittman 1993). The essential

characteristic of SLHs is their offering of an alcohol- and drug-free living environment for individuals attempting to establish or maintain abstinence from alcohol and drugs. They offer no formal treatment services but either mandate or strongly encourage attendance at 12-step self-help groups such as Alcoholics Anonymous. SLHs can provide a living environment that supports recovery for individuals completing residential treatment, attending outpatient programs, or those who want to pursue recovery outside of formal treatment. Polcin (2006a) has suggested that SLHs have been underutilized as a living environment for criminal justice populations, such as parolees leaving prison.

There are similarities between SLHs and other residential facilities for substance abusers, such as “halfway houses” (Polcin and Henderson 2008). Both types of houses are designed to facilitate recovery in a home-like environment in the community. However, there are important differences as well. Unlike most halfway houses, SLHs have the advantage of being financially self-sustaining through resident fees. Most residents meet their financial obligations through work, but others have access to family support or government entitlement programs such as social security income. A second difference is the residents of SLHs can stay as long as they wish, provided they meet their financial obligations and abide by the rules, such as maintaining abstinence from drugs and alcohol.

SLHs have their origins in the state of California and most SLHs continue to be located there (Polcin and Henderson 2008). However, websites promoting SLHs list houses in many states representing all geographic regions of the country. It is difficult to ascertain the number of SLHs that exist because they are not formal treatment programs and are therefore outside the purview of state licensing agencies. However, many SLHs in California are members of coalitions or associations that monitor health, safety, quality, and adherence to a peer-oriented model of recovery, such as the California Association of Addiction and Recovery Resources (CAARR) or the Sober Living Network (SLN). Over 24 agencies affiliated to CAARR offer clean and sober living services. The SLN has over 300 individual houses among its membership.

Like many community-based programs for addiction treatment, SLHs have encountered resistance from individuals who do not want substance abusers in their community (Wittman 2008). NIMBYism (not in my backyard) is therefore a frequent challenge for SLHs. Fortunately, Wittman (2008) has provided a discussion on how legal and zoning issues can protect the establishment of SLHs in communities. Briefly, he notes that SLHs fall under the protection of the Fair Housing Amendments Act (FHAA) of 1988 regarding the right to live in any residentially zoned area under the Fourth Amendment. The FHAA prohibits housing discrimination by allowing people with disabilities to live together for a shared purpose, such as mutually assisted recovery and maintenance of an abstinent lifestyle. (For a full description of legal, zoning, and “not in my backyard” [NIMBY] issues, see Wittman’s 2008 paper.)

Purpose

Despite the potential for SLHs to address the housing needs of individuals seeking to establish or maintain recovery, relatively little attention has been paid to them in the professional literature. The purpose of this article is to describe two different models of SLHs, the types of individual served in each, and 12-month outcomes. One model is a freestanding SLH program consisting of 16 houses ($N=245$) not affiliated with any formal treatment. The second SLH model is a modification of SLHs in that the four houses ($N=55$) are affiliated with an outpatient treatment program. Admission to these houses

requires individuals to be attending the outpatient treatment program. However, unlike most halfway houses affiliated with treatment, residents can remain at the SLHs after they complete treatment for as long as they wish provided they abide by the house rules.

Our main hypothesis was that SLH residents would report significant reductions in alcohol and drug use over the past 6 months (measured as the maximum number of days of alcohol or drug use per month) between baseline and 6-month follow-up and reductions would be maintained at 12 months. We also expected to see improvement on ASI scales measuring alcohol, drug, employment, legal, medical and family/social severity and psychiatric symptoms on the Brief Symptom Inventory.

Methods

Housing models

To provide a broad view of SLHs we sought to study two different SLH models, both of which were located in Northern California. We selected some houses that represented freestanding SLHs in the community that were not affiliated with any formal treatment. These represented the most common model of SLHs. We also selected a somewhat innovative model of SLHs that was associated with an outpatient treatment program. Each of these programs is described in detail below.

Clean and Sober Transitional Living (CSTL) operates 16 freestanding SLHs (136 bed capacity) located in a suburb 17 miles northeast of Sacramento. CSTL is structured into two phases. The first (30–90 days) is designed to provide more limits and structure (e.g., curfews and mandatory 12-step meeting attendance) to help residents successfully transition into the facility. The primary goal is for residents to adapt to the SLH environment and develop a stable recovery program. The second phase allows for more autonomy. While residents in phase I are required to share a room, those in phase II may have a private room. In addition, curfews and requirements for 12-step attendance for phase II residents are reduced. Regardless of which phase they are in, all residents are required to be actively involved in 12-step recovery programs, abide by basic house rules, and abstain from alcohol and drugs. A “Residents Congress” consisting of current residents and alumni help enforce house rules and provide input into the management of the houses. Although the owner/operator of the houses is ultimately responsible, she/he defers to the Residents Congress as much as possible to maintain a peer-oriented approach to recovery. In order to be admitted to CSTL, prospective residents must have begun some type of program of recovery prior to their application.

Some residents of CSTL have a recent history of residential treatment, while others have substantive experience with self-help groups such as Alcoholics Anonymous. Among our sample of 245 residents, 60% reported entering a residential treatment program during the previous 6 months; the median number of days in treatment was 10. Fewer, 32%, indicated that they had attended an outpatient treatment program over the past 6 months. The median number of 12-step meetings attended over the previous 6 months was 30.

Residents at CSTL are free to stay as long as they wish provided they comply with house rules and meet their financial obligations. The cost at entry into the house is \$695 per month which includes family-style meals and utilities. About 90% of the residents use their own financial resources (e.g., employment earnings, savings, family resources, or Social Security income) to meet housing costs. About 10% of the residents receive financial support from the Substance Abuse Services Coordinating Agency (SASCA), an agency created for

graduates of drug treatment programs in the California Department of Corrections. For a more extensive description of CSLT, see Polcin and Henderson (2008).

Options Recovery Services (ORS) is an outpatient substance abuse treatment program located in Berkeley, California. The program serves about 800 clients per year, most of whom have low income and have histories of homelessness. In response to a clear need for alcohol- and drug-free housing for many clients in the outpatient program, ORS opened SLHs in 2001 so clients could have a stable, alcohol- and drug-free place to reside while they attended outpatient treatment. There are currently 4 houses with 58 beds. The houses are different from freestanding SLHs (such as those described above at CSTL) because all residents must be involved in the outpatient program to be eligible for admission. Typically, new residents have 30 days of abstinence from drugs and alcohol and most new residents enter the houses after residing in a short-term homeless shelter located near the program.

Nearly all residents are eligible for some type of government assistance (e.g., general assistance [GA] or social security disability [SSD]) and use those funds to pay SLH fees. The agency adjusts fees based on income. Those on GA are charged \$250 per month and those on SSD are charged \$350 per month. Attendance in the treatment program is required until they complete the 39-week treatment program. In addition, residents are expected to be involved in 12-step meetings as long as they remain in the house. Like other SLH models of recovery, residents are free to stay as long as they wish provided they comply with the house rules and fulfill their financial obligations. However, nearly all leave within a 2-year period. Also, like other SLH models, each house has a house manager who is responsible for ensuring that the house rules requirements are followed. ORS does not have any type of Residents Council, but house managers meet regularly with the executive director and give inputs into the operations of the SLHs during these meetings. For a more complete description of the SLHs at ORS, see Polcin (2009).

Sample

In order to maximize our ability to generalize results we employed only a few inclusion/exclusion criteria: all study participants were aged 18 or older and were deemed competent to provide informed consent. We recruited 245 individuals from CSLT and 55 from ORS. See Table I for a depiction of demographic characteristics.

Procedures

Study participants were recruited and interviewed within their first week of entering the houses between January 2004 and July 2006 and interviewed again at 6- and 12-month follow-up. Interviews required about 2 h and participants were paid \$30 for the baseline interview and \$50 for each of the follow-up interviews. All participants signed an informed consent to take part in the study and all were informed that their responses were confidential. Study procedures were approved by the Public Health Institute Institutional Review Board and a federal certificate of confidentiality was obtained, adding further protection to confidentiality.

To reach individuals for follow-up interviews we required them to provide their contact information (e.g., phone numbers, addresses, e-mails, names of friends who might know their whereabouts, family members' phone numbers, health service professionals from whom they received services, shelters they frequented, and criminal justice personnel). Follow-up rates for CSLT residents were 72% at 6 months and 71% at 12 months.

Table I. Baseline categorical variables (in percent).

Variable	ORS (N=55)	CSLT (N=245)
Sex		
Male	94.5	77.1
Female	5.5	22.9
Marital status		
Never married	54.5	49.8
Other	45.5	50.2
Have kids under 18 years		
No	56.4	51.8
Yes	43.6	48.2
Race Dichotomized		
Non-white	70.4	27.5
White	29.6	72.7
Education		
Not a HS Graduate	27.3	20.8
HS Graduate/GED+	72.7	79.2
Referral source		
Criminal	23.6	29.2
Inpatient	3.6	15.2
Self/family/friend	45.5	43.6
Other	27.3	11.9
Controlled environment in past 30 days		
No	67.3	23.7
Yes	32.7	76.3

Only 18% were not interviewed at either follow-up time point. Follow-up was relatively higher at ORS (86% at 6 months and 76% at 12 months). Here, 13% were not interviewed at either follow-up time point. Comparisons of participants who were located and interviewed *versus* those lost at follow-up time points revealed no significant differences in terms of demographic characteristics, Addiction Severity Index (ASI) scales (i.e., medical, legal, alcohol, drug, family/social, and vocational), psychiatric symptoms, and maximum number of days of substance use (alcohol or drugs) per month during the previous 6 months. We conducted a power analysis to assess our ability to detect baseline differences between participants who were successfully contacted at follow-up ($N=249$) *versus* those we could not locate ($N=51$). Using 0.05 level of significance and two-tailed comparisons we found that we had sufficient power (0.90) to detect medium effect sized differences between those followed up *versus* those not found. Nevertheless, it is possible that the individuals who were lost at follow-up had worse outcomes on average than those whom we were able to locate.

Measures

Some measures were administered at baseline only to describe the characteristics of participants at entry into the houses:

- (1) Demographic characteristics included standard demographic questions such as age, gender, ethnicity, marital status, and education.
- (2) A DSM IV checklist for past 12-month alcohol and drug dependence was used to assess substance-use disorders over the past 12 months. Items are based on DSM IV diagnostic criteria (American Psychiatric Association, 2000; Forman et al., 2004).

- (3) **ASI Lite:** The ASI is a standardized, structured interview that assesses problem severity in six areas: medical, employment/support, drug/alcohol, legal, family/social, and psychological. The ASI measures a 30-day time period and provides composite scores between 0 and 1 for each problem area. The ASI has demonstrated excellent reliability and validity in numerous studies (McLellan et al. 1992). Although the instrument includes a measure of psychiatric severity as well, we opted to use a more comprehensive measure for psychiatric symptoms which is described below.
- (4) **Psychiatric symptoms:** To assess current psychiatric severity we used the Brief Symptom Inventory (Derogatis and Melisaratos 1983). This 53-item measure assesses severity of psychiatric symptoms on nine clinical scales as well as three global indices. Items are rated on a 5-point scale and ask about symptoms over the past 7 days. We used the Global Severity Index (GSI) as an overall measure of psychiatric severity.
- (5) **A 6-month measure of alcohol and drug use:** This measure was taken from Gerstein et al. (1994) and labeled Peak Density – number of days of any substance use (i.e., any alcohol or drug) during the month of highest use over the past 6 months.

Analysis

Our goal in analyzing the two models of SLHs was to provide descriptions of the types of individuals who entered each type of SLH and track longitudinal changes of residents within each of the two programs. Thus, our intent was not to make direct comparisons to assess which was more effective.

The analysis plan began with descriptive data portraying individuals in each of the two types of programs (Table I). To test longitudinal changes, we developed mixed model regressions that depicted resident functioning on ASI scales, the GSI of the Brief Symptom Inventory, and Peak Density of alcohol and drug use over the past 6 months. Unlike some repeated-measures analyses, mixed model methods do not require that participants take part in each of the interviews to be included in the analysis. Thus, all residents who completed a baseline interview were included in our regression models.

Results

Table I shows demographic variables for individuals in each type of SLH at baseline. Large majorities of residents in both types of houses were men. The ORS houses only had three women (5.5%), largely because the only women's house closed shortly after the study began. Roughly half of the residents in each type of SLH had never been married, with ORS having a slightly larger proportion than CSLT (54.5%). A substantial proportion of residents in both types of SLHs reported having children; nearly half at CSTL, slightly less at ORS (44%). The average age at ORS was a bit older (mean age = 43, SD = 9) than at CSLT (mean age = 37, SD = 10). In terms of the racial distribution, ORS had a large number of African-American residents (62%) while most of the residents at CSLT were white (73%). While the percentage of residents who completed high school or a General Equivalency Degree (GED) was similar (73% at ORS and 79% at CSLT) monthly income at ORS (mean = \$447, SD = \$407) was less than half that at CSLT (mean = \$963, SD = \$1882).

Both programs received a plurality of their referrals from informal sources, such as self, family, or friends. However, criminal justice referrals were also quite common. Relative to

CSTL, ORS had a smaller proportion in any type of controlled environment the past 30 days. Controlled environment consisted primarily of incarceration and in-patient treatment. Over a third of CSLT residents reported spending some time in a residential treatment program before entering the SLH. In contrast, most ORS residents lived in a nearby homeless shelter during the month before they entered the houses.

There were also differences in past year drug dependencies (not shown in the table). Methamphetamine dependence during the past year was more common among residents at CSLT (53%) *versus* ORS (12%). In contrast, ORS had significantly larger proportions of individuals with past year cocaine dependence (60%) compared to 23% for CSLT. Alcohol dependence was relatively common at both types of houses. Of the residents at CSLT, 49% met criteria for past year alcohol dependence and slightly larger proportions met alcohol dependence criteria at ORS (58%).

In summary, although there were some similarities in the characteristics of the populations served and the structure of the two types of SLHs, there were important differences as well. Differences included types of drugs abused, race, income level, and the relationship of the houses to formal treatment.

Longitudinal effects

One of the strongest predictors of longitudinal outcome for clients in residential treatment programs is length of time in treatment (National Institute on Drug Abuse 1999). Average lengths of stay in both types of SLHs surpassed the National Institute on Drug Abuse's (NIDA's) recommendation that clients remain in treatment at least 90 days to obtain maximum benefit (NIDA, 1999). Average lengths of stay at ORS were 254 days ($SD = 169$ days) and 166 days ($SD = 163$) at CSLT.

Our goal in the longitudinal analyses was to look within each type of SLH to see if residents decreased their substance use or made significant improvements on ASI problem areas and psychiatric symptoms. Because we found some ASI areas were on average very low at baseline (e.g., see alcohol and drug severity in Table II), there was limited room for improvement. We therefore expected low severity to be maintained at follow-up time points.

Table II shows longitudinal changes of outcome variables for both types of houses. Peak density (maximum number of days of alcohol or drug use per month during the preceding 6 months) showed large, statistically significant declines in alcohol and drug use between baseline and 6 months for individuals residing in both types of houses and those improvements were maintained at 12 months. In the 6 months before entering ORS, residents had an average peak density of 19.27 ($SD = 1.76$) days of use. At 6-month follow-up it declined to 3.56 ($SD = 1.15$) days per month and stayed low at 12 months (mean = 4.07, $SD = 1.23$) ($p < 0.001$). In the CSLT houses residents entered with an average peak density of 18.81 ($SD = 0.85$) days of use, which declined to 10.12 ($SD = 0.91$) days per month at 6-month follow-up and remained at that level at 12 months (mean 9.84, $SD = 0.92$) ($p < 0.001$).

Peak density provided information about resident drug use over a 6-month time period. However, most outcome measures assessed shorter time periods, such as ASI variables which measured a 30-day time period, and psychiatric severity, which measured the past 7 days. Relative to individuals entering treatment programs in our geographical area (e.g., Polcin and Beattie 2007) most of these variables (e.g., alcohol, drug, and legal severity) showed low-problem severity at entry into the houses. For our primary ASI outcome measures, alcohol and drug severity, we found low severity for individuals at entry into the

Table II. Estimated marginal means for longitudinal outcomes within programs (SE).

Variable	Baseline	6 Months	12 Months	F
ASI Alcohol				
ORS	0.058 (0.015)	0.054 (0.015)	0.051 (0.019)	0.07 ($p=0.93$)
CSLT	0.127 (0.013)	0.085 (0.012)	0.084 (0.011)	5.47** ($p=0.005$)
ASI Drug				
ORS	0.050 (0.010)	0.030 (0.008)	0.052 (0.013)	2.29 ($p=0.11$)
CSLT	0.072 (0.006)	0.046 (0.006)	0.050 (0.006)	5.57** ($p=0.004$)
ASI Employment				
ORS	0.605 (0.017)	511 (0.025)	0.443 (0.033)	18.36*** ($p<0.001$)
CSLT	0.548 (0.013)	0.403 (0.015)	0.412 (0.016)	60.70*** ($p<0.001$)
ASI Family				
ORS	0.212 (0.020)	0.237 (0.019)	0.221 (0.023)	0.51 ($p=0.61$)
CSLT	0.259 (0.010)	0.248 (0.009)	0.239 (0.010)	1.371 ($p=0.26$)
ASI Legal				
ORS	0.081 (0.018)	0.041 (0.015)	0.039 (0.018)	2.48 ($p=0.09$)
CSLT	0.092 (0.010)	0.084 (0.011)	0.094 (0.012)	0.26 ($p=0.77$)
ASI Medical				
ORS	0.270 (0.037)	0.275 (0.046)	0.189 (0.040)	2.09 ($p=0.13$)
CSLT	0.181 (0.016)	0.181 (0.019)	0.214 (0.020)	1.46 ($p=0.23$)
Global Severity Index				
ORS	0.674 (0.084)	0.688 (0.081)	0.610 (0.081)	0.75 ($p=0.48$)
CSLT	0.826 (0.050)	0.678 (0.047)	0.701 (0.050)	4.52* ($p=0.012$)
Peak Density				
ORS	19.27 (1.76)	3.56 (1.15)	4.07 (1.23)	38.59*** ($p<0.001$)
CSLT	18.81 (0.85)	10.12 (0.91)	9.84 (0.92)	45.12*** ($p<0.001$)

Note: Analyses were mixed model regressions using a random intercept model.
 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

houses and either continuation of low severity or modest improvement at 6 months. ORS residents entered with alcohol severity at 0.058 (SD = 0.015) and that level of severity was the same at 6 months (mean = 0.054, SD = 0.015) and 12 months (mean = 0.051, SD = 0.019). CSLT residents entered with slightly higher alcohol severity (0.127, SD = 0.013), which declined to 0.085 (SD = 0.012) at 6 months ($p < 0.01$). Outcome at 12 months was about the same (0.084, SD = 0.011), indicating that low severity was maintained. Thus, residents in both types of SLHs were successful at maintaining low alcohol severity.

ASI drug severity showed a similar pattern. Participants at ORS entered the houses with low drug severity (mean = 0.050, SD = 0.010) and there were no significant changes over 6- (mean = 0.030, SD = 0.008) and 12-month (mean = 0.052, SD = 0.013) follow-up. CSLT participants entered the houses with slightly higher severity than ORS (mean = 0.072, SD = 0.006). However, drug severity declined significantly at 6 months (mean = 0.046, SD = 0.006) and remained at that level at 12-month follow-up (mean = 0.050, SD = 0.006) ($p < 0.01$). For legal severity, residents in both types of houses entered with low severity (mean = 0.081, SD = 0.018 for ORS and mean = 0.092, SD = 0.010 for CSLT) that was maintained at 6- and 12-month follow-up (Table II).

Employment severity differed from other ASI subscales in that individuals in both types of houses showed significant improvement between baseline and 6 months and that improvement was maintained at 12 months (Table II). However, mean severity of employment at baseline was relatively high for both programs (mean = 0.605, SD = 0.017

for ORS and 0.548, $SD=0.013$ for CSLT) and remained somewhat elevated despite improvements. At 12 months, residents in ORS had a mean employment severity score of 0.443 ($SD=0.033$) and residents in CSLT had a mean score of 0.412 ($SD=0.016$).

Two ASI scales that showed no significant improvement in either type of SLH were family/social and medical. Residents entered with moderate severity in these areas (Table II) and they did not improve to any significant extent at follow-up time points. Findings on the GSI (a measure of psychiatric symptoms) were mixed. Among residents at CSLT there was significant improvement over time. Residents entered the houses with a mean GSI score of 0.826 ($SD=0.050$) which declined to 0.701 ($SD=0.050$) at 12 months. ORS residents entered with somewhat lower severity scores that remained between 0.60 and 0.70 across all 3 time points. However, at 12 months residents in both types of houses had fairly elevated scores indicating psychiatric symptoms were a continuing concern. Although residents at CSLT showed significant improvement over time and those at ORS did not, residents at CSLT had higher overall severity than those at ORS at 12 months.

It is worth noting that results between 6- and 12-month outcomes changed very little despite the fact that much larger proportions of the residents had left the house at 12 months.

For ORS, 74% of the residents were still residing in the program at the 6-month time point, but that fell to 32% at 12 months. For CSLT 42% of the residents were still residing in the houses at 6 months and that number dropped to 18% at 12 months. Nevertheless, as Table II indicates, there were only marginal differences on outcome variables between 6 and 12 months. Thus, many participants who had left the residence were nonetheless continuing to function well.

Discussion

Overall, our findings represent the first systematic evaluation of SLHs and we found support for both models of SLHs: freestanding SLHs not affiliated with treatment and SLHs that were integrated into outpatient treatment. On average, residents in both models either made significant improvement on primary outcome variables (peak density, ASI alcohol, and ASI drugs) or succeeded in maintaining low-problem severity.

The two types of houses tended to serve different types of individuals and may therefore play different roles within recovery systems. ORS served poorer, minority individuals in an urban area of limited resources. Few of the residents at ORS had the resources or insurance necessary to afford residential treatment and nearly all paid their rent with general assistance or social security benefits. Instead of entering residential treatment, clients established initial sobriety by attending the outpatient program. When a controlled living environment was necessary to help clients establish sobriety, they were typically housed in a nearby homeless shelter that prohibited substance use while they attended outpatient treatment. To be considered for entry into the SLHs, clients needed to show some success in their efforts to establish abstinence. Thus, they entered the SLHs with low alcohol and drug severity relative to individuals entering treatment programs. On average, residents were able to maintain low severity at 6 and 12 months.

A distinguishing characteristic of CSTL was the residents were not required to engage in any formal treatment. It was entirely acceptable to pursue recovery exclusively through a 12-step group such as Alcoholics Anonymous. Thus, CSLT was an alternative for those who had negative experiences with treatment and wished to avoid it. It was also an option for

those who may have had some success with recovery (through treatment, self-help groups or independent of any formal help) but then relapsed and wanted to regain abstinence without engaging in a formal treatment program. Relative to ORS, CSTL residents had to have access to more financial resources or be able to maintain employment. General assistance benefits did not provide sufficient funds and only some beds could be financially covered through use of social security benefits.

Although our goal was not to directly compare outcomes between individuals in the two types of SLHs, it is worth noting that at 6 and 12 months nearly all outcomes were markedly similar.

The only obvious exception was on Peak Density. Although residents in both types of houses showed large, significant improvements, the level of use among residents at ORS was lower at 6 and 12 months. Whether this was due to the SLH model used at ORS or the different characteristics of the residents served is unknown.

Areas where residents entered with moderate severity that did not improve or improved modestly were medical and psychiatric severity. To some extent these problem areas may reflect chronic conditions that do not readily improve even with abstinence. For example, medical conditions that are common among substance abusers, such as hepatitis C and HIV, can have a chronic course even with provision of treatment. Although psychiatric symptoms did improve at CSLT, the relatively high levels at 12 months indicated that they were a continuing concern in both types of houses. Similar to some medical problems, continuing high severity of psychiatric symptoms might reflect the presence of chronic conditions. Individuals with a history of post-traumatic stress, chronic mood, and some psychotic disorders, can continue to experience symptoms for many years.

Another way to view these findings is to consider that the substance use may have masked problems that became more prominent with decreased substance use. For example, as individuals established sobriety they may have become more aware of previously undiagnosed medical problems. Increased access to health care services as one establishes sobriety may play a role in detecting medical problems as well. Some residents may have been self-medicating psychiatric symptoms that were exacerbated when they stopped using substances, or they may have at least become more sensitized to psychiatric symptoms with decreased substance use. Thus, medical and psychiatric conditions may have been present but unrecognized at entry into the houses making improvements less noticeable.

Family/social severity was another area where residents entered with moderate severity that did not improve. What is interesting here is that one way SLHs are thought to be helpful is their offering an alternative social support system for individuals who lack social support for sobriety (Polcin and Henderson 2008). In place of family and friends who encourage substance use the resident finds a household that supports recovery. Recovery in the household is reinforced by attendance at mandatory 12-step meetings. It is questionable whether an individual with a family and social network that supported recovery would need to be referred to a sober living facility. They could simply draw on their existing social resources and learn the mechanics of how to stay, and achieve and maintain abstinence through attendance at 12-step self-help meetings.

Anecdotal reports from residents in SLHs suggest that many are from families with extensive alcohol and drug problems or families from which they are estranged because of the damage alcohol and drug use has inflicted on family relationships. In these cases, lack of improvement in family relationships would not necessarily be evidence of poor outcomes, and for families with heavy alcohol and drug use just the opposite might be true. Reconciling relationships with family members who are substance users could be an ominous sign.

Research examining long-term alcohol and drug outcome has documented the important influence of the social environment (e.g., Beattie and Longabaugh 1999; Zywiak et al. 2002; Bond et al. 2003; Moos and Moos 2006). These researchers point out that factors emphasized by the recovery philosophy of SLHs are related to outcome: few or no alcohol and drug users in the social network, involvement in 12-step meetings such as Alcoholics Anonymous, and social support for maintaining sobriety. While substantiation of the mechanisms of how residents in SLHs make improvements will require additional research, the current broader literature on factors associated with successful recovery seem to support the social influence mechanisms put forth by proponents of SLHs (e.g., Polcin and Henderson 2008).

Limitations

Several limitations were inherent in the study. First, we assessed only one facility within each type of intervention. SLHs might vary a great deal and comparisons of different programs could yield different findings than those reported here. In addition, the sample size for ORS was limited. Studies using larger samples of residents within each type of SLH would allow for analysis of predictors of outcome along with covariates of outcome measures. Second, our study was an observational study assessing individuals who self-selected into SLHs. Randomly assigned individuals to different types of houses or other comparison conditions might result in different findings. Finally, we had a small *N* for the ORS which limited our power to study how covariates might impact outcome.

Future directions

Although residents in both types of SLHs showed promising 12-month outcomes, additional studies are needed to establish causality and assess the mediators or “active ingredients” of outcome. There is a need for randomized trials comparing SLHS to comparison groups. In addition, there are a number of potential mediators that could be investigated. For example, Witkiewitz and Marlatt (2008) commented on the effects of contingency management on clients’ ability to maintain sustained abstinence. SLHs provide a social and physical environment that is designed to avoid exposure to stimuli associated with substance use and socially reinforce continued abstinence. Measures of exposure to substance related stimuli and reinforcement for continued abstinence could be important mechanisms of action. Along these lines, it would be interesting to describe how changing characteristics of residents’ social networks within and outside the houses mediate outcome.

Litt et al. (2008) suggested that experiencing mastery of contingencies to use substances was important for sustained abstinence. SLHs provide a supportive environment that not only helps residents avoid triggers or stimuli associated with use of substances, it also provides opportunities to increase self-efficacy and cope with high-risk situations that may be unavoidable. What remains to be documented is whether self-efficacy and coping skills actually do increase over time among the residents of SLHs and whether this in turn is associated with continued abstinence.

Another issue that we have discussed elsewhere (i.e., Polcin 2006b) is that successful translation efforts need to be based on an assessment of stakeholder groups in the community. While simple education of research findings might suffice for some situations, others may require translation efforts that consider values, beliefs, and culture. Research efforts that might help in this regard would include studies that query stakeholder groups

(neighbors, residents' families, local government officials, and referral sources) about their knowledge and beliefs about SLHs. In the absence of substantive data about translation efforts that work, communities interested in developing SLHs might turn to organizations that are available to offer guidance in establishing SLHs, including the CAARR and the SLN.

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