



Intervention Research

Participation in a Substance Misuse Intervention in Postacute Care Is Associated With More Optimal Rehabilitation Outcomes

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Abstract

Background and Objectives: Alcohol and substance misuse is prevalent among older adults, yet underdiagnosed and undertreated. More substance misuse intervention programs specifically designed for older adults and offered in various settings are needed. This project's objectives were to (a) provide a detailed description of a Geriatric Substance Abuse Recovery Program (GSARP) designed and implemented at post-acute rehabilitation units of a skilled nursing facility and (b) report findings of a study conducted to evaluate if GSARP participation among post-acute care patients with substance misuse issues can optimize rehabilitation outcomes (i.e., being discharged home vs. another setting).

Research Design and Methods: A pretest–posttest study design with data obtained from patients' electronic medical record upon facility admission, during post-acute stay, and after discharge (N = 271). Based on Andersen's model of health care utilization, we investigated which predisposing factors (e.g., ethnicity), enabling factors (e.g., cognition and social support), and need-related factors (e.g., activities of daily living functioning), as well as health behaviors (e.g., GSARP participation) predicted likelihood of being discharged home versus another discharge setting.

Results: Patients participating in the GSARP and patients who received social support from family members and friends during their post-acute stay were more likely to be discharged home. Patients with severe cognitive impairment were less likely to be discharged home.

Discussion and Implications: The GSARP eliminates some common barriers often encountered in the screening and delivery process of substance misuse interventions for older adults. Findings support the effectiveness of the GSARP in optimizing rehabilitation outcomes for older adults with substance misuse issues.

Keywords: Geriatric substance abuse, Post-acute rehabilitation, Skilled nursing facilities

Background and Objectives

Although prevalent, hazardous alcohol and other substance use has been underacknowledged and underidentified in

older adults for decades (Kuerbis et al., 2014). Studies show that based on high-risk drinking levels as defined by the World Health Organization (WHO; Kuerbis, 2020), 19%

of older adults aged 50-64 years (Han, Moore et al., 2017) and about 15% of those 65 years of age or older (Han et al., 2019) engaged in hazardous drinking in the past month. Hazardous or high-risk drinking in older adults is defined as consuming more than 40 g of ethanol (or about four standard drinks) per day (Moore et al., 2009). Furthermore, of particular relevance to older adults is the misuse of prescription drugs, as this segment of the population is being prescribed more drugs-in particular sedatives and opioids-than their younger counterparts (Han, Compton et al., 2017). Prescription drug misuse is referred to as the use of another person's medication or use of one's own medication in ways not intended by the prescribing clinician (Schepis et al., 2019). Research has found that even a 5-day prescription for an opioid medication could increase the risk of long-term opioid use (Korownyk et al., 2019). According to the Substance Abuse and Mental Health Services Administration (SAMHSA), 3% of individuals aged 50-64 years and 1.5% of individuals older than 65 years report yearly opioid medications misuse (SAMHSA, 2018). While alcohol is the most frequently misused substance by older adults, illicit drug use also prevalent among older adults. About 6% of individuals aged 65 and older report having used illicit drugs over the last month with cannabis being the most commonly used illicit drug among older adults (SAMHSA, 2018). Noteworthy is the fact that illicit drug use is higher among the baby-boomer generation when compared to previous generations (Kuerbis, 2020; Wu & Blazer, 2011). Overall, with large numbers of baby boomers turning 65 years, at-risk use of alcohol and other substances is projected to increase among older adults.

The negative consequences of alcohol and substance misuse for older adults' well-being and health include accidents, falls, and related injuries, such as hip fractures due to impaired physical functioning caused by intoxication (Bucholz et al., 1995; Saitz, 2003). Age-related physiological changes in how the body can process alcohol and drugs oftentimes put older adults at greater risk for substance misuse-related problems when compared to younger age groups (Cummings et al., 2013; Kuerbis, 2020; Kuerbis et al., 2014). For instance, age-related physiological changes, such as a decrease of lean body mass and total body water, result in older adults having higher blood alcohol concentrations and increased impairment when consuming alcohol compared to younger age groups (Oslin, 2000). Additionally, alcohol and substance misuse may negatively affect older adults' psychological well-being. For example, there is evidence that prescription drug misuse increased the risk of experiencing suicidal ideation within a sample of U.S. adults aged 50 years and older (Schepis et al., 2019).

Although alcohol and substance misuse is prevalent among older adults and has severe negative consequences for their well-being, individuals aged 65 and older face significant barriers to seeking treatment, such as stigma, geographic isolation, lack of funds, and transportation (Center

for Substance Abuse Treatment, 2012; Fortney et al., 1995). In fact, adults aged 65 years and older are less likely to use treatment which may be partly caused by older adults being less likely to perceive the need for treatment when compared to their younger counterparts (Choi et al., 2014). Therefore, a substantial number of older adults do not receive the appropriate recovery interventions necessary to improve health and quality of life-posing a major public health problem. The barriers older adults face to receiving treatment make interventions in nontraditional settings such as primary care and senior or community centers ideal settings for initial, first-time interventions (Kuerbis & Sacco, 2013). Initial interventions in these nontraditional settings typically take the form of brief interventions. Brief interventions, sometimes also referred to as "Screening, Brief Intervention, and Referral to Treatment" (SBIRT) programs, aim to screen for alcohol and substance misuse issues, educate about the harm associated with misuse of a substance, motivate change, and refer to treatment when necessary (Blow & Barry, 2000). These brief intervention programs can be effective in reducing alcohol and substance misuse (Fink et al., 2005; Fleming et al., 1999; Moore et al., 2010; Schonfield et al., 2010).

Overall, there is relatively little research on the effectiveness of treatment programs for older adults, but findings do suggest that older adults who attend treatment programs have better or similar outcomes as younger adults (Kuerbis & Sacco, 2013). Furthermore, research has provided insights into what types of treatment programs may be particularly well suited for older adults. In a review of treatment options for older adults, Kuerbis and Sacco (2013) found that age-specific treatments may work better with older adults than mixed-age treatment programs. Group treatments are the norm in substance abuse programs and can reduce isolation and feelings of shame, but older adults may feel more isolated in mixed-age groups because of an inability to relate to the problems and circumstances of younger adults (Schultz et al., 2003). Schultz et al. (2003) also found that most treatment facilities that catered to older adults were most often associated with hospitals and believe this may be connected to the fact that older adults' substance misuse is often revealed in the hospital setting. As a greater variety of settings and agencies become involved in the identification of substance misuse among older adults (Blow & Barry, 2000), the door may open for treatment programs to expand to nontraditional settings.

To help meet the urgent need of identifying and addressing alcohol and substance misuse issues in older adults, the organization where this research was conducted created a Geriatric Substance Abuse Recovery Program (GSARP) within a skilled nursing facility (SNF) that integrated medical rehabilitation and substance abuse recovery services for older post-acute care (PAC) patients after an acute hospital stay. Approximately 40% of Medicare recipients who have been hospitalized for a major medical condition (e.g., a broken hip) are discharged to SNFs

for post-acute rehabilitation before returning home (Mor et al., 2010; Tian, 2013). The GSARP was offered to all PAC patients entering the facility who screened positive for substance misuse issues free of charge. Patients participated in the program during their PAC stay. Hence, the program eliminated some common barriers (e.g., lack of transportation and lack of funds) older adults have faced accessing substance misuse treatment. Post-acute rehabilitation units of SNFs are uniquely positioned to serve as a gateway to alcohol and substance abuse screening and recovery for the aging population as they are inpatient rehabilitation settings where geriatric patients stay over a substantial period of time, on average about 25 days (Werner & Konetzka, 2018), to regain physical strength. Substance abuse health professionals in PAC settings have time to build relationships with patients, thus increasing the likelihood of the patients' willingness to participate in interventions. PAC is also an important intervention point because substance use problems can interfere with successful rehabilitation, and unaddressed substance misuse compounded with insufficient rehabilitation could lead to rehospitalization, for example, due to a fall with injury.

In brief, the GSARP we evaluated entails (a) screening of geriatric PAC patients for substance use issues upon admission, (b) providing counseling and other supportive recovery services to substance use patients while they undergo physical rehabilitation, and (c) referring patients to substance abuse treatment services in the community after discharge home. An initial evaluation (Phase 1) of our GSARP included a sample of patients (n = 124) who represent a subsample of the current study. It is noted that both groups of patients making up the sample of the current study-Phase 1 participants and those referred after the initial evaluation-participated in the same implementation of the program. Evaluation findings from Phase 1 showed high program acceptability and preliminary evidence for the effectiveness of the program in preventing relapse 1 month after discharge (Cimarolli et al., 2018). However, it is unknown how a recovery program such as this GSARP can potentially improve rehabilitation outcomes of geriatric PAC patients with substance use issues when considering other variables that have been found to influence rehabilitation outcomes. Hence, our study is intended to add to the intervention literature by investigating the effects of a substance abuse program for patient outcomes in PAC, specifically, the impact of the program on the likelihood of being discharged home as opposed to another setting (e.g., return to acute care/rehospitalization, long-term nursing home care) when accounting for other important factors in accordance with a theoretical model of health care utilization and outcomes.

The purpose of this article is twofold: (a) provide a detailed description of the GSARP designed and implemented at The New Jewish Home (a large non-profit health care system for older adults based in New York City) and (b) report findings of a study conducted to evaluate if GSARP participation among patients with substance misuse issues can optimize rehabilitation outcomes (i.e., being discharged home vs. another setting) when controlling for other important health behaviors and individual characteristics. We focused on discharge home as an outcome because it is considered the most optimal PAC outcome as it represents an indicator of improved functioning to a degree that the patient can live independently in the community as opposed to being transferred to long-term care or having to return to acute care. Furthermore, we hypothesized that GSARP participation would be associated with greater odds of being discharged home because it may positively affect patients' psychosocial functioning thus benefitting participation in physical rehabilitation which in turn can result in greater functional independence.

Research Design and Methods

Conceptual Model

Andersen's Behavioral Model of Health Services Use (Anderson, 2008) was employed as a conceptual model for evaluating the influence of GSARP participation on our rehabilitation outcome of interest. This model postulates that health outcomes depend on individual characteristics and health behaviors (e.g., rehabilitation service use), the latter are also associated with individual characteristics. Individual characteristics include predisposing (e.g., gender), enabling (e.g., social support), and need-related (e.g., level of physical functioning) factors. This framework has been used in other studies investigating predictors of rehabilitation outcomes (Cary et al., 2016). The current study focused on examining if GSARP participation-an indicator of health behavior-would function as a predictor of being discharged home when controlling for other important factors influential in successful rehabilitation outcomes in PAC (Cimarolli, Falzarano et al., 2020). Based on Andersen's model, we sought to determine which predisposing factors (i.e., age, gender, race, and marital status), enabling factors (i.e., cognition, depression, behavioral symptom, pain-assessed upon admission, and social support-assessed during PAC stay), and need-related factors (i.e., physical/activities of daily living [ADL] functioning, comorbidities, and number of substance misuse problems reported-all assessed upon admission), as well as health behaviors (i.e., length of stay in PAC, GSARP participation [yes/no]) predict the likelihood of being discharged home versus another discharge setting (health outcome).

Data Sources

Over a 3-year period, a total of 271 patients aged 55 years and older referred to the GSARP (177 program participants and 94 refusers) were included in the study. Data for this study were obtained from patients' electronic medical record (EMR) upon admission, during their post-acute stay,

and after discharge. Data were in part collected from the minimum data set (MDS), which is a standardized tool to provide information for conducting a comprehensive assessment of patients admitted to SNFs including physical (e.g., diagnoses), functional (ADL), and psychosocial (depression, preferences, and interests) domains. As mandated by federal regulations, MDS 3.0 assessments are completed on a regular basis, including upon admission and discharge from the facility. Its use is federally mandated for all certified institutions that receive Medicaid and Medicare funding. MDS 3.0 data are gathered by interdisciplinary team members, with data collection and management supervised by the Resident Assessment Utilization Management department. The study was approved by the Institutional Review Board of the health care system where the research was conducted.

The Intervention: The GSARP

The program was designed based on the components of the SBIRT approach to the management of substance misuse. A Program Director/Substance Abuse Counselor with a masters' degree in Mental Health Counseling coordinated and delivered the various service components under the supervision of the Director of Social Work of the SNF. In order to receive referrals of patients with substance use issues and to be able to refer patients for further recovery care once they were discharged from PAC, program staff established partnerships with hospitals for outreach and referrals and community-based substance abuse recovery organizations. In an initial evaluation, the feasibility of the program was established by determining if screening procedures for rehabilitation patients and below intervention components for patients who screened positive for substance abuse issues could be implemented. Another program feasibility metric was the program participation rate of patients who screened positive for substance abuse issues which was at 80% (Cimarolli et al., 2018).

The GSARP included the following stepwise components (Cimarolli et al., 2018):

 Screening of all patients 55 years and older admitted for post-acute rehabilitation to identify possible substance abuse issues: First, the existence of alcohol and drug problems was established by administering the Cut down, Annoyed, Guilty, Eye opener-Adapted to Include Drugs (CAGE-AID) (Brown & Rounds, 1995) to all patients admitted to PAC one business day after admission. If patients screened positive on the CAGE-AID and were willing to participate in the GSARP, they were further evaluated for alcohol and other substance use issues by administering the Michigan Alcoholism Screening Test—Geriatric Version (MAST-G; Blow et al., 1992) and/or the Drug Abuse Screening Test (DAST; Skinner, 1982). The CAGE-AID has a sensitivity of 0.79 and a specificity of 0.77 (Brown & Rounds, 1995). The MAST-G has a sensitivity of 93% and a specificity of 65% (Joseph et al., 1995). The sensitivity of DAST-28 has been found to range from 81% to 96% and its specificity from 71% to 94% (Yudko et al., 2007).

- 2. Assessment of patients' specific addiction and recovery support needs (e.g., family involvement).
- 3. Development of a comprehensive individualized care plan to meet the recovery needs for patients during their post-acute stay (3–5 weeks). Care plans included psychology consultations, substance abuse counseling, group work and individual therapy, family therapy as well as onsite community-based self-help group meetings, such as Alcoholics Anonymous. Each patient had their own treatment plan, based on their situation, needs, and willingness to participate. The Program Director coordinated with rehab professionals to ensure both the GSARP and rehabilitation treatment plans were feasible to implement.
- 4. Involvement of families and/or caregivers in the recovery process.
- 5. Referral to community-based substance abuse recovery programs and services prior to discharge to facilitate engagement in these programs upon discharge.
- 6. Postdischarge phone call and a home visit to ensure patients have and use necessary communitybased supports and to provide ongoing support and encouragement.

Measures

Outcome

Discharge status was measured as a dichotomous variable. A patient was given a value of "1" if he or she was discharged home upon completion of PAC. Alternatively, a patient received a "0" if the patient was discharged to a setting other than home (return to acute care and admission to long-term nursing home care).

Predisposing factors

Demographic characteristics for patients including age, gender, race/ethnicity, and marital status—all one-item indicators—were obtained from patients' EMRs.

Enabling factors

Cognitive functioning—This was assessed at admission via the Brief Interview for Mental Status (BIMS; Chodosh et al., 2008). This five-item instrument is part of the MDS and measures cognitive function by assessing word repetition, recall, and temporal orientation. A summary score across the five items was created, with possible scores ranging between 0 and 15. Higher BIMS scores indicate better cognitive functioning. Based on their BIMS scores, patients could fall into three categories: cognitively intact (score range: 13–15), moderate cognitive impairment

(score range: 8–12), and severe cognitive impairment (score range: 0–7).

Depressive symptoms.—For an indicator of depressive symptomatology, we extracted 9 item Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001) scores from the residents' MDS 3.0 admission assessments. The PHQ-9 items assess the extent to which the resident has been bothered by symptoms of depression such as feeling down, depressed, or hopeless over the past 2 weeks, using a fourpoint Likert-type scale (0 = never or 1 day; 3 = 12-14 days; possible range = 0–27). The PHQ-9 allows for the categorization of depression based on scores: no depression (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe depression (20–27).

Social support.—Whether the patient had social support from family members or friends (Yes/No) was ascertained by examining clinical notes in the EMR. Having received social support (Yes) was determined if clinical notes indicated that a family member and/or friend was involved in the patient's care (e.g., attended care plan meetings).

Need-related factors

We included the following need-related indicators that were all assessed at admission: behavioral symptoms, pain present, functional dependence in ADLs, types and number of substances that patients reported problems, and the number of comorbidities at admission.

Behavioral symptoms.—We utilized MDS item E0300 (Overall Presence of Behavioral Symptoms, including physical, verbal, and other behavioral symptoms; Yes/ No) as an indicator for behavioral symptoms at admission. These are behavioral symptoms that may cause distress to the resident and are potentially harmful to the resident or may be distressing or disruptive to facility residents, staff members, or the care environment (e.g., hitting and yelling).

Pain.—As an indicator of pain experienced upon admission to the PAC unit, we used MDS item J0300: "Have you had pain or hurting at any time, during the last 5 days?" (Yes/No).

Functional dependence.—This was measured at admission to post-acute rehabilitation via the functional dependence measure of the ADL Scale adapted for the MDS (MDS-ADL; Morris et al., 1999). The scale allows clinicians to rate a resident's degree of difficulty in performing ADL tasks, including dressing, eating, and toilet use. Ratings for each task can range from 0 (independent) to 4 (total dependence). We formed an indicator of functional dependence by adding the number of ADLs at admission

that clinicians rated as "extensive assistance" or "total dependence" across seven ADL items (bed mobility, transfer, locomotion on unit, dressing, eating, toilet use, and personal hygiene). Hence, this functional dependence indicator could range between 0 and 7.

Type and number of substance problems.—Upon admission based on screening information, the substance abuse counselor/program director noted whether each of the following substance misuse problems was present (Yes/No): alcohol, illicit drugs, and/or prescription medication. Number of problems were added, ranging from 1 to 3, to obtain an indicator of substance problems severity.

Comorbidities.—Numbers of diagnoses at admission was extracted from the MDS.

Health Behaviors

Two indicators of Health Behaviors were used. Post-acute length of stay was measured in days and GSARP participation was indicated as "participated" versus "refused participation."

Data Analysis Plan

Descriptive analyses were run on all study variables followed by a logistic regression analysis to determine the effects of the independent variables on being discharged home. To identify correlates of being discharged home in accordance with Andersen's model of health care utilization, we conducted a logistic regression analysis with predisposing factors (i.e., age, gender, race, and marital status), enabling factors (i.e., cognition, depression, behavioral symptoms, pain-assessed upon admission, and social support-assessed during post-acute stay), and needrelated factors (i.e., functional dependence, comorbidities, and severity of substance problems-all assessed upon admission), as well as health behaviors (i.e., length of stay in PAC, GSARP participation [yes/no]). This analysis plan allowed for determining the effects of GSARP participation on the likelihood of being discharged home (rehabilitation outcome) when controlling for other important variables associated with optimal rehabilitation outcomes.

Results

Sample Characteristics

Sociodemographic and health-related characteristics for patients referred to the program are displayed in Table 1. The average age of GSARP referrals was 68 years. The majority of those referred were men and about half belonged to a minority group. A little more than 90% of referred patients had issues with alcohol misuse followed

Characteristics of Referrals ($N = 271$)				
	N (%)	M(SD)		
Age		68.1 (8.3)		
Gender (female)	94 (34.7)	(,		
Ethnicity/race				
Non-Hispanic black	75 (28.6)			
Hispanic	49 (18.7)			
Non-Hispanic white	133 (50.8)			
Other	5 (1.9)			
Marital status				
Never married/single	112 (42.3)			
Married	57 (21.5)			
Separated/divorced	66 (24.9)			
Widowed	30 (11.3)			
Admission cognitive status				
No impairment	201 (76.4)			
Moderate impairment	53 (20.2)			
Severe impairment	9 (3.4)			
Admission depressive symptoms	235 (87.0)			
(none)				
Social support during stay (yes)	204 (75.3)			
Admission behavioral symptoms (yes)	10 (3.7)			
Admission pain (present)	163 (60.8)			
Admission number of high		5.5 (1.8)		
dependence ADLs				
Admission comorbidities count		5.3 (2.5)		
Type of substance problems		1.2 (.4)		
Alcohol misuse (yes)	248 (91.5)			
Prescription drug misuse (yes)	28 (10.3)			
Illicit drug misuse (yes)	45 (16.6)			
Average length of stay (days)	27.8 (21.6)			
GSARP participation (yes)	177 (65.3)			

Table 1. Sociodemographic and Health-Related

Note: ADL = activities of daily living; GSARP = Geriatric Substance Abuse Recovery Program.

by prescription drug misuse. Of the patients who were referred to the program because of substance misuse issues, about 65% participated in the GSARP. Analyses conducted to compare program participants with refusers along study variables showed that a significantly higher percentage of whites were program participants compared to refusers and that refusers had a significantly higher number of comorbidities at admission when compared to program participants (Cimarolli, Burack et al., 2020).

Predictors of Being Discharged Home

Table 2 presents results from the logistic regression analysis conducted to determine predictors of discharge status (i.e., being discharged home), including GSARP participation-our main independent variable of interest. GSARP participation, cognitive status at admission, and receipt of social support during post-acute stay emerged as significant predictors of the likelihood of being discharged

home. Results showed that the odds of being discharged home were 3.2 times higher for patients who participated in GSARP when compared to GSARP refusers. In addition, those patients who could be classified as having severe cognitive impairment were 87% less likely to be discharged home when compared to patients without cognitive problems. Furthermore, those patients who received social support from family members and friends during their post-acute stay had 3.1 higher odds of being discharged home when compared to patients without social support.

Discussion and Implications

One aim of this article was to provide a description of a substance abuse recovery program that was designed and implemented for individuals aged 55 years and older who were receiving post-acute rehabilitation at an SNF following a hospital stay. To the best of our knowledge, this GSARP is one of the few that exists in the country that was specifically designed for this population and was found to be feasible to implement alongside a physical rehabilitation program (Cimarolli et al., 2018). The program's uniqueness lies in that it can be delivered to patients at the time of their PAC stay during which clinicians can build trust with patients. Hence, PAC patients with substance misuse issues may be more likely to participate in a recovery program when compared to older adults who are offered participation in community-based recovery programs. In addition, because such a program delivered in PAC implements a screening component, screening for substance misuse issues in older adults in SNFs is enhanced.

Furthermore, we aimed to evaluate if GSARP participation could improve an important rehabilitation outcome, namely the likelihood of being discharged home, when considering other important variables affecting successful rehabilitation outcomes in PAC. Our findings support the effectiveness of the program in optimizing this important rehabilitation outcome: Patients who were identified as having substance misuse issues and participated in the GSARP, when compared to those who were identified but refused to participate in the program, were more likely to be discharged home. We speculate that program participants' psychosocial functioning was positively supported by the intervention and this allowed them to engage in physical rehabilitation in a more focused manner, which could have led to more optimal discharge status. Other factors found to be influential in being discharged home were more optimal cognitive functioning and having social support during the post-acute stay from family members or friends. The patients with severe cognitive impairments were less likely to be discharged home, in line with previous research on, for example, predictors of rehospitalizations among PAC patients (Cimarolli, Falzarano et al., 2020). This is likely due to the fact that in order to participate in therapy (e.g., physical and occupational therapy) effectively, a certain level of cognitive ability is necessary to process

Table 2. Logistic Regression Analysis for Discharge Home vs. Other Discharge Settings

	В	SE	OR (95% CI)	Þ
Predisposing				
Age	-0.01	0.03	0.99 (0.95-1.04)	.78
Gender (male = 1)	-0.26	0.45	0.77 (0.32-1.86)	.56
Ethnicity/Race (reference: non-Hispanic white)				
Non-Hispanic black	-0.44	0.47	0.64 (0.26-1.62)	.35
Hispanic and other	-0.29	0.51	0.75 (0.27-2.05)	.58
Marital status (reference: never married/single)				
Married	-0.73	0.53	0.48 (0.17-1.37)	.17
Separated/divorced	-0.46	0.49	0.63 (0.25-1.64)	.35
Widowed	1.18	1.11	3.24 (0.37-28.34)	.29
Enabling				
Admission cognitive status (reference: intact)				
Moderate impairment	-0.54	0.49	0.58 (0.22-1.51)	.27
Severe impairment	-2.02	0.95	0.13 (0.02-0.86)	.03*
Admission PHQ-9 (mild/moderate/severe = 1)	0.36	0.61	1.43 (0.44-4.72)	.56
Social support during stay (yes = 1)	1.13	0.47	3.10 (1.23-7.80)	.02*
Need-related				
Admission behavioral symptoms (yes = 1)	0.05	1.00	1.05 (0.15-7.38)	.96
Admission pain (present = 1)	-0.03	0.44	0.97 (0.42-2.29)	.94
Admission number of high-dependence ADLs	-0.16	0.14	0.85 (0.65-1.11)	.24
Admission comorbidities count	-0.15	0.08	0.86 (0.73-1.01)	.06
Number of substance problems	-0.38	0.40	0.68 (0.31-1.50)	.34
Health behaviors				
Average length of stay (days)	-0.01	0.01	0.99 (0.98-1.01)	.24
GSARP participation (yes = 1)	1.17	0.41	3.22 (1.45-7.15)	.00**

Note: ADL = activities of daily living; CI = confidence interval; GSARP, Geriatric Substance Abuse Recovery Program; OR = odds ratio.

*p < .05, **p < .01; Nagelkerke $R^2 = 0.26$; $\chi^2 = 40.20$ **.

instructions and for the transfer of learning in order to be able to function safely at home. Also, patients with severe cognitive impairment were most often discharged to long-term nursing home care. Furthermore, based on study findings, social support, such as having a family member present at care plan meetings and to interact with medical professionals during post-acute stay, appears to aid the most optimal rehabilitation outcomes for patients. This finding is consistent with previous studies that have shown that social support from family members and friends is associated with a greater likelihood of transitioning home after PAC as opposed to other discharge settings (Hicks & Cimarolli, 2018).

Despite our study showing evidence that a GSARP can optimize an important rehabilitation outcome, there were limitations to the current evaluation. Foremost, this study was not designed as a randomized controlled trial, but rather as an evaluation study in a real-world clinical setting, a design which does not allow for controlling all possible factors that could influence the outcome of interest. It is, for example, possible that there were experiential or motivational differences between substance misusers who agreed to participate in GSARP and those who refused. For instance, according to Prochaska and Velicer's (1997) Transtheoretical Model of Health

Behavior Change, the lowest level of behavior change is called "precontemplation." Individuals at this level are not interested in taking steps to change their healthcompromising behavior because they are unable or unwilling. Individuals who are in the precontemplation stage may not be informed about the negative consequences of their behavior, may not identify their behavior as problematic, or may be unmotivated due to previous failed attempts at behavior change. The needs of individuals in the precontemplation stage are different to those in higher stages (e.g., contemplation and determination); they often need psychoeducation and to raise their awareness about the realities of their health behavior (Prochaska & Velicer, 1997). It is possible that individuals who refused to participate in GSARP were in the precontemplation stage, and thus, their needs systematically differed from those who agreed to participate. Additionally, because the sample was composed predominately of men, it is unclear whether the pattern of findings is widely generalizable to women. Historically, substance misuse has been under-identified and particularly stigmatized among women (Dragišić Labaš, 2016). Thus, it is possible that during the screening process, female PAC patients were less likely to indicate that they had a history of issues with substance misuse as a result of stigma, which could partially explain the male

majority in the sample. It is also noteworthy that while men have higher rates of hazardous drinking (Merrick et al., 2008), women are more likely to misuse prescription drugs when compared to men (Simoni-Wastila & Yang, 2006). Women and men should be seeking treatment at equal rates, but perhaps for different substance misuse issues. A further study limitation is the use of dichotomous variables as predictors which limited the ability to determine differences in intensity of certain predictors, for example, the intensity of substance abuse or the intensity of pain. Also, because we only had a specific set of EMR data available, we could not include ecological variables (e.g., income) that may affect discharge status.

Despite the limitations of the current study, the GSARP and the current evaluation contribute to the current intervention literature on alcohol and substance misuse in older adults. To the best of our knowledge, there are few other substance abuse recovery programs specifically designed for older adults receiving post-acute rehabilitation. This program addresses several of the barriers to delivering high-quality substance abuse treatment (e.g., stigma, geographic isolation, lack of funds, and transportation). Specifically, GSARP can be delivered free of charge to patients, so the financial concern is no longer a barrier. Patients are already temporarily residing in the SNF for PAC, so transportation and geography are no longer barriers, and their extended stay allows clinicians to develop rapport and trust with the patients, which could help combat the perception of stigma surrounding substance misuse. The evaluation of this program was rigorously designed and informed by Andersen's Behavioral Model of Health Services Use. We statistically controlled for predisposing, enabling, and need-related factors and found that participation in GSARP was uniquely related to increased odds of a more optimal rehabilitation outcome. Finally, the sample was diverse with almost 50% of the sample being Hispanic or non-Hispanic black.

Practice Implications

The current study provided a detailed description of the GSARP implemented in a PAC setting within a large geriatric health care organization and is one of very few programs to serve the unique needs of this specific population. Results of the current evaluation also suggested that participation in this program (compared to nonparticipation) was associated with increased odds of being discharged home as opposed to another setting (e.g., return to acute care/rehospitalization, long-term nursing home care) after a post-acute stay. Another important factor in predicting this outcome was the presence of social support. GSARP offered therapies that involved family participation and prioritized family and/or caregiver involvement in the recovery process. In the future, for those who screen positive for substance misuse but choose not to enroll in the GSARP, prioritization of family/friend/caregiver

involvement in PAC could be bolstered to improve rehabilitation outcomes, specifically increasing their odds of being discharged home. Severe cognitive impairment was another important factor as it predicted increased odds of not being discharged home after a post-acute stay. Future substance misuse programs implemented in PAC settings may design adaptations of the program to specifically meet the needs of older substance misusers with significant cognitive impairment. Furthermore, clinicians may consider the use of medication-assisted treatment with GSARP participants to reduce relapse when going home. Overall, the current evaluation suggests that the GSARP holds promise to be an effective intervention in addressing some of the existing barriers to screening and delivering quality substance misuse treatment to older adults and in optimizing PAC rehabilitation outcomes for older adults with alcohol and substance misuse issues.

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Conflict of Interest

None declared.

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