

Gender Comparison in Referrals and Treatment Completion to Residential and Outpatient Alcohol Treatment

Shahrzad Bazargan-Hejazi^{1,2}, Valory De Lucia³, Deyu Pan³, Mona Mojtahedzadeh⁴, Elham Rahmani⁵, Sinan Jabori⁶, Golar Zahmatkesh⁷ and Mohsen Bazargan³

¹Department of Psychiatry, Charles R. Drew University of Medicine and Science, Los Angeles CA, USA. ²Department of Psychiatry, David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA, USA. ³Department of Family Medicine, College of Medicine, Charles R. Drew University of Medicine and Science, Los Angeles, CA, USA. ⁴Department of Psychiatry, Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, USA. ⁵School of Public Health, Boston University, Boston, MA, USA. ⁶University of California at Los Angeles, Los Angeles, CA, USA. ⁷School of Medicine, University of California at Irvine, Irvine, CA, USA.

ABSTRACT

BACKGROUND: Residential treatment for alcoholism is associated with high completion rates for clients, yet there appear to be gender disparities in patient referrals and treatment completion rates. We studied whether (A) gender is associated with differential patient placement to outpatient vs. residential treatment facilities and (B) completion rates differ by gender.

METHODS: In this cross-sectional study, we analyzed the admission and discharge data from 185 publicly funded substance abuse treatment facilities across Los Angeles County between 2005 and 2010.

RESULTS: Among the 33,745 studied cases, women were referred to residential treatment facilities less frequently than men (75% vs. 66%). The adjusted results derived from logistic regression models confirmed that females were more likely to be referred to outpatient treatment than to residential treatment facilities (odds ratio [OR]: 1.15, 95% confidence interval [CI]: 1.05–1.26). In addition, we observed that compared to White/Caucasian patients, all other races were associated with more referral to outpatient facilities (ie, less referral to residential facilities), indicating a racial disparity on the top of the observed gender disparity. However, there was no significant link between gender and treatment completion rates (OR: 0.93, 95% CI: 0.86–1.00).

CONCLUSIONS: Women seem to have treatment completion rates comparable to men, yet they are less likely to be referred to residential treatment facilities. Hence, there still remains a gender disparity in alcoholic patient referrals. Further studies should delineate which specific therapeutic aspects and programmatic components of women-focused treatments are essential to augment positive treatment outcomes.

KEYWORDS: gender, alcohol dependence, residential treatment, outpatient treatment, treatment completion

CITATION: Bazargan-Hejazi et al. Gender Comparison in Referrals and Treatment Completion to Residential and Outpatient Alcohol Treatment. *Substance Abuse: Research and Treatment* 2016;10:109–116 doi: 10.4137/SART.S39943.

TYPE: Original Research

RECEIVED: April 14, 2016. **RESUBMITTED:** July 04, 2016. **ACCEPTED FOR PUBLICATION:** July 11, 2016.

ACADEMIC EDITOR: Gregory Stuart, Editor in Chief

PEER REVIEW: Three peer reviewers contributed to the peer review report. Reviewers' reports totaled 1357 words, excluding any confidential comments to the academic editor.

FUNDING: Authors disclose no external funding sources.

COMPETING INTERESTS: Authors disclose no potential conflicts of interest.

CORRESPONDENCE: shahrzadbazargan@cdrewu.edu, shahrzadb@ucla.edu

COPYRIGHT: © the authors, publisher and licensee Libertas Academica Limited. This is an open-access article distributed under the terms of the Creative Commons CC-BY-NC 3.0 License.

Paper subject to independent expert blind peer review. All editorial decisions made by independent academic editor. Upon submission manuscript was subject to anti-plagiarism scanning. Prior to publication all authors have given signed confirmation of agreement to article publication and compliance with all applicable ethical and legal requirements, including the accuracy of author and contributor information, disclosure of competing interests and funding sources, compliance with ethical requirements relating to human and animal study participants, and compliance with any copyright requirements of third parties. This journal is a member of the Committee on Publication Ethics (COPE).

Published by Libertas Academica. Learn more about this journal.

Introduction

Among patients with drug use disorders in general, and alcohol abuse in particular, gender is a key determinant in how their disorder is perceived by healthcare professionals, how they are referred for advanced care, and how they complete treatment.^{1–4} With an increased recognition of the role of gender, gender differences, and gender inequality in health and social life, the past three decades have witnessed a paradigm shift from generic substance abuse treatment model to gender-responsive treatment model.^{5,6} The crux of matter in this paradigm is to understand gender as the central construct that influences treatment initiation, processes, and outcome.^{7,8} Following this line of reasoning, there appears to be gender differences in referrals to residential treatment for alcoholism with women receiving less referral despite

the fact that women perceive their alcoholism more serious than men.^{1,9,10}

Residential treatment may benefit vulnerable populations, including patients with severe psychiatric illness, low social functioning, few financial resources, and severe medical conditions.¹¹ Women with alcohol problems suffer from more psychiatric comorbidities, exhibit poorer social functioning, and have less economic resources; thus, they are at risk for poorer prognosis.^{12,13} Women who are referred to residential treatments, once completing the treatment, are more likely to present with better outcomes such as remission from alcohol use and lower depression.^{14,15} Yet, they are less referred to residential treatment facilities.¹

Understanding the role of gender in treatment retention is important since treatment dropouts have a 6.5 times



greater relative risk of relapse compared to those who stay in treatment.^{16,17} In this study, we attempt to investigate if (A) gender is associated with disparities in patient placement to outpatient or residential treatment for alcohol abuse and (B) completion rates differ by gender. Our hypothesis is that women still face disparities in referrals to residential treatment facilities, while among those receiving treatment, women show comparable treatment completion rates.

Methods

Study design and participants. We completed a cross-sectional study using the admission and discharge data from 185 publicly funded substance abuse treatment facilities across Los Angeles County. Client placement was generally based on the severity of their addiction disorder, living situation, and availability of treatment space. Data were gathered via Los Angeles County Participants Reporting System (LACPRS), which is collected by the Substance Abuse Prevention and Control (SAPC) of the Los Angeles County Department of Public Health (DPH). The study population comprised adults (18 years or older) admitted and discharged in fiscal years 2005–2010 who reported alcohol as their primary drug of abuse and were not concurrently receiving methadone treatment. The patients were self-identified as White/Caucasian, African-American/Black, Hispanic/Latino, or Asian/other. The data from detoxification programs were excluded. Our inclusion and exclusion criteria narrowed down our patient population to 33,745 adults (22,143 males and 11,602 females), from whom 23,381 and 10,364 were referred to outpatient and residential treatment facilities, respectively. Charles Drew University Institutional Review Board reviewed the protocol of this study and found it to be exempt from the requirement of formal IRB review.

Study measures. In order to clarify which patients successfully completed their treatments and which patients did not, we utilized the three discharge categories made available by the participating treatment facilities: (A) *completed discharge*, (B) *left before completion with satisfactory progress*, and (C) *left before completion with unsatisfactory progress*. “Completed discharge” was considered successful treatment completion, while the other two categories were not. Also, the types of treatment facilities were identified as outpatient versus residential.

We also extracted data regarding gender, race/ethnicity, age, highest level of education, economic resources including employment status, homelessness, and Medi-Cal beneficiary status. Moreover, we accessed and analyzed addiction characteristics at the time of admission, ie, reported prior treatment (yes/no), any additional drug use (marijuana, other, none), injection drug use (yes/no), number of days on which alcohol and/or other drugs were used over the past month, and age of first substance use. Patient’s mental health was self-reported by answering the question “*Have you ever been diagnosed with a mental illness?*” (yes/no). The types of referral to treatment included self-referral, court/criminal justice, school/employer,

or other. Finally, legal supervision indicated whether the subject was on parole or probation.

Statistical analyses. In order to test if gender is associated with disparities in patient placement (in outpatient vs. residential facilities), we completed both univariate and multivariate logistic regression analyses, in which gender was the independent variable (exposure) and patient placement was the dependent variable (outcome). The multivariate logistic regression model was adjusted for the covariates listed under the above section. Our second hypothesis was tested by modeling the gender (exposure/independent variable) with treatment completion (outcome/dependent variable) in univariate and multivariate logistic regression models. The multivariate model was adjusted for similar covariates (listed above). In all regression models, continuous independent covariates were centered by subtracting their sample means to reduce the skewness and increase data granularity. An estimated odds ratio (OR) on a centered continuous covariate represented the change in the log odds of completion that would be expected from a unit increase over the covariate’s sample mean. We have presented the odds ratios and their 95% confidence intervals (CIs). Statistical significance level was set at $P < 0.05$. For the data analyses, we used SAS (Release 9.1.3, 2002; SAS, Inc.).

Results

Sample characteristics. Table 1 demonstrates the characteristics of our study population among males and females. Our results showed that females were referred to residential treatment facilities less frequently than males (75% vs. 66%). In addition, higher proportions of women used amphetamines (data not shown), were unemployed, were Medi-Cal beneficiaries, had mental illness, and were referred into treatment by “self-referral”. On the other hand, higher percentages of men were homeless, abused alcohol and marijuana, were under legal supervision, and were referred by the court/criminal justice (Table 1).

Table 2 summarizes the results of our regression models investigating the relationship between gender (as well as other covariates) and patient placement, ie, outpatient vs. residential treatment facilities. The adjusted results showed that females were more likely to be referred to outpatient treatment than to residential treatment facilities (OR: 1.15, 95% CI: 1.05–1.26). In addition, we observed that compared to White/Caucasian patients, all other races were associated with more referral to outpatient facilities (ie, less referral to residential facilities), indicating a racial disparity on the top of the observed gender disparity (Table 2). Other significant determinants of patient placement included age, highest level of education, employment status, homelessness, Medi-Cal beneficiary status, history of prior treatment for drug abuse, other drug-related disorders, frequency of alcohol and drug use over the past month, and whether the patients were under legal supervision (Table 2).

Table 3 summarizes the results of our investigation whether gender, as well as other covariates, was associated with

**Table 1.** Discharge status, treatment setting, and patient characteristics.

INDEPENDENT VARIABLES	MALE (n = 22,143)	FEMALE (n = 11,602)
Treatment setting		
Outpatients	66.25%	75.08%
Residential	33.75%	24.92%
Discharge status		
Completed treatment	45.45%	41.47%
Demographics		
Race/ethnicity		
White/Caucasian	36.09%	37.44%
Black/African-American	23.85%	28.32%
Hispanic/Latino	31.38%	25.70%
Asian/Other	8.68%	8.53%
Age in years (Mean ± SD)	40.90 ± 12.41	40.08 ± 12.52
Highest level of education in years (Mean ± SD)	11.50 ± 3.05	11.58 ± 3.03
Economic resources		
Employment ^b	81.19%	87.55%
Unemployed/not in labor market employed	18.81%	12.45%
Homelessness	24.51%	18.87%
Medi-Cal beneficiary status	34.20%	50.24%
Addiction characteristics		
Ever received prior treatment	39.06%	36.11%
Additional drug problems		
Marijuana	18.38%	13.09%
Other drugs	29.97%	29.97%
No other drug	51.65%	56.94%
Injection drug use	27.52%	35.66%
Days drinking over past month (Mean ± SD)	12.63 ± 12.21	11.74 ± 12.15
Days secondary drug use over past month (Mean ± SD)	5.86 ± 9.73	5.53 ± 9.75
Age of first substance abuse in years (Mean ± SD)	15.97 ± 5.11	17.15 ± 6.11
Mental health		
History of mental illness	27.52%	35.66%
Legal supervision status		
Under legal supervision	32.93%	19.76%
Principle source of referral		
Self-referral	43.71%	47.17%
Court/criminal justice	31.36%	22.81%
School/employer	1.69%	1.57%
Other	23.25%	28.45%

higher rates of treatment completion. Our results indicated a trend toward lower treatment completion among females; however, this trend was not statistically significant (OR: 0.93, 95% CI: 0.86–1.00). Our results also showed that those

referred to residential treatment facilities were 2.5 times more likely to complete the treatment. Patients who were employed were also 3.35 times more likely to complete treatment. Conversely, homelessness, other drug problems, frequency of drinking and drug use, and history of mental illness were all associated with lower rates of treatment completion (ie, lower treatment compliance).

Discussion

Association of gender with patient placement. We found that women in Los Angeles County who needed treatment for alcohol were more likely to be referred to outpatient treatment rather than residential. This finding was in line with the reports from two decades ago.¹⁸ We did not have access to further data regarding how the treatment facilities addressed patients' impairments or to what extent they provided gender-sensitive services, eg, childcare.¹⁹ It can be argued that patient placement should follow the criteria put forth by the American Society of Addiction Medicine (ASAM), in which gender is not a determinant of patient placement. The ASAM criteria comprise six dimensions based on which each patient is assigned a score that guides patient placement.²⁰ However, the State of California (including Los Angeles County) does not require compliance with the ASAM standard patient placement criteria, which leaves room for gender disparity at treatment assignment.²⁰

Women undergoing substance abuse treatment should overcome many barriers including difficulty in attending regular services, lack of financial resources and social support, childcare responsibilities, and daily stressors, as well as other comorbidities including mental disorders, all of which complicate the course of treatment referral, treatment utilization, and outcomes.^{3,21–23} In addition, previous studies of national data on admission to treatment facilities have shown that women's and men's pathways to treatment referral and utilization have interconnections with the types of primary substance use, sources of payment for treatment, and sources of referral.¹⁸ Women, for example, are more likely to abuse cocaine, amphetamines, or heroin/other opioids, whereas men are more likely to abuse alcohol and marijuana.¹⁸ Also, a greater portion of men are referred to treatment by court, whereas women are more often referred by child welfare or mental health service agencies.¹⁸ Moreover, women rely more on public insurance to pay for their treatment due to the lack of economic resources and unemployment.¹⁸ Additionally, women view substance abuse more negatively and attach more stigma to those who seek treatment,¹⁸ effecting their treatment seek behaviors.

Similar to women, minority patients (African-American, Hispanic, and Asian), older patients, those with less education, those under Medi-Cal coverage, and those referred by the court or criminal justice were more likely to be referred to outpatient treatment, whereas prior treatment for alcohol addiction, injection drug use being under legal supervision,

**Table 2.** Logistic regression models predicting patient placement in outpatient vs. residential treatment facilities ($n = 33,589$).

INDEPENDENT VARIABLES	REFERENCE	
	UNADJUSTED OR 95% CI	ADJUSTED MODEL OR 95% CI
Demographics		
Gender		
Male	1.53 (1.45–1.62) [‡]	1.15 (1.05–1.26) [†]
Female	–	–
Race/ethnicity		
White/Caucasian	1.75 (1.64–1.86) [‡]	1.60 (1.43–1.78) [‡]
Black/African-American	2.26 (2.12–2.41) [‡]	2.12 (1.89–2.37) [‡]
Hispanic/Latino	1.44 (1.31–1.58) [‡]	1.22 (1.04–1.43) [*]
Asian/Other	–	–
Age in years ^a	1.01 (1.01–1.01) [‡]	1.02 (1.01–1.02) [‡]
Highest level of education (in years) ^a	0.91 (0.90–0.92) [‡]	0.96 (0.94–0.97) [‡]
Economic resources		
Employment	0.47 (0.44–0.50)	3.61 (3.20–4.08) [‡]
Unemployed/not in labor market employed	–	–
Homelessness		
Yes	0.08 (0.08–0.09) [‡]	0.11 (0.10–0.12) [‡]
No	–	–
Medi-Cal beneficiary		
Yes	6.01 (5.65–6.39) [‡]	4.73 (4.27–5.23) [‡]
No	–	–
Addiction characteristics		
Ever received prior treatment		
Yes	0.44 (0.42–0.46) [‡]	0.70 (0.64–0.76) [‡]
No	–	–
Additional drug problems Marijuana		
Other drugs	0.94 (0.87–1.01)	1.63 (1.43–1.87) [‡]
No other drug	0.48 (0.46–0.51) [‡]	0.91 (0.81–1.03)
Injection drug use		
Yes	0.39 (0.33–0.46) [‡]	0.87 (0.68–1.10)
No	–	–
Days drinking over past month ^a	0.96 (0.96–0.97) [‡]	0.98 (0.97–0.98) [‡]
Days secondary drug use over past month ^a	0.95 (0.94–0.95) [‡]	0.96 (0.96–0.97) [‡]
Age of first substance abuse in years ^a	1.05 (1.05–1.06) [‡]	1.02 (1.01–1.03) [‡]
Mental health		
Mental illness		
Yes	1.48 (1.40–1.56) [‡]	1.03 (0.93–1.13)
No	–	–
Legal supervision status		
Under legal supervision		
Yes	0.62 (0.59–0.66) [‡]	0.66 (0.60–0.73) [‡]
No	–	–
Principle source of referral		
Self-referral	1.64 (1.54–1.74) [‡]	3.00 (2.68–3.35) [‡]
Court/criminal justice	12.78 (8.72–18.74) [‡]	8.40 (4.63–15.23) [‡]
School/employer	4.12 (3.84–4.43) [‡]	5.44 (4.83–6.13) [‡]
School/employer	–	–
Other	–	–
Pseudo R ²	0.01 ^b	0.52
χ^2	230.42 ^{‡b}	4313.39 [‡]
Log likelihood	17321.07 ^b	– 6980.70

Notes: * $P < 0.05$. † $P < 0.01$. ‡ $P < 0.001$. ^aCentered continuous variable. ^bModel fit statistic for gender only.



Table 3. Logistic regression models predicting treatment completion ($n = 33,589$).

INDEPENDENT VARIABLES	REFERENCE	
	UNADJUSTED OR 95% CI	ADJUSTED MODEL OR 95% CI
Demographics		
Gender		
Male	0.85 (0.81–0.89) [‡]	0.93 (0.86–1.00)
Female	–	–
Race/ethnicity		
White/Caucasian	0.55 (0.52–0.58) [‡]	0.79 (0.73–0.86) [‡]
Black/African-American	0.67 (0.63–0.70) [‡]	0.90 (0.82–0.98) [†]
Hispanic/Latino	0.75 (0.69–0.81) [‡]	0.92 (0.81–1.04)
Asian/Other	–	–
Age in years ^a	1.01 (1.01–1.01) [‡]	1.02 (1.01–1.02) [‡]
Highest level of education (in years) ^a	1.05 (1.04–1.05) [‡]	1.00 (0.99–1.01)
Treatment setting		
Outpatient residential	1.96 (1.86–2.06) [‡]	2.54 (2.32–2.77) [‡]
Economic resources		
Employment	2.28 (2.15–2.42) [‡]	3.15 (2.87–3.44) [‡]
Unemployed/not in labor market employed	–	–
Homelessness		
Yes	1.12 (1.06–1.18) [‡]	0.91 (0.83–0.99) [*]
No	–	–
Medi-Cal beneficiary		
Yes	0.49 (0.47–0.52) [‡]	1.00 (0.92–1.09)
No	–	–
Addiction characteristics		
Ever received prior treatment		
Yes	1.01 (0.97–1.06)	1.03 (0.96–1.09)
No	–	–
Additional drug problems Marijuana		
Other drugs	0.63 (0.59–0.67) [‡]	0.88 (0.80–0.97) [*]
No other drug	0.79 (0.75–0.83) [‡]	0.76 (0.69–0.83) [‡]
Injection drug use		
Yes	0.95 (0.81–1.11)	0.90 (0.74–1.10)
No	–	–
Days drinking over past month ^a	1.03 (1.02–1.03) [‡]	0.99 (0.98–0.99) [‡]
Days secondary drug use over past month ^a	1.01 (1.01–1.02) [‡]	1.00 (0.99–1.00)
Age of first substance abuse in years ^a	1.01 (1.00–1.01) [†]	1.00 (0.99–1.01)
Mental health		
Mental illness		
Yes	0.69 (0.66–0.73) [‡]	0.89 (0.82–0.96) [*]
No	–	–
Legal supervision status		
Under legal supervision		
Yes	0.95 (0.91–1.00) [*]	1.01 (0.93–1.10)
No	–	–
Principle source of referral		
Self-referral	0.92 (0.88–0.97) [†]	1.17 (1.07–1.28) [*]
Court/criminal justice	0.67 (0.56–0.80) [‡]	1.27 (0.99–1.64)
School/employer	0.59 (0.56–0.63) [‡]	0.95 (0.87–1.03)
Other	–	–
Pseudo R ²	0.02 ^b	0.11
χ^2	649.80 ^{‡b}	1283.09 [‡]
Log likelihood	–18359.74 ^b	–10600.17

Notes: * $P < 0.05$. † $P < 0.01$. ‡ $P < 0.001$. ^aCentered continuous variable. ^bModel fit statistic for treatment setting only.



and homelessness increased the odds of being referred to residential treatment. Minority individuals are more likely to stigmatize and report embarrassed receiving alcohol abuse treatment,^{24,25} and they may demand referring to outpatient settings to lift some of the attached stigma. With the same token, issues related to language barrier and other cultural barriers may be in play. Less educated individuals are also reported to stigmatize alcohol abuse treatment more often,²⁵ which can help explain the lower rates of residential treatment among them. With respect to older patients, research indicates that they usually suffer from a higher baseline severity of addiction and stay in residential treatment for a shorter duration of time, regardless of readiness to change.²⁶ As a result, care providers might assume that referral to residential substance abuse treatment might not be effective for this group. Medi-Cal beneficiaries were observed to be less likely to be referred to residential treatment. This can be explained by Medi-Cal's strict criteria for inpatient rehabilitation admission and continuation,²⁷ which might make healthcare providers unwilling to refer Medi-Cal beneficiaries to residential treatment.

With regard to legal supervision, in contrast to our findings, a study investigating the 2002 data of National Survey on Drug Use and Health has demonstrated that history of criminal justice involvement in the previous year increases the likelihood of substance abuse treatment admission.²⁸ The authors of this study divided criminal justice involvement to three groups (arrest only, arrest with criminal justice supervision, and criminal justice supervision only) and have reported no significant difference between the arrest only group and the general population with regard to type of treatment (outpatient, residential, mental health clinic, and hospital based).²⁸ One reason for the apparent disagreement between the results of this study and our study might be that the authors have assessed the impact of arrest in the previous year rather than criminal justice referral. In addition, this study investigated the national level data in 2002, while we have assessed the 2005–2010 data of Los Angeles County. However, in collaboration with outpatient and residential treatment facilities, authorities in criminal justice are in a unique position to leverage a court visit as teachable moment in encouraging change in the substance behaviors of individuals.^{29,30}

Association of gender with treatment completion. Our findings revealed no significant difference in gender regarding treatment completion. Similar findings were reported by Bird,⁸ who found no differences between male and females who received substance abuse treatment in mixed- vs. single-gender programs. Likewise, Greenfield et al.⁷ found that while gender did not predict treatment completion, individual characteristics such as education, employment, income, mental health, and social support predicted treatment completion differentially by gender. It is evident from previous studies that substance abuse treatment services that offer women-specific programs such as childcare, prenatal and postnatal care, transportation, supplemental assistances such as domestic

violence services, empowerment and self-efficacy workshops, and mental health counseling and offer age-specific treatment module are more likely to reduce barriers to treatment utilization and enhance treatment completion rates.^{5,31–33} Others have suggested that directing resources toward social support and childcare for female alcoholics might improve treatment completion rates.^{34–38} It is also argued that the dynamic of treatment completion may be the function of within-treatment factors. For example, Fiorentine et al.³⁹ found that women attended significantly more in group treatment sessions compared to men, though treatment completion rates were similar. The lack of a significant gender disparity in treatment completion rates in our study may imply that patients in the study were properly assigned to the needed treatment services, and treatment providers were able to address problems unique to their patients.

Other factors that increased the odds of treatment completion in the sample were being referred to residential services, being older, unemployed, having part-time or full-time jobs, having Medi-Cal, and being referred to the treatment by court, school, or an employer. Factors that decreased the odds of treatment completion in this sample were being African-American or Hispanic, using heroin, amphetamines, cocaine/crack, or marijuana, as well as more frequent drinking. In a large study on African-American and Hispanic alcoholics in Los Angeles, Bluthenthal et al.⁴⁰ observed links between treatment completion rates and patient placement in residential vs. outpatient facilities and showed that racial differences in completion rates would be eliminated if African-Americans and Hispanics were referred to residential treatment at the same rates as Whites. Others have supported racial disparity in treatment completion, highlighting the role of culturally appropriate treatment programs and eclectic model of care for enhancing treatment retention and posttreatment outcomes.^{41–43}

Limitations. Our study had the inherent limitations of a cross-sectional study. We could not establish any causal relationship between gender and referral status. Another shortcoming of our study was having a smaller sample size for women compared to men, which may have influenced our results. Also, the data set did not contain information about other factors known to influence treatment referrals, eg, available community resources such as childcare facilities, social support, patients' attitude toward the residential or outpatient treatments, social workers' and/or counselors' attitudes, and the society's attitudes toward the preferred treatments for men and women. In addition, it was unclear whether men had a tendency to self-elect the residential treatment facilities for other reasons such as gaining a better position in the court. Moreover, the potential biases due to self-reporting and different treatment effectiveness across the study sites could not be anticipated. We suggest that future studies on gender disparities in the type of alcohol treatment referral and completion rates focus on identifying gender and cultural barriers for completing treatment for women assigned to residential



treatment, as well gender and cultural barriers or biases of healthcare professional who make such referrals.

Conclusions

Our results shed more light on how gender affects patient placement and treatment completion among those suffering from alcohol abuse, and it showed that the gender disparities in referrals are still in place. Based on our observations, women are less likely to be referred to residential treatment for alcoholism. However, we observed no significant difference between men and women with regard to treatment completion rates.

A key implementation for practice is to aim for higher referral rates of alcoholic women to residential treatment facilities in order to better address alcohol abuse among women and to eliminate such a gender disparity in patient placement considering the fact that gender is not among the ASAM criteria for patient placement while such a disparity currently exists in patient referrals. It seems necessary to train providers to better understand gender issues and on how to better assess referrals. However, whether higher referrals to residential treatment facilities would actually lead to decreased morbidity and increased quality of life among alcoholic women should be further tested in future studies, particularly in randomized controlled trials.

Future studies should incorporate gender-specific motives for treatment seeking as well as the attributes considered by the providers and referring agencies to place men and women in a given treatment setting. Finally, considering the empirical evidence pointing to the importance of women-focused substance abuse treatments,⁵ it is just as important to validate which specific therapeutic aspects and programmatic components of women-focused treatments are essential to augment positive treatment outcomes.³

Acknowledgments

The authors would like to thank the Substance Abuse Prevention Control, Los Angeles County Department of Public Health for providing the data of the Los Angeles County Participants Reporting System and for their assistance and cooperation.

Work on this paper was supported by the following grants:

1. Title III, Part B "Strengthening Historically Black Graduate Institutions" grant P031B070062
2. Accelerated Excellence in Translational Sciences (AXIS), NIH-National Institute of Minority Health, and Health Disparities, grant# 2U54MD007598-07
3. NIH-NIMHD under award number 54MD008149
4. UCLA/DREW Project EXPORT, NIH-NIMHD grant 2P20MD000182.

Author Contributions

SBH and VDL conceived and designed the study, and drafted the initial version of the manuscript. DP and MB analyzed

the data. SBH, MM, ER, SJ and GZ participated in drafting different versions of the manuscript. SBH and MB drafted the final version. All the authors reviewed and approved the final manuscript.

REFERENCES

1. Samuelsson E, Wallander L. Disentangling practitioners' perceptions of substance use severity: a factorial survey. *Addict Res Theory*. 2014;22:348–60.
2. Atkinson AM, Kirton AW, Sumnall HR. The gendering of alcohol in consumer magazines: an analysis of male and female targeted publications. *J Gen Stud*. 2012;21:365–86.
3. Hensing G, Spak F. Introduction: gendering socio cultural alcohol and drug research. *Alcohol Alcohol*. 2009;44:602–6.
4. Greenfield SF. Women and alcohol use disorders. *Harv Rev Psychiatry*. 2002;10:76–85.
5. Grella CE. From generic to gender-responsive treatment: changes in social policies, treatment services, and outcomes of women in substance abuse treatment. *J Psychoactive Drugs*. 2008;Suppl 5:327–43.
6. Annandale E, Hunt K. *Gender Inequalities in Health*. Philadelphia: Open University Press; 2000.
7. Greenfield SF, Brooks AJ, Gordon SM, et al. Substance abuse treatment entry, retention, and outcome in women: a review of the literature. *Drug Alcohol Depend*. 2007;86:1–21.
8. Bird CE, Sharman Z. Gender-based analysis is essential to improving women's health and health care. *Womens Health Issues*. 2014;24:e163–4.
9. Claus RE, Orwin RG, Kissin W, Krupski A, Campbell K, Stark K. Does gender-specific substance abuse treatment for women promote continuity of care? *J Subst Abuse Treat*. 2007;32:27–39.
10. Arfken CL, Klein C, di Menza S, Schuster CR. Gender differences in problem severity at assessment and treatment retention. *J Subst Abuse Treat*. 2001;20:53–7.
11. Pettinati HM, Meyers K, Jensen JM, Kaplan F, Evans BD. Inpatient vs. outpatient treatment for substance dependence revisited. *Psychiatr Q*. 1993;64:173–82.
12. Diehl A, Croissant B, Batra A, Mundle G, Nakovics H, Mann K. Alcoholism in women: is it different in onset and outcome compared to men? *Eur Arch Psychiatry Clin Neurosci*. 2007;257:344–51.
13. Mertens JR, Weisner CM. Predictors of substance abuse treatment retention among women and men in an HMO. *Alcohol Clin Exp Res*. 2000;24:1525–33.
14. Grella CE, Lovinger K. 30-year trajectories of heroin and other drug use among men and women sampled from methadone treatment in California. *Drug Alcohol Depend*. 2011;118:251–8.
15. Satre DD, Blow FC, Chi FW, Weisner C. Gender differences in seven-year alcohol and drug treatment outcomes among older adults. *Am J Addict*. 2007;16:216–21.
16. Haver B, Dahlgren L, Willander A. A 2-year follow-up of 120 Swedish female alcoholics treated early in their drinking career: prediction of drinking outcome. *Alcohol Clin Exp Res*. 2001;25:1586–93.
17. Bottlender M, Soyka M. Outpatient alcoholism treatment: predictors of outcome after 3 years. *Drug Alcohol Depend*. 2005;80:83–9.
18. Substance Abuse and Mental Health Services Administration Office and Applied Studies. *The NSDUH Report: Alcohol Treatment: Need, Utilization, and Barriers*. Rockville, MD: Office of Applied Studies; 2009.
19. Campbell CI, Alexander JA. Health services for women in outpatient substance abuse treatment. *Health Serv Res*. 2005;40:781–810.
20. The ASAM Criteria. Available at: <http://www.asam.org/quality-practice/guidelines-and-consensus-documents/the-asam-criteria>
21. Hasin DS, Stinson FS, Ogburn E, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry*. 2007;64:830–42.
22. Cotto JH, Davis E, Dowling GJ, Elcano JC, Staton AB, Weiss SRB. Gender effects on drug use, abuse, and dependence: a special analysis of results from the national survey on drug use and health. *Gen Med*. 2010;7:402–13.
23. Comfort M, Sockloff A, Loverro J, Kaltenbach K. Multiple predictors of substance-abusing women's treatment and life outcomes: a prospective longitudinal study. *Addict Behav*. 2003;28:199–224.
24. Keyes KM, Grant BF, Hasin DS. Evidence for a closing gender gap in alcohol use, abuse, and dependence in the United States population. *Drug Alcohol Depend*. 2008;93:21–9.
25. Keyes KM, Martins SS, Blanco C, Hasin DS. Telescoping and gender differences in alcohol dependence: new evidence from two national surveys. *Am J Psychiatry*. 2010;167:969–76.
26. Morse SA, Watson C, MacMaster SA, Bride BE. Differences between older and younger adults in residential treatment for co-occurring disorders. *J Dual Diagn*. 2015;11:75–82.



27. Results from the 2004 National Survey on Drug Use and Health: National Findings. 2005. Available at: <http://www.oas.samhsa.gov/NSDUH/2k4NSDUH/2k4results/2k4results.htm>
28. Kubiak SP, Arfken CL, Swartz JA, Koch AL. Treatment at the front end of the criminal justice continuum: the association between arrest and admission into specialty substance abuse treatment. *Subst Abuse Treat Prev Policy*. 2006;1:20.
29. Miller W, Rollnick S. *Motivational Interviewing: Preparing People for Change*. Guilford, New York: Guilford Press; 2002.
30. Prochaska JO, Velicer WF, Rossi JS, et al. Stages of change and decisional balance for 12 problem behaviors. *Health Psychol*. 1994;13:39–46.
31. Ashley OS, Marsden ME, Brady TM. Effectiveness of substance abuse treatment programming for women: a review. *Am J Drug Alcohol Abuse*. 2003;29:19–53.
32. Greenfield SF, Grella CE. What is “women-focused” treatment for substance use disorders? *Psychiatr Serv*. 2009;60:880–2.
33. Myers US, Browne KC, Norman SB. Treatment engagement: female survivors of intimate partner violence in treatment for PTSD and alcohol use disorder. *J Dual Diagn*. 2015;11:238–47.
34. Beckman LJ, Bardsley PE. Individual characteristics, gender differences and drop-out from alcoholism treatment. *Alcohol Alcohol*. 1986;21:213–24.
35. Kelly PJ, Blacksin B, Mason E. Factors affecting substance abuse treatment completion for women. *Issues Ment Health Nurs*. 2001;22:287–304.
36. Killeen T, Brady KT. Parental stress and child behavioral outcomes following substance abuse residential treatment. Follow-up at 6 and 12 months. *J Subst Abuse Treat*. 2000;19:23–9.
37. Brown JD, Vartivarian S, Alderks CE. Child care in outpatient substance abuse treatment facilities for women: findings from the 2008 National Survey of substance Abuse Treatment Services. *J Behav Health Serv Res*. 2011;38:478–87.
38. Campbell CI, Alexander JA, Lemak CH. Organizational determinants of outpatient substance abuse treatment duration in women. *J Subst Abuse Treat*. 2009;37:64–72.
39. Fiorentine R, Anglin MD, Gil-Rivas V, Taylor E. Drug treatment: explaining the gender paradox. *Subst Use Misuse*. 1997;32:653–78.
40. Bluthenthal RN, Jacobson JO, Robinson PL. Are racial disparities in alcohol treatment completion associated with racial differences in treatment modality entry? Comparison of outpatient treatment and residential treatment in Los Angeles County, 1998 to 2000. *Alcohol Clin Exp Res*. 2007;31:1920–6.
41. Mennis J, Stahler GJ. Racial and ethnic disparities in outpatient substance use disorder treatment episode completion for different substances. *J Subst Abuse Treat*. 2016;63:25–33.
42. Newton-Howes G, Stanley J. Patient characteristics and predictors of completion in residential treatment for substance use disorders. *BJPsych Bull*. 2015;39:221–7.
43. Jones AL, Hanusa BH, Appelt CJ, Haas GL, Gordon AJ, Hausmann LR. Racial differences in veterans’ satisfaction with addiction treatment services. *J Addict Med*. 2015;9:383–90.