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REVIEW



A systematic review of gender-responsive and integrated substance use disorder treatment programs for women with co-occurring disorders

Samantha Johnstone^a, Gil Angela Dela Cruz^a, Natalie Kalb^a, Smita Vir Tyagi^b, Marc N. Potenza^{c,d,e,f}, Tony P. George^a, and David J. Castle^a

^aAddictions Division and Centre for Complex Interventions (CCI), Centre for Addiction and Mental Health (CAMH) and Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada; ^bDepartments of Psychiatry and Neuroscience and the Child Study Center, Yale University School of Medicine, New Haven, CT, USA; ^cForensic Consultation and Assessment Team, CAMH, Toronto, Ontario, Canada; ^dChild Study Centre, Connecticut Mental Health Center, New Haven, CT, USA; ^eWomen's Health Research, Yale University, New Haven, CT, USA; ^fWu Tsai Institute, Yale University, New Haven, CT, USA

ABSTRACT

Background: Integrated and gender-responsive interventions, designed to target co-occurring substance use and psychiatric disorders in women, may be effective in addressing gender-specific challenges.

Objectives: This systematic review aims to identify integrated gender-responsive substance use disorder treatments for women, summarize evaluations of these treatments, and address gaps in the literature.

Methods: We searched PsycINFO, PubMed, and MEDLINE on September 24, 2021, and March 10, 2022. Included articles were randomized-controlled trials, secondary analyses of naturalistic studies, or open-label studies of integrated and gender-responsive treatments from any year that assessed both substance use and mental health/trauma outcomes.

Results: We identified N = 24 studies (participants = 3,396; 100% women) examining Seeking Safety, Helping Women Recover and Beyond Trauma, A Woman's Path to Recovery, Modified Trauma Recovery and Empowerment Model (TREM), Breaking the Cycle, VOICES, Understanding and Overcoming Substance Misuse, Women's Recovery Group, Female Specific Cognitive Behavioral Therapy, and Moment by Moment in Women's Recovery. Across treatments there were significant improvements over time; Seeking Safety, Helping Women Recover, and TREM were associated with significantly better substance use and mental health outcomes relative to the comparison groups.

Conclusions: Integrated gender-responsive treatments are a promising approach to treating women with co-occurring substance use and mental health concerns, and broad clinical implementation stands to benefit women. However, there remains a lack of studies evaluating substance use treatments in women with severe mental illness (e.g., psychotic-spectrum disorders) who differ in their needs and capacity.

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Women; comorbid disorders; substance use disorders; treatment outcomes; barriers; gender-responsive

Introduction

Substance use disorder (SUD) research has historically overlooked women, resulting in treatments that were made by men, for men. For example, in 1946, E.M Jellinek sent a survey to Alcoholics Anonymous members asking them to describe their experiences with addiction and recovery. Of the 113 responses, 15 differed from the rest of the sample so greatly that Jellinek decided he could not include them in his model. However, they were too small a sample to be analyzed separately, so without any further investigation, he discarded them. All 15 responses were from women (1), evidencing the omission of women with SUDs from much addiction research.

Although progress has since been made in acknowledging sex and gender factors in substance use and how they interact with treatment outcomes, the availability of effective programming for women remains inadequate. In particular, despite the high prevalence of comorbid disorders in women (2,3), many available programs are constructed in a manner that excludes women with psychiatric comorbidities or have not yet been evaluated in such individuals. Thus, we review gender-responsive integrated SUD treatments for women and identify gaps in the field, commencing with an overview of potential SUD risk factors in women, gender-related differences in treatment and recovery, and the evidence that gender-informed programs can help address these complex issues.

Unique risk factors for women

Biological

Sex-specific chromosomes and gonadal hormones selectively differentiate the activity, development, and organization of organs, including the liver and brain, which in turn affect drug consumption and addictive behaviors (4). For example, females with problematic substance use experience more rapid drug-induced dysregulation of key neural pathways, including the nucleus accumbens and the dorsolateral striatum (5), corresponding with a more rapid progression from initiation to addiction, known as “telescoping.” Moreover, differences in liver and body composition affect the absorption, distribution, and metabolism of substances in a manner that may escalate the harmful physiological effects of substances (4,5). Consequently, females with SUDs develop advanced diseases, including cirrhosis and breast/cervical cancers, more quickly than males, despite lower levels of substance intake (3); they also face unique reproductive effects, including fertility issues, painful menstruation, and miscarriage (6)

Psychological

There is a reciprocal relationship between substance use, trauma, and mental health. Relative to men with SUDs and women without SUDs, women with SUDs are significantly more likely to experience domestic violence, rape, incest, and childhood physical, sexual and emotional abuse (7). Trauma may contribute to the development of SUDs and relapse, as well as increasing the likelihood of experiencing co-occurring disorders (1,8). Relatedly, borderline personality disorder, post-traumatic stress disorder (PTSD), and depressive disorders are highly prevalent among women with SUDs (3) and can exacerbate SUD progression (1). Standard treatment programs tend to focus on the addiction with the expectation that any other problems will be treated afterward (1,9). However, not actively addressing women’s trauma, mental illness, and substance use in an integrated manner likely reduces their chances of meaningful functional recovery from SUDs.

Social

Various social factors also contribute to the risk of developing SUDs, and these can vary among women depending on ethnicity, socioeconomic status, and identification with the LGBTQ+ community. Women are more likely than men to report perceived shame and stigmatization surrounding substance use due, *inter alia*, to societal expectations regarding motherhood and childcare (10), reducing willingness to seek treatment (5,11,12). Furthermore, women are more likely to

experience domestic violence and to be introduced to substances by a substance-using partner (3,13,14). They are also less likely to receive support from partners if they enter treatment (1,13). In contrast, men who seek treatment are more likely to report feeling supported by their family (13,15). Despite the salience of interpersonal relationships in both the emergence of and recovery from SUDs, these factors are often not formally addressed in treatment programs.

Differences in treatment and recovery

Globally, women comprise around one-third of people with SUDs, but only about one-fifth of the individuals in treatment (9,13). Barriers to care for women include fear of losing a child or partner, relationship difficulties, shame and stigma, pregnancy and sexual harassment, difficulties with poverty/unemployment, and inadequate insurance (1,3,10,16). Relatedly, programs often fail to address the full range of services required, including childcare, pregnancy-related services, and mental illness or trauma treatment (13), thus compounding the difficulties women face in gaining access to treatment. Although men with SUDs may also encounter barriers to treatment, they are disproportionately magnified for women, who often also have to shoulder family responsibilities (11). There is a need for programs designed specifically for women, to address these barriers.

Treatment effectiveness: gender-neutral or gender-informed?

Standard treatment methods for SUDs, including cognitive-behavioral therapy, motivational interviewing, and contingency management, are well documented in the empirical literature. Notably, large reviews of efficacy and effectiveness show no significant gender differences in treatment outcomes (17,18). However, the goal for women’s programs should not be to match men’s recovery rates but to optimize benefits for women in recovery. Despite promising results, these studies may not inform providers about efficacy for women due to gender-based barriers (19). Women are also less likely to seek – and more likely to leave – treatment when women-only services are not available (19). In women-only groups, participants reported feeling less guilt and shame, more comfortable about sharing trauma, and feeling better supported, relative to mixed-gender groups (20,21). Moreover, women are less likely to enter treatment when they have co-occurring psychiatric disorders (22). These factors affecting access may bias the study outcomes of standard treatments.

Present study

Integrated gender-responsive treatment is a cost-effective, holistic, and efficient strategy for treating co-occurring SUDs and mental illness in women (9,23). Specifically, services must implement an overlapping strategy to address SUDs along with mental illness or trauma in an integrated manner for women (9) as well as incorporate gender-related issues (e.g., relationships; 23). However, research is limited, and details of what constitutes essential ingredients can be difficult to distill. Accordingly, we conducted a systematic review of both peer-reviewed and gray literature with the aim of identifying *integrated gender-responsive SUD treatments for women* that focus on all types of substance use as well as trauma, and mental health outcomes and take a critical approach to summarizing the evaluations of these programs and identifying gaps.

Materials and methods

Search strategy

A comprehensive literature search was conducted by two of the authors (SJ and GD) in PsycINFO, PubMed, and MEDLINE using PRISMA guidelines. Search terms are included in Appendix A. We included only descriptions of integrated gender-responsive treatment programs designed to be responsive to women's needs and evaluations of these programs through randomized-controlled trials (RCTs), secondary analyses of naturalistic studies, or open-label studies. In this case, we consider a treatment approach to be "integrated" if it delivers both substance use and mental health interventions concurrently by the same individual or team, obviating the need for the participant to move between different treatment facilities or agencies as opposed to consecutively treating the "primary" issue and then the "secondary" issue or parallel treatment of both issues with different treatment teams (9). Additionally, gender-responsive refers to treatments that incorporate gender-related issues relevant to SUDs in women (e.g., relationship pregnancy; 23). After identifying programs, the names of these programs were also entered into the above databases to search for any additional evaluation studies. Exclusion criteria included evaluations of treatment programs that were not specifically for women, treatments that were not integrated nor gender-responsive, studies that did not report both substance use and mental health outcomes, evaluations that included both men and women in the sample, non-validated measures of substance use or mental illness, and case studies, theses/dissertations, reviews, or meta-

analyses. SJ and GD independently screened records and collaboratively collected data from reports.

Risk of bias

Risk of bias in randomized trials was evaluated by SJ and GD using the Cochrane Collaboration Tool (24), which assesses studies on the following criteria: random sequence generation, allocation concealment, blinding of participants and research personnel, blinding of outcome measures, incomplete outcome data, and selective reporting of results. For open-label trials, the Cochrane Risk of Bias in Non-Randomized Studies (ROBINS-I (25); was used to evaluate potential bias in controlling for confounding variables, selection of participants, classification of interventions, deviations from intended intervention, missing data, measurement of outcomes, and selection of reported results.

Results

Study characteristics

Figure 1 shows the PRISMA diagram depicting the inclusion process of the 24 studies that met our screening criteria. Where possible, differences between the comparison groups at the latest follow-up point are reported. Of note, we located the Triad Women's Trauma Model and a Collaborative Approach to the Treatment of Pregnant Women with Opioid Use Disorders, but we were unable to find formal published evaluations of these. Outcomes of the included studies are summarized in Table 1; changes in outcomes are reported from baseline to the latest follow-up, unless stated otherwise. The majority of the studies involved RCTs with a comparator group of either another active intervention (e.g., another manualized program) or treatment as usual (TAU). Women in the included studies were either incarcerated or from outpatient or SUD treatment residential programs.

Risk of Bias Assessment

With respect to randomized studies, eight of the included studies had a low risk of bias and two were identified as having some concerns. The remaining five were determined to have a high risk of bias, primarily due to randomization or blinding procedures. With respect to open-label trials, four of the included studies had some concerns and one had a high risk of bias, primarily due to issues in controlling for confounding variables with appropriate statistical analysis or accounting for missing data. Details are depicted in Figure 2.

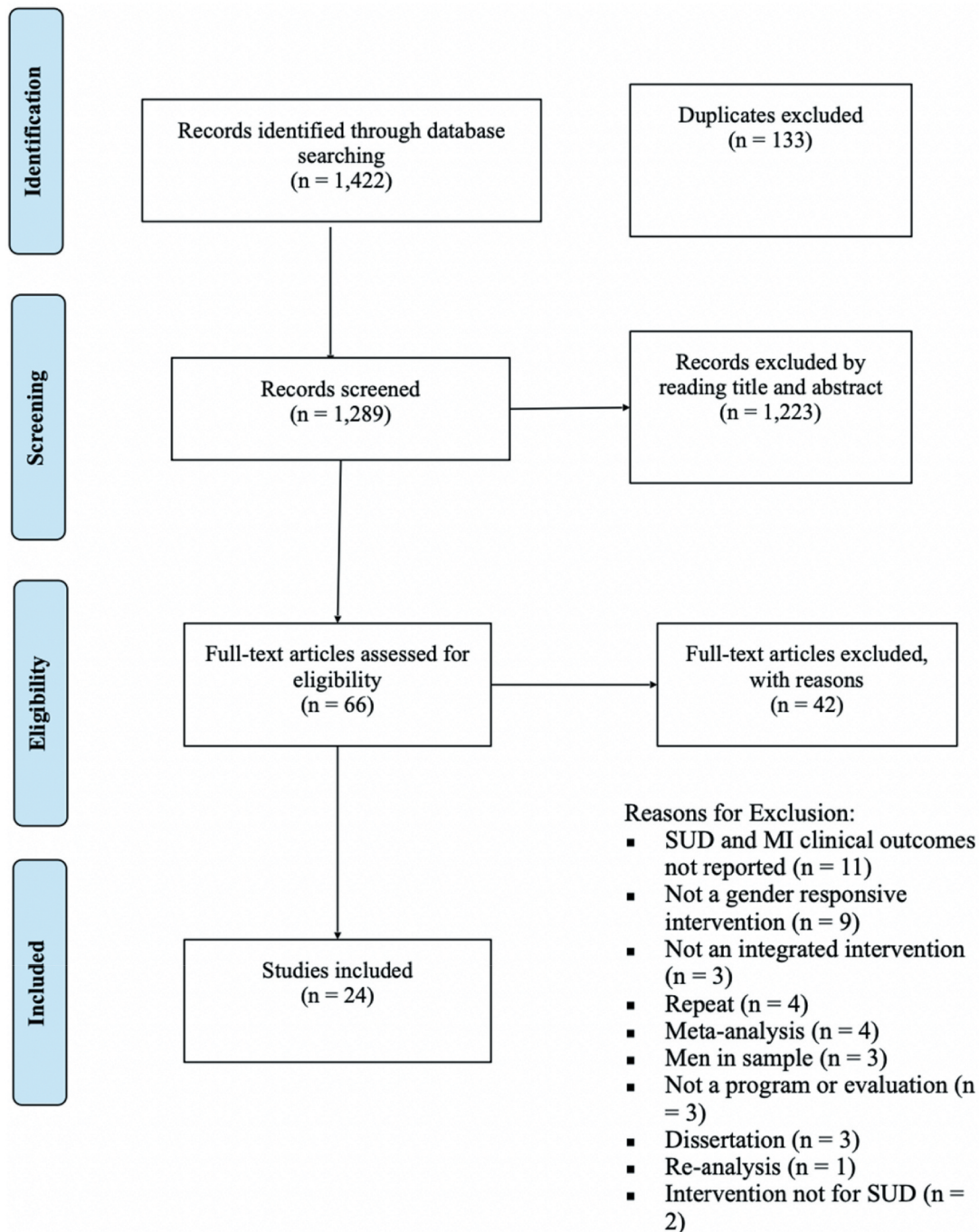


Figure 1. PRISM-A diagram depicting study inclusion process.

Summary of Included Studies

Seeking Safety

Seeking Safety (SS (23,45); is a widely researched integrated treatment program targeting comorbid PTSD and SUDs in women. It involves 24 structured sessions that address cognitive, behavioral, and interpersonal coping skills, with safety as the highest priority. In this context, safety refers to abstinence, reduced destructive behaviors, improved social-support, and protection from danger.

We identified nine evaluations of SS, seven of which were RCTs. In all but one (30), the SS group showed significant improvements as evidenced by reductions in drug and alcohol use, including frequency of substance use (four studies), the Addiction Severity Index (ASI; five studies) or multiple measures combined into a composite score (one study). Kaiser et al. (30), found improvements only on the alcohol subscale of the ASI but not on the drug subscale. Only two evaluations used urine toxicology to confirm self-reported reductions.

Table 1. Included Studies Evaluating Gender-Informed Substance Use Disorder Treatment Programs.

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Seeking Safety Najavits et al (23),	Open label	24 (90 min)	Women in community with PTSD + SUD (n = 27) AR = 37%	88% White 12% Black	59% alcohol 29% cannabis 24% cocaine 6% anxiolytics 6% sedatives	SCZ, organic mental disorder, mandated to treatment, on methadone, interfering characteristics (i.e., homelessness)	Baseline- post tx; 3-month follow-up ASI ($d = 0.59, p < .05; d = 0.4, p < .05$), Post tx: SBQ thoughts ($d = 0.32, p < .05$) SBQ risk ($d = 0.28, p < .05$)	Baseline -3-month follow-up TSC- 40 ($d = 0.59, p < .05$), Post tx: SBQ thoughts ($d = 0.32, p < .05$) SBQ risk ($d = 0.28, p < .05$)	Urinalysis confirmed 73% of self- reports. Significant increase in abstinence. Improvements in trauma symptoms, suicidal risk, and social adjustment/ family functioning	Small sample size, no control group. Didn't follow dropouts
Hien et al (26),	Randomized, controlled, parallel groups tau 1 = relapse prevention tau 2 = nonspecific community care	24 (60 min)	Women in community with SUD, history of DSM-IV- defined trauma (tx = 41, tau 1 = 34, tau 2 = 32) AR = 20%	48.8% Black 24.4% Hispanic 24.4% White 2.4% other	31.7% alcohol 26.8% cannabis 14.6% crack- cocaine 19.5% cocaine 7.3% heroin	Advanced stage medical diseases, organic mental disorder, suicidality, Axis 1 diagnosis (excl. BD/MDD/anxiety), psychosis history	Baseline - post tx; 9-month follow-up SUD composite severity (between group difference $f = 0.42, p < .001; f = 0.24, p = .06$)	Baseline- post tx; 9-month follow-up PTSD symptom severity (between group difference $f = 0.31, p < .01; f = 0.33, p < .01$)	Significant reduction of substance use severity and PTSD severity in SS and RP groups compared to community care post treatment and 6 month follow up, and of PTSD severity at 9 month follow up.	Use of a non- randomized, quasi- experimental comparison group, lack of long-term follow up
Najavits et al (27),	Randomized, tau- controlled, parallel groups tau = allowed to attend any treatment	25 (50 min)	Outpatient adolescent girls with PTSD + SUD (tx = 18; tau = 15) AR not reported	78.8% White 12.1% Asian/ Pacific Islander 3% Black 3% Hispanic 1% mixed	78.8% cannabis 66.7% alcohol 21.2% hallucinogens 15.2% amphetamines 9.1% cocaine 9.1% opioids 9.1% inhalants 6.1% barbiturates 6.1% polysubstance	History of mania, psychotic disorder, mandated to treatment, or interfering characteristics (homelessness, incarceration, life- threatening illness)	Baseline -3-month follow-up change PEI polydrug use (between group difference $d = 0.98, p < .05$), PEI loss of control (difference $d = 0.37, p < .01$) PEI preoccupation (difference $d = 0.92, p < .01$)	Baseline- 3-month follow-up APS SUD ($d = 0.94; p < .01$) APS depression ($d = 0.40; p < .01$) TSCC distress ($d = 0.71; p < .05$) TSCC concerns ($d = 0.50; p < .05$)	Urinalysis confirmed self-reports. Relative to TAU, SS significantly improved some outcomes on substance use, trauma, and adolescent psychopathology with moderate satisfaction and alliance	Non-significant results not reported, small sample sizes, and missing data.

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Gatz et al (26),	Quasi-experimental, tau-controlled, parallel groups tau = usual residential SUD treatment	31 (90 min)	Women in community with SUD + MI + trauma (tx = 187; tau = 215) AR tx = 34% tau = 41.5%	36.8% White 26.3% Hispanic 22.6% Black 11.7% Indigenous 1.5% mixed 0.74% Asian/ Pacific Islander	35.3% methamphetamine 22.1% cocaine 9.2% polydrug 8.7% alcohol 5.4% cannabis 3.4% heroin	Not reported	Baseline -12 months follow up ASI alcohol (between group difference $f = 0.04, ns$) ASI drug (difference $f = 0.06, ns$)	Baseline -12 months follow up GSI ($f = 0.03, ns$) PSS ($f = 0.11, p < .05$) Coping ($f = 0.12, p < .05$)	Both groups showed significant improvements in ASI, GSI, and PSS. SS group had a greater improvement on PSS and coping skills than TAU. Women who improved on coping skills improved more on ASI measures	Absence of random assignment. Control had more severe ASI baseline severity, higher attrition for more severe drug and trauma problems
Hien et al (26),	Randomized, multi-site, tau-controlled tau = women's health education	12 (75-90 min)	Outpatient women with trauma + SUD (tx = 176, tau = 177) AR tx = 21% tau = 31%	45% White 34% Black 13.3% mixed 6.5% Latina 0.6% other	70.5% cocaine 56.1% alcohol 27.2% cannabis 25.6% opioid	Advanced stage medical disease, impaired cognition, history of SCZ, history or active psychosis, risk of suicide or homicide, undergoing litigation related to trauma	Abstinence rates (baseline tx = 45%, tau = 47%; post treatment tx = 54%, tau = 55%) Post treatment Days of drug use (difference ES = 0.01, CI = -0.17, 0.19)	Post-treatment PSS-SR (between group difference ES = -0.08, CI = -0.10, .26) CAPS (difference ES = 0.04, CI = -0.14, .23)	Both groups showed statistically significant large reductions in self-reported PTSD symptoms and trended toward significance for clinician reported symptoms but no difference between groups.	Absence of minimal treatment control. Generalizability is affected by multisite approach. No follow-up on dropouts. Significant portion of sample already abstinent at beginning of treatment
Cash Ghee et al (28),	Randomized, tau-controlled tau = usual residential SUD treatment	6 (90 min)	Residential women with SUD (tx = 36, tau = 50) AR tx = 29% tau = 64%	51% White 47% Black	Not reported	Not reported	Abstinence status 30-day follow-up (tx, abstinent = 25%, relapsed = 22.2%, non-remuner = 52.8%; tau, abstinent = 25% relapsed = 3.8%, non-remuner = 71.2%)	30-day follow-up TSC-40 sati (tx $\eta_p^2 = .54, p < .01$; between group difference $\eta_p^2 = .12, p < .03$) TSC-40 total (difference $\eta_p^2 = .12, p < .09$)	Although differences in relapse rates between groups were not significant, the TAU group had significantly fewer people return for assessment. SS group also had a significantly greater decrease on sexual trauma symptoms.	Non-equivalent groups. Low rate of return makes it difficult to compare true relapse rates. Time frame extended too far post treatment.

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Zlotnick et al (29),	Randomized, tau-controlled, parallel groups tau = state prison SUD treatment	18–24 (60 min)	Incarcerated women with SUD + clinical/sub-clinical PTSD (tx = 27, tau = 22) AR tx = 14% tau = 4%	46.9% White 32.7% Black 14.2% Hispanic 6.1% other	93.9% cocaine 75.5% cannabis 59.2% opioids 38.8% sedatives/hypnotics 30.6% hallucinogens/PCP 26.5% stimulants	Active psychosis, organic brain impairment, poor English	6 month follow up ASI drug (between group difference $f = 0.06, p = .71$) ASI alcohol (difference $f = 0.11, p = .48$) Weeks abstinent (difference $f = 0.20, p = .20$)	6-month follow-up TSC-40 (difference $f = 0.09, p = .59$) CAPS-1 (difference $f = 0.06, p = .69$) *SS showed improvement at each follow up whereas TAU showed improvement only at 12 weeks and worsened at 3 months.	Significant improvement in CAPS total score in both groups, with trend from 12 weeks to 6 months in SS group. SS improved significantly on BSI positive symptoms and TSC-40. Significant improvement in ASI alcohol in TAU from intake to 3 months follow up. No significant difference between two groups on drug or alcohol composite scores; both improved from intake to 3/6 month follow ups	Contamination of treatment and control groups (same clinicians) No case management from SS. Women not assessed at end of SS treatment at 6–8 weeks. Inadequate power. Baseline TLFB assessed substance use outside of prison whereas follow-up was inside
Kaiser et al (30),	Open label	12 (90 min)	Outpatient women with SUD, + clinical or sub-clinical PTSD (n = 53) AR = 62%	German	81% alcohol 15% cannabis 12% cocaine	On opioid use disorder medication, acute psychosis, suicidal intent, severe cognitive impairment	Baseline – post tx: 3 months follow up ASI-Lite alcohol ($p = .117; d = 0.47, p = .02$) ASI-Lite drug ($p = .729; p = .663$)	Baseline – post tx: 3 months follow up: TSC-40 ($d = 0.79, p = .000; d = 0.70, p = .000$)	Significant improvement in all total scores, all PTSD measures, global psychopathology, and interpersonal problems. Alcohol ASI significantly improved at 3 month follow up, but drug ASI did not.	Absence of control. No control for Type I error. No intent to treat. No urinalysis. No fidelity monitoring. Lacked power for alcohol and drug use measures

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Schäfer et al. 31	Randomized, multisite, parallel groups, active-control and tau-control seeking safety + tau = t x 1 relapse prevention + tau = t x 2 tau = free to engage in any additional treatment/no treatment	16 (90 min)	Outpatient women with SUD + clinical or sub-clinical PTSD (t x 1 = 111, t x 2 = 115, tau = 117) AR t x 1 = 41% t x 2 = 37% tau = 25%	German	85.4% alcohol 48.5% cannabis 31.2% sedatives 28.5% cocaine 28.2% stimulants 21.3% opioids	Current psychosis, severe cognitive impairment, intravenous drug use a month before treatment	6 month follow up ASI alcohol- I (t x 1 - tau d = -0.12, p > .05; t x 2 - tau d = -0.37 p < .05; difference p = .15) t x 2 - tau d = -0.24, p < .01) = .48 ASI drug- I (t x 1 - tau d = -0.07, p > .05; t x 2 - tau d = 0.16 p > .05; t x 2 - difference p > .05) difference p = .02	PSS- I (t x 1 - tau d = -0.04; t x 1 - t x 2 d = 0.20; t x 2 - tau d = -0.24, p = .15) difference p = .15 BDI- II (t x 1 - tau d = -0.34 p < .05; t x 1 - t x 2 d = -0.12, p > .05; t x 2 - tau d = -0.22, p > .05) difference p = .02	No significant group effect on PSS-I scores, or PDS severity score, but both groups improved significantly. No significant differences between SS & RP or SS & TAU. Significant lower ASI-lite alcohol scores in SS & RP.	Pre-tx differences in traumatic experiences between groups. Partial dose of seeking safety Participants allowed to use other treatments.
Helping Women Recovery + Beyond Trauma Covington et al (1),	Open label	HWR = 17 sessions, BT = 11 sessions	Residential women with SUD + trauma (n = 195-199 completed stabilization) AR = 80%	41% White 31% Hispanic 18% Black 10% Asian/ Indian	66% methamphetamine 10% cannabis	Not reported	Not reported	Pre tx - post HWR - post BT TCS-40 (d = 0.35; p < .01; d = 0.44 p < .01) BDI (d = 0.37; p < .05; d = 1.16 p < .05)	99% of women who completed the HWR + BT remained abstinent. Significant improvements on trauma, depression, and sleep outcomes	No control group, no long-term follow-up. Self-selection bias due to high attrition. SUD statistics not reported

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Messina et al (32),	Randomized, tau-controlled, parallel groups tau = standard prison-based therapeutic community	HWR = 17 sessions, BT = 11 sessions	Incarcerated women with SUD + trauma (tx = 60, tau = 55) AR = 24%	48% White 26% Hispanic	58% metham- phetamine	Gang membership, administrative segregation, felony or immigration holds	Baseline -12 month follow up ASI ASI alcohol (tx d = .003; tau d = 0.66, p = .001) ASI drug (tx d = 1.27 p = .001; tau d = 1.34, p = .001)	Baseline- 12 month follow up ASI psychological (tx d = 0.43, p = .013; tau d = 0.54, p = .002) HWR+ BT had a higher retention rate. (tx d = 0.54 p = .14; tau d = 0.71, p = .003) After controlling for ethnicity, marital status, employment, Tx had significantly lower scores on the ASI relative to TAU and were less likely to return to prison	No significant difference between groups on ASI psychological composite or self- efficacy improvements. HWR+ BT had a higher retention rate. After controlling for ethnicity, marital status, employment, Tx had significantly lower scores on the ASI relative to TAU and were less likely to return to prison	Demographic characteristics non-equivalent between groups
Messina et al (33),	Randomized, tau-controlled, parallel groups tau = mixed- gender drug court treatment program	HWR = 17 sessions, BT = 11 sessions	Outpatient women offenders (tx = 85, tau = 65) AR tx = 23% tau = 29%	58% White 10% Black 22% Hispanic 10% other	71% metham- phetamine	No DUI, 3 or less nonviolent convictions,	Not reported	Baseline -15- 24 months PDS (group x time; $\beta = -$ 1.44, p = .07)	Significant reductions in ASI scores in both groups, change over time between groups approached significance (p < .06). HWR+ BT had greater decreases in PDS scores, although not statistically significant HWR+ BT group improved significantly more than no tx on post traumatic cognitions. Both groups had statistically significant reductions on drug use self- efficacy	Substance use statistics not reported. Variations in treatment time across patients
Swopes et al (34),	Randomized, tau-controlled, parallel groups tau = usual prison services	48 sessions (3 hours)	Incarcerated women with SUD w/ trauma (tx + tau = 55, tau = 40) AR tx = 38% tau = 45%	54% White 18% Black 16% Indigenous 5% mixed 1% other	38% metham- phetamine 19% cocaine 13% cannabis	More than 1.5 years left in prison, lower than 6th grade reading level,	Baseline - post tx DTCQ (between group difference η_p^2 = .04, p > .05)	PTCI ($\eta_p^2 = .15$, p < .01) TSI anxiety (η_p^2 = .02, p > .05) TSI tension (η_p^2 = .02, p > .05) TSI dissociation ($\eta_p^2 = .04$, p > .05) CES-D ($\eta_p^2 = .05$, p > .05)	HWR+ BT group improved significantly more than no tx on post traumatic cognitions. Both groups had statistically significant reductions on drug use self- efficacy	Substance use outcomes not reported due to incarceration, hindering comparison. Lack of long-term follow-up post release

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
<i>A Woman's Path to Recovery</i>										
Nejavits et al (35),	Open label	12 (90 min)	Women with OUD (n = 8)	87.5% White 12.5% Hispanic	100% opioids 75% cocaine 37.5% cannabis 12.5% alcohol	Not reported	Baseline-2-month follow-up ASI drug (d = 1.34; p < .005) BSU (d = 0.84; p > .05)	Baseline-2 month follow up BASIS-32 total (d = 0.73; p > .05) BASIS-32 impulsive (d = 0.91; p < .05) GSI (η ² = .10, p < .01) BASIS-24 (η ² = .19, p < .01)	Urinalysis confirmed self-reports. Improvements were mostly found on variables directly related to workbook.	Small sample size, no control group, no follow-up post tx
<i>Modified Trauma Recovery Empowerment Model</i>										
Najavits et al (36),	Randomized, tau-controlled, parallel groups tau = 12-Step Facilitation	12 (60 min)	Outpatient women veterans with SUD (tx = 33, tau = 33) AR tx = 55% tau = 55%	68.2% White 18.2% Black 18.2% Indigenous 4.5% mixed 3% Hispanic	45.8% alcohol 54.2% cocaine 12.5% cannabis amphetamines 8.3% opioids 4.2% heroin	Pregnant and planning pregnancy, acute mental condition affecting attendance/psychological functioning, symptomatic bipolar/psychotic disorder, organic mental disorder, dangerousness, upcoming medication change	ASI alcohol (η ² = .33, p < .001) ASI drug (η ² = .19, p < .001) BAM SUD (η ² = .238, p < .001)	Both treatments resulted in improvements on substance use, mental health outcomes, and functional outcomes. WPR did not perform better than TAU	Small sample size, lack of long-term follow up.	
Amaro et al (37),	Tau-controlled, parallel groups tau = usual services	12-36	Mixed residential and outpatient women with SUDs + MI + abuse history (tx = 181, tau = 161) AR tx = 31% tau = 32%	35% White 35% Hispanic 26% Black 5% Indigenous	Not reported	Women in a sensitive state	Baseline -12 month follow up ASI alcohol (difference d = 0.09; p = .72) ASI drug (difference d = 0.32; p = .69) % drug abstinent at 12 months (tx = 75%, tau = 40%)	Baseline -12 month follow up GSI (d = 0.32p = .01) PSS (d = 0.35 p = .01)	Women in the integrated treatment group had significantly better outcomes in drug abstinence, mental health, and PTSD symptomatology. Both groups improved significantly on other substance use outcomes	No randomization to treatment, no biological measures of drug use, lacked an end of treatment measure

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Toussaint et al. 38	Tau-controlled, parallel groups tau = intensive residential treatment	24 (75 min)	Residential women with SUD + MI + trauma (tx = 64, tau = 106) AR tx = 4% tau 14%	48.8% White 19% Black 15.8% Hispanic 8.8% Indigenous 5.3% other	Not reported	Not reported	Baseline -12 month follow up ASI alcohol (difference $d = 0.28, p = .07$) ASI drug (difference $d = 0.30, p = .32$)	Baseline- 12 month follow up GSI ($d = .58, p = 0.02$) PSS ($d = 0.47, p = .24$) PSS dissociation ($d = 0.61, p = .007$) PSS safety ($d = 0.38, p = .03$)	TREM significantly improved dissociative symptoms, trauma coping, sense of safety and mental health. Both groups improved on physical health and substance use outcomes	Lack of random assignment, women in TAU may have had a more severe condition
<i>Breaking the Cycle</i> Espinat et al. (39),	Randomized, active tau-controlled, parallel groups tau=standard integrated treatment		Mothers with an SUD in community (tx = 66, tau = 25) *Most had a trauma history, but not an inclusion criteria AR = 56%	81% White	63.7% polydrug use 45% crack cocaine 31.9% other 23% alcohol	Discontinued attending service before 2 weeks or missing data at T2	Baseline -1 year follow up EuroPASI ($t \times 1 d = 0.53, p < .01$; tau $d = 0.65, p < .01$) DTCQ-8 ($t \times 1 d = 0.36, p < .05$; tau $d = 0.16, ns$)	1 year follow up CES-D (between group difference $d = 0.14, p < .05$) BAI (difference $d = 0.13, ns$)	ASI improved significantly for both groups, whereas drug taking self-efficacy only improved for the BC group. BC was also successful in fostering maternal confidence More women receiving BC were able to shift to non-clinical levels of depression and anxiety and reported greater social support	Comparing a parenting relationship focused on integrated treatment to another gender-responsive integrated treatment. Non-equivalent groups
<i>Understanding and Overcoming Substance Misuse</i> Long et al (40),	Open label	11 (75 min)	Women in a forensic psychiatric hospital with SUD + serious MI (n = 23) AR = 32%	94% White	67.6% cannabis 50% alcohol 50% cocaine 50% amphetamines 44.1% opioids 35.3% hallucinogenic 29.4% inhalants 11.9% barbiturates 11.8% phencyclidines	Not reported	Baseline -1 month follow up DTCQ ($d = 0.6, p < .01$) ADCQ costs of quitting ($d = 0.55, p < .001$) ADCQ benefits of quitting ($d = 0.39, p < .05$)	Baseline -1 month follow up CANFOR ($d = 0.64, p < .05$) BPRS anxiety ($d = 0.69, p < .01$) BPRS tension ($d = 0.70, p < .01$) GSES ($d = 0.68, p < .01$)	UOSM resulted in significant improvements on substance use and general psychiatric measures.	Treatment non-completers (n = 11) were higher on ADCQ costs, lower on benefits and GSES. No control group, small sample size.

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
VOICES Tolou-Shams et al (41),	Randomized tau- controlled, parallel groups tau = women's health psychoeducation	12 (60 min)	Adolescent girls with history of substance use in community (tx = 51, tau = 62) AR tx = 24% tau = 11%	41.6% Latinx 18.6% Black 15% mixed 12.4% White 7.1% Asian 1.8% Middle Eastern 3.6% Indigenous	cannabis alcohol other	Over 18, lack of English fluency, impairment precluding assent, active severe substance use, active psychosis or other significant psychiatric or cognitive impairment	Baseline -9 month follow up Cannabis urinalysis (between group difference $f =$ 0.17, $p = .08$) BYACQ (tx $d =$ 0.33, $p < .05$; tau $d = 0.38$, p < .05) BMCQ (tx $d =$ 0.34, $p < .05$; tau $d = 0.55$, p < .05)	9 month follow up GSI (between group difference $f =$ 0.22, $p = .02$ NSESS (difference $f =$ 0.33, p < .0001)	Girls in the tx group had lower rates of biologically confirmed cannabis use relative to TAU. Improvements in consequences of cannabis and alcohol use did not differ across conditions.	Small sample size, some analyses may have been underpowered.
Women's Recovery Group McHugh et al (42),	Randomized, tau- controlled tau = mixed gender Group Drug Counseling	12 (90 min)	Women with a diagnosis of DSM-IV SUD (tx = 29, tau = 7) AR = 8%	97.8% White	92% alcohol	Current psychotic disorder, bipolar disorder, posttraumatic stress disorder	Baseline -6 month follow up Drinking days (between group difference $d =$ 0.72, $p = .05$); Drinks per drinking day ($d = 0.81$, p = .03) ASI alcohol ($d =$ 0.73, $p = .05$) ***	Baseline - post tx BDI (between group difference $f =$ 0.08, $p = ns$) BAI (difference f = 0.36, $p = ns$) ASI psychiatric (difference f = 0.03, $p = ns$)	Psychiatric symptom reduction was not mediated by changes in substance use (i.e., independent). Despite no between group differences, both groups showed significant reductions in substance use and psychiatric symptoms from baseline to end of treatment.	Diagnostic information not collected at follow-up, small sample size, sample not demographically diverse and excluded women with common co- occurring disorders so generalizability is limited, mediation analysis underpowered

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
<i>Female-Specific</i>										
<i>Cognitive Behavioral Therapy</i>										
Epstein et al., 2017	Randomized, tau-controlled tau = gender neutral CBT	12 (60–90 min)	Women with alcohol use disorder (tx = 44, tau = 55) AR = $t \times 1 = 32\%$ tau = 32%	92% White	100% alcohol	SUD other than marijuana or nicotine, psychotic symptoms in past 6 months, gross cognitive impairment	Baseline – post tx/follow-up Percent drinking days (between group difference <i>estimate</i> = $-0.03, se = 0.17, p = .85$) Percent heavy drinking days (<i>estimate</i> = $0.16, se = 0.18, p = .36$)	Baseline to post-tx/follow-up BDI and BAI ($d = -0.09$ to $-0.34; p \geq .22$)	No significant differences between groups with regards to drinking outcomes or psychological outcomes at end of treatment, however, women in both groups reduced use. Women in FS-CBT reported a significant increase in number of abstainers in their social network (e.g., social support)	Potentially underpowered to detect treatment effects, all women were in a committed relationship, lack of diversity in sample. Utility with respect to other drug use unclear.
Epstein et al (43),	Randomized tx1 = Individual FS-CBT tx2 = group FS-CBT	12 (60–90 min)	Women with DSM-IV alcohol use disorder (t x 1 = 73, t x 2 = 65) AR t x 1 = 13% tx2 = 16%	87% White 9.4% Hispanic 9% Black 4.4% Mixed	100% alcohol	No current SUD of any illicit substance, no psychotic symptoms in past 6 months, no gross cognitive impairment	Baseline –2 week follow-up Percent drinking days (between group difference <i>estimate</i> = $-0.14, se = 0.60, p = .82$) Percent heavy drinking days (<i>estimate</i> = $-0.05, se = 0.41, p = .91$)	Baseline –2 week follow-up BDI (between group difference <i>estimate</i> = $0.03, se = 0.22, p = .88$) BAI (<i>estimate</i> = $-0.13, se = 0.26, p = .62$)	Quality of delivery rated higher in group FS-CBT, however, fewer sessions were attended relative to individual FS-CBT (possibly due to closed groups) Substance use and psychiatric outcomes improved in both groups, no significant difference between groups	Homogenous sample with respect to ethnicity, education, income, generalizability not certain. Utility with respect to other drug use unclear.

(Continued)

Table 1. (Continued).

Author, year	Study Design	Sessions	Sample/ Attrition Rate	Demographics	Primary Substance	Exclusion Criteria	SUD Outcomes	Mental Health Outcomes	Summary of Relevant Results	Limitations
Black & Amaro et al (44), <i>Moment by Moment in Women's Recovery</i>	Randomized, parallel-group, tau-controlled tau = study standard care includes relapse prevention, trauma education, counseling		Residential women with an SUD (all of whom had co-occurring psychiatric disorder; tx = 100, tau = 100) AR tx = 10% tau = 6%	58% Hispanic 19.5% Black 21% White 1.5% other	76% methamphetamine 52.5% cannabis 50% alcohol (binge) 14.5% opioids 13% cocaine/crack-cocaine 8.5% sedatives 6.5% hallucinogens	Inability to consent, cognitive impairment, untreated psychotic disorder, severe chronic DSM-V mental health condition, older than 65, past 30 day suicidality, current prisoner, 6+months pregnant	Baseline- post tx Penn Alcohol Craving Scale (between group difference $d = 0.28$, $p = .26$)	Baseline- post tx PSS (between group difference $d = 0.24$, $p = .21$) DERS ($d = 0.11$, $p = .52$) DASS-21 ($d = 0.16$, $p = .40$) PANAS negative ($d = 0.13$, $p = .47$) PANAS positive ($d = 0.08p = .60$)	MMWR participants were less likely to leave residential treatment without satisfactory progress. Women in both groups improved on mindfulness skills, distress tolerance, emotion regulation, and craving for alcohol, with no significant difference between groups	Not compared to a sham mindfulness intervention (to avoid problematic learning), delivered sessions over 6 weeks instead of typical 12 weeks

Note: AR = attrition rate, BD= bipolar disorder, DUJ= driving under intoxication, FS-CBT = Female Specific Cognitive Behavioral Therapy, HWR+ BT = Helping Women Recovery and Beyond Trauma, MDD= major depressive disorder, MI = mental illness, MMWR = Moment by Moment in Women's Recovery, PTSD = post traumatic stress disorder RP = relapse prevention, SCZ= schizophrenia, SS= Seeing Safety, SUD = substance use disorder, tx = treatment/intervention group, tau = treatment as usual/control/comparison group, UOSM= Understanding and Overcoming Substance Misuse, WRG = Women's Recovery Group.

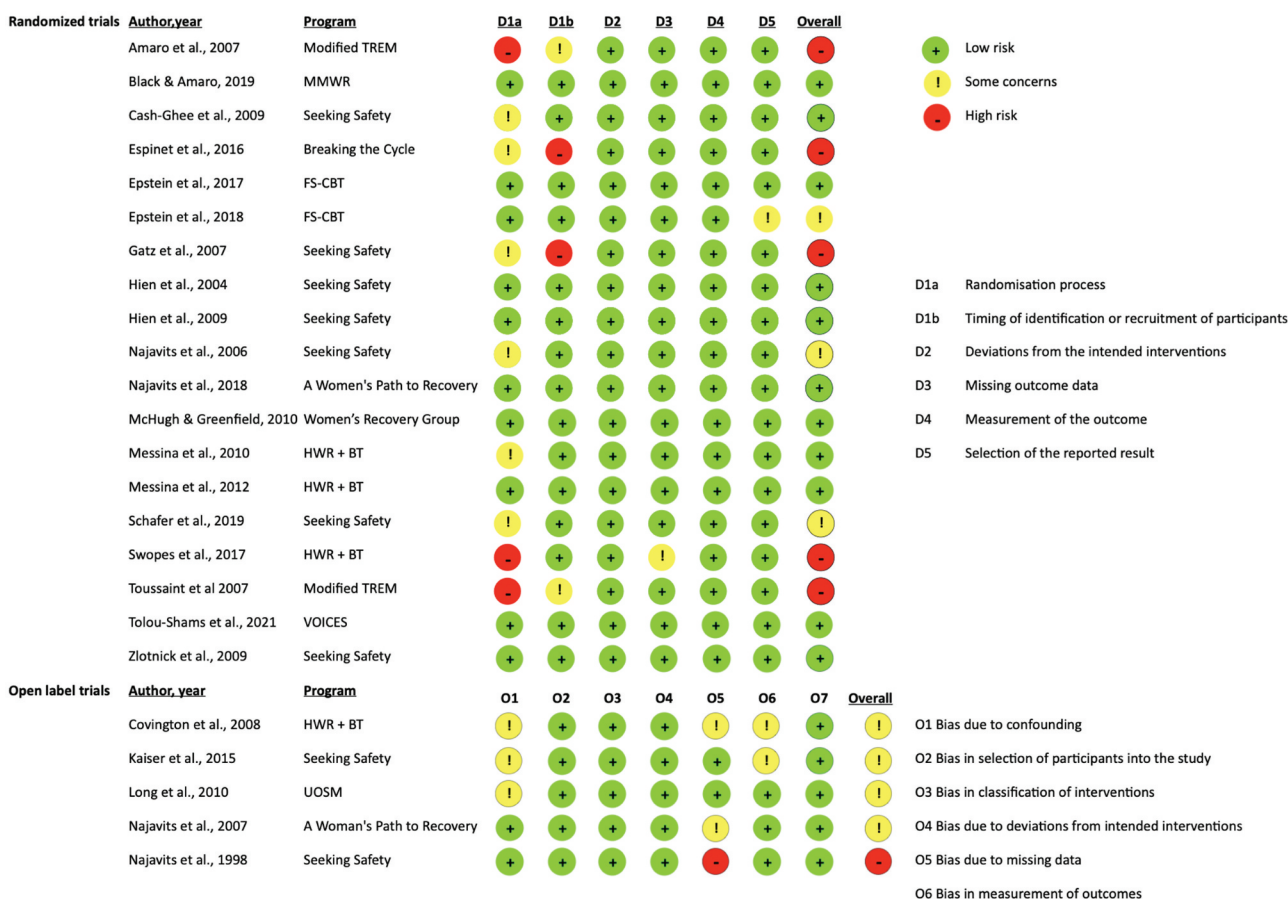


Figure 2. Risk of bias assessment for randomized and open-label trials. Figure depicts ratings of possible bias in included studies for individual categories as well as overall risk of bias.

Moreover, SS was also successful in reducing global mental health symptomatology and, importantly, PTSD and trauma symptoms in all evaluations. In two of the RCTs, improvements in substance use outcomes were significantly greater in the SS group at the last follow-up, relative to TAU (27,31,46); however, in the remaining studies there were no significant differences, suggesting SS is either as effective as, or superior to, existing treatments in addressing substance use. Encouragingly, SS was significantly better than TAU at improving trauma symptoms in four of the seven evaluations (26–29) even in the study assessing the condensed six sessions versions (29).

One study (27) compared groups on treatment satisfaction and found that women in the SS program reported significantly greater satisfaction than those in TAU. Two studies (29,30) did not differentiate between groups, but overall participants reported high satisfaction with treatment. Furthermore, attrition from treatment was substantially lower for SS than TAU in three of the evaluations (28,46,47) but was higher in the other two evaluations (29,31); the other two studies did not report this variable.

Helping Women Recover and Beyond Trauma

Helping Women Recover (HWR) and the adjunct Beyond Trauma (BT) model are similarly widely researched. HWR involves four modules: Self (learn self-esteem, recovery is expansion of the self, effects of discrimination/stigma, etc.), relationship (roles in family of origin, relationship histories, myths of motherhood, etc.), sexuality (connections between addiction and body image/sexual identity, etc.), and spirituality (prayer, meditation, connection, wholeness, etc.). BT is similar to HWR but is trauma-specific and has a major emphasis on coping skills and understanding how abuse can impact life (1).

Four studies investigating both HWR+BT were identified, three of which were RCTs (32–34,48). Interestingly, the initial open-label study found that 99% of the women who completed the entire program were able to remain abstinent at follow-up (48). Only 45 from the original sample of 199 completed both HWR and BT, however, the program was delivered as part of a 12-month residential program and women may have been discharged for various reasons (48). The three RCTs found no significant differences in substance use

outcomes for HWR+BT compared to TAU, albeit in one study, the difference between groups in changes in ASI scores approached being statistically significant for the HWR+ BT group ($p < .06$) (33). In all three evaluations, both HWR+BT and TAU groups improved on global and trauma psychopathology symptoms. Encouragingly, Swopes et al., 2017 found that incarcerated women in HWR+BT displayed significantly greater improvements in psychopathology or trauma symptoms and considerably better treatment retention than women who received the usual prison treatment services (see Table 1; 38). Attrition in the RCTs ranged from 23% to 38%, considerably lower- and hence likely more representative - than the initial study in the residential program.

A Woman's Path to Recovery

A Woman's Path to Recovery (WPR) involves 12 sessions based on the Women's Addiction Workbook, which provides gender-based psycho-education on addiction and co-occurring disorders. It involves two major sections, namely exploring gender differences in addiction and recovery, with a highlight on violence/trauma along with sexuality, stress, and relationships, as well as healing through actions, feelings, beliefs, and relationships. In a preliminary evaluation, eight women with opioid dependence improved their drug symptom severity, impulsivity scores, and knowledge of the principles in the workbook (35). We identified an RCT in which both WPR and TAU groups improved significantly on substance use and mental health and functional outcomes, but there were no significant between-group differences in outcomes. Both groups also had equivalent attrition rates that were moderately high (55%). Additionally, the sample size was small (18 completers per group), and there was no long-term follow-up (36).

Modified Trauma Recovery and Empowerment Model

The Boston Consortium Model is a modified version of the Trauma Recovery and Empowerment Model (TREM) that is intended to function as an integrated treatment for women with co-occurring trauma, SUDs, and mental illnesses (49). Embedded in a larger substance use program are topics, such as gender identity, sexuality, interpersonal boundaries, self-esteem, family and relationships, destructive behaviors, and sexual, physical, and emotional abuse. In addition, there is a focus on peer support, survivor empowerment, and cognitive restructuring. Amaro and colleagues (37) found that after controlling for covariates, the intervention group reported significantly higher drug abstinence

rates, fewer PTSD symptoms, and fewer mental health symptoms at both 6- and 12-month follow-ups (37). Relative to mixed inpatient and outpatient participants who received the usual services, more participants in the intervention group reported getting all the services they needed ($p = .06$) and being treated like a person without being "pulled into" separate problems ($p = .07$), while significantly more participants reported feeling respected ($p = .03$). Both groups reported similar attrition rates (31% vs 32%). Another similarly modified version of TREM was also evaluated by Toussaint and colleagues (38). At the 12-month follow-up, TREM showed significant improvements in mental health symptoms and trauma coping, while both TREM and TAU (intensive residential treatment) participants improved significantly on substance use outcomes with no between-group differences. Moreover, women in the TREM group had considerably lower attrition.

Breaking the Cycle

Breaking the Cycle (BC) is a holistic integrated intervention for mothers with problematic substance use that primarily targets maternal connections and forming healthy relationships while simultaneously addressing childhood trauma and assisting with basic needs (e.g., food and clothing). The weekly counseling sessions are flexibly scheduled and cover addiction, mental health, domestic violence, life skills, and parenting support. Nurturing mother and child relationships is a key focus of BC. Espinet et al. (39) compared BC to an active integrated-control intervention that offered similar counseling services, but without the focus on relationships. Both groups improved on ASI, but the BC intervention accrued additional gains in drug self-efficacy and fostering maternal confidence. Moreover, more women in the BC group were able to achieve non-clinical levels of depression and anxiety compared to TAU. Attrition was moderately high (56%) but was not differentiated between groups.

VOICES

VOICES is an integrated, trauma-informed, gender-responsive intervention for adolescents with problematic substance use. It is based on HWR and includes four modules (self; identifying self-attributes and identifying positive female role models; connecting with others; communication, family dynamics, positive peer support, signs of abuse, healthy living; substance use and spirituality, journey ahead; future orientation, goal-setting). Tolou-shams et al. (41), found that compared to a psychoeducational TAU, adolescent girls in VOICES had significantly lower rates of biologically confirmed cannabis use, while both groups improved

on measures of general psychiatric and trauma-related symptoms. Surprisingly, more girls dropped out of the VOICES intervention relative to TAU.

Understanding and Overcoming Substance Misuse

We found only one study reporting a gender-responsive SUD treatment that was designed for and implemented in a psychiatric institution: Understanding and Overcoming Substance Misuse (UOSM). UOSM is an integrated treatment aimed at helping women with serious mental illness in a forensic unit to develop motivation, initiate, and maintain changes, explore the impacts of trauma, and determine why women typically use substances (40). The manual is based on integrated CBT and relapse prevention and is informed by gender-specific topics, including why women use substances and substance use as a way of masking symptoms of trauma and abuse. Most women ($n = 23$; 67.6%) completed over 75% of the sessions and reported the intervention to be engaging and effective (40). Treatment completers had increased abstinence self-efficacy and perceived changing their substance use to be more beneficial and less costly after treatment. There were also significant improvements in anxiety, tension, psychiatric symptoms, and fewer unmet forensic needs (40).

Women's Recovery Group

The Women's Recovery Group (WRG) is a manualized 12 sessions relapse-prevention, skills-based group therapy that utilizes a gender-specific approach with an all-women group composition and educational content focused on substance use antecedents, consequences, and outcomes specifically relevant for women. There are 14 modules that can be flexibly chosen including relations between substance use and violence and abuse, mood, anxiety and eating disorders, stigma and shame, partners, caregiving, and achieving a balance in one's life (10). Research on WRG utilized mixed-methods and was conducted on two RCTs reported in several papers (non-exhaustive; 10 (50–57)), one paper focuses on both substance use and mental health disorder outcomes (42) and is therefore the only one included in this review focused on co-occurring disorders. McHugh et al. (42) found that women in the WRG reported significant improvements in depression, anxiety, the psychiatric scale of the ASI, as well as substance use outcomes. Moreover, improvements in psychiatric symptoms were not mediated by improvements in substance use, suggesting WRG to be effective in decreasing mood, anxiety, and other psychiatric symptoms, rather than symptoms improving solely as a result of reduced substance use; it should be noted that the sample size of

36 was likely not powered to detect null effects with mediation analysis (58). Finally, there was no significant difference in psychiatric symptom improvements between women in the WRG group and women in the mixed-gender drug counseling conditions.

Female-Specific Cognitive Behavioral Therapy

Female-Specific Cognitive-Behavioral Therapy (FS-CBT) is a manualized treatment for alcohol use disorders based on core CBT, motivational enhancement therapy, and relapse prevention, with a gender-specific approach to self-confidence, autonomy, and interpersonal functioning. Sessions cover social support and interpersonal functioning, assertiveness, as well as coping with negative effects, depression, anxiety, and emotion regulation (59). FS-CBT does not appear to cover trauma or victimization. An initial evaluation comparing FS-CBT to gender-neutral CBT found that women in both groups reduced alcohol use and improved on depression and anxiety, however, there was no significant difference between groups (59). A follow-up study comparing group FS-CBT to individual FS-CBT, found improvements in substance use and psychiatric outcomes in both treatment groups, with no significant difference between groups (43). Furthermore, women who used illicit substances were excluded from evaluations, reducing generalizability.

Moment by Moment in Women's Recovery

Moment by Moment in Women's Recovery (MMWR) is a gender-responsive approach to mindfulness-based interventions for SUDs developed for women in residential programs that integrates mindfulness skills (e.g., coping with cravings via mindful attention) with specific application to gender-related issues including parenting roles, trauma exposure, co-occurring mental health problems, and interpersonal conflicts, with a focus on reducing treatment drop-out (44). In the initial evaluation of MMWR, the program was compared to usual care, which encompassed relapse prevention, family education, and trauma counseling. The sample involved an ethnically diverse group of women, and the majority had one or more co-occurring psychiatric disorders and a history of trauma. Retention was significantly better in the MMWR group, than the usual care group. Women in both groups reported significant improvements in emotion regulation, mindfulness skills, distress tolerance, and alcohol cravings, however, there were no significant differences between the groups.

Exclusion Criteria

Where reported, nearly all studies excluded women with either a history of or active psychosis, significant

cognitive impairments, and mental illnesses other than depression or PTSD (e.g., bipolar disorder). Other exclusion criteria present in some of the studies included homelessness, being mandated for treatment, incarceration, poor English-communication abilities, and being medicated for opioid use disorder.

Discussion

Our systematic review identified 24 studies from 10 distinct gender-responsive integrated programs for women with SUD. Findings suggest integration of women's specific needs, trauma, and mental health counseling into substance use treatment is associated with benefits in both substance use and mental health outcomes. Of the 19 controlled trials, 11 studies found greater effectiveness in trauma symptomatology relative to gender-neutral TAU and thus might be beneficial for women in the community. Successful trauma-related and mental health outcomes were more likely to occur in programs that made a concerted effort to treat PTSD symptoms in conjunction with substance use, such as Helping Women Recover, its adaptation into VOICES, modified TREM, as well as Seeking Safety. However, several of the included studies were categorized as having moderate-to-high risk of bias, particularly the open-label trials, which calls into question the validity of the results. Moreover, the current evidence base is limited by substantial heterogeneity in follow-up points and study methods (e.g., measures used to assess addiction and mental illness). It is also important to note that it is not clear whether these treatments are appropriate for women with serious mental illness (e.g., psychotic-spectrum disorders), as these were often exclusion criteria. Excluding people with the most severe SUD, trauma, and co-occurring mental illnesses (8,60–62) limits the evidence base and arguably perpetuates health disparities.

Summary of Findings

All of the programs resulted in improvements in substance use measures at the end of treatment from the baseline. In 15 of the 19 included controlled trials, integrated interventions performed, as well as standard interventions in reducing substance use, with no significant differences between groups, and in the remaining four, the integrated intervention (Seeking Safety, Helping Women Recover, TREM) outperformed the comparator intervention. This is heartening, as it is evidence that available treatments have been successful in helping women with SUDs. We highlight that the benefit of gender-responsive, integrated treatments

come from their ability to target mental health issues and/or trauma in women experiencing co-occurring disorders, which may result in a more holistic improvement in their mental health (evidenced by significantly better performance of integrated interventions in addressing trauma as discussed below), formation of healthier relationships to avoid additional trauma, and sustaining SUD improvements. Encouragingly, women in the gender-informed intervention groups reported particularly high client satisfaction, and were more likely to stay in treatment, which is promising for treatment adherence.

Findings related to trauma and other clinical symptoms were also auspicious. That is, Seeking Safety, Helping Women Recover, modified TREM, Breaking the Cycle and VOICES, Women's Recovery Group all resulted in significant improvements on clinical outcomes including trauma symptoms and general psychiatric symptoms (e.g., depression and anxiety) that were greater than comparison treatments. Alleviation of clinical symptoms may also contribute to improvements in substance use outcomes over the longer term; in one modified TREM, women in the intervention group continued to improve at the 4, 6, and 9-month follow-ups, whereas the comparison group did not (37), suggesting a protective effect of the intervention against relapse. Moreover, Gatz et al. (47) found that women in the Seeking Safety group improved more on coping with trauma skills, and this improvement predicted greater improvements in ASI. Evaluations of all identified programs with longer follow-ups are needed to confirm this hypothesis.

What is Missing?

Despite findings in the reviewed studies that are promising for women in the community dealing with co-occurring SUDs and a range of co-occurring mental illnesses (e.g., depression, anxiety, and PTSD), there remains a pressing need for programs that will meet the needs of women with comorbid psychotic disorders, such as schizophrenia. For example, the Seeking Safety treatment manual expressly excludes women with psychosis, "organic" mental disorder, or learning disabilities (63) and requires women to be diagnosed with PTSD. Many individuals who have experienced trauma may benefit from an integrated treatment that addresses its consequences, without necessarily reaching diagnostic threshold criteria (64). Additionally, the original evaluation of this study also excluded women who were homeless, receiving methadone treatment, or had impending incarceration (23). Given frequent SUDs and trauma in these populations (60,61), excluding these women from treatment is highly limiting.

Although *A Woman's Path to Recovery*, *Women's Recovery Group*, *Female-Specific Cognitive-Behavioral Therapy*, and modified *TREM* showed promising results for women in the community, their efficacy in women who are institutionalized in general or forensic psychiatric institutions remains unknown as they have not been evaluated in these settings. Potential issues with *TREM* include advanced material (e.g., financial leadership), and having a reasonable level of literacy, while *A Woman's Path to Recovery* requires active engagement and completion of independent homework, women in inpatient psychiatric units, particularly forensic units, are acutely unwell and may find difficulty engaging with this content (2,8). Thus, programs might require tailoring to particular local contexts and to the specific requirements of the potential participants.

Helping Women Recover and *Moment by Moment* in *Women's Recovery* appear the most amenable to adaptation for women with serious mental illnesses in inpatient psychiatric care. *Helping Women Recover* employs flexible inclusion criteria, as women only need to be presented with a history of trauma and addiction (48) and it was originally evaluated in a residential treatment program. Moreover, specific concerns relating to relationships, parenting, safety, guilt, and trauma are addressed adequately. Although Covington et al. (1) recommended that *Helping Women Recover* and *Beyond Trauma* programs are conducted sequentially and in closed groups after a 45-day stabilization period, it is noted that either can act as stand-alone treatments, leaving room for flexibility. Similarly, *Moment by Moment* in *Women's Recovery* was first evaluated in a residential care setting on demographically diverse women who presented with a range of psychiatric disorders, substance dependencies, with promising findings. Future research should investigate the efficacy of these interventions in inpatient women.

Limitations

The purpose of this review was to evaluate available integrated and gender-responsive substance-use disorder treatments for women so as to summarize their efficacy in treating both substance use outcomes and mental health outcomes with a trauma-informed and women-specific approach. Broadly, we aimed to identify the landscape of available programs for women with co-occurring disorders as access to effective integrated treatments remains an unmet need in this complex population, with many trials still choosing to exclude these women from their studies. In light of this focused scope, some treatments (e.g., gender-neutral programs for co-occurring disorders, evaluations of gender-

responsive programs that did not evaluate both substance use and mental health outcomes) were excluded. Our focus was on specific and relevant programs meant to address the complex needs of this population, and exclusion of programs or evaluations is not an indictment of the merits of these treatments.

Conclusive statements regarding the findings of this review are limited as some evaluations of programs lack a control group, hence not allowing account to be taken of nonspecific effects of being engaged in a research project, and statistical issues, such as regression to the mean. Moreover, even in studies that used control groups, other methodological concerns were present, including a lack of random assignment (26,37,38,47), baseline differences between intervention and control groups (37,38,47), a lack of biological measures of drug use (30,37,38), non-equivalent groups (28,31,32,38,39), and small sample sizes in nearly all studies. Finally, most interventions lacked a long follow-up period, precluding evaluation of longer-term outcomes and relapse rates, and there was significant heterogeneity in the available evidence base. Thus, there is a need for more rigorous large-scale randomized controlled trials with longer follow-up periods.

Conclusions and Future Directions

This review identified several integrated and gender-responsive treatments that have promising results in improving substance use and trauma in women in the community. However, methodological shortcomings have been identified in most studies. Moreover, these programs are limited in their applicability to women with more serious mental illnesses, such as schizophrenia and bipolar disorder. Future research should employ more rigorous testing of these programs and encourage development of programs suitable for women with psychosis comorbidities, as well as those inpatient psychiatric and forensic psychiatric settings.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Disclosures

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ORCID

Samantha Johnstone  <http://orcid.org/0000-0002-5459-265X>

Marc N. Potenza  <http://orcid.org/0000-0002-6323-1354>

Tony P. George  <http://orcid.org/0000-0003-1645-9767>

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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