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Effectiveness of Substance Abuse Treatment Programming for Women: A Review[†]

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ABSTRACT

Recent research has shown that women and men differ in substance abuse etiology, disease progression, and access to treatment for substance abuse. Substance abuse treatment specifically designed for women has been proposed as one way to meet women's distinctive needs and reduce

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barriers to their receiving and remaining in treatment. However, relatively few substance abuse treatment programs offer specialized services for women, and effectiveness has not been fully evaluated. This article reviews the literature on the extent and effectiveness of substance abuse treatment programming for women and provides an overview of what is known about the components of successful treatment programs for women. Thirty-eight studies of the effect on treatment outcomes of substance abuse treatment programming for women were reviewed. Seven were randomized, controlled trials, and 31 were nonrandomized studies. In our review, six components of substance abuse treatment programming for women were examined: child care, prenatal care, women-only programs, supplemental services and workshops that address women-focused topics, mental health programming, and comprehensive programming. The studies found positive associations between these six components and treatment completion, length of stay, decreased use of substances, reduced mental health symptoms, improved birth outcomes, employment, self-reported health status, and HIV risk reduction. These findings suggest that to improve the future health and well-being of women and their children, there is a continued need for well-designed studies of substance abuse treatment programming for women.

INTRODUCTION

Substance abuse in women has a distinctive etiology, disease progression, and concomitant treatment needs. In the early 1970s, the National Institute on Drug Abuse (NIDA) developed a small program to deal with the problem of substance abuse treatment for women. The growth of such programs languished until the crack cocaine epidemic of the 1980s focused attention on crack-addicted women, and particularly, their children (1,2). One response in the late 1980s to the increase in cocaine use was increased funding under the substance abuse block grant for treatment programs serving women. In October 1988, Congress passed the Anti-Drug Abuse Act, which mandated a 10% set-aside for grants to public, private, and not-for-profit entities to fund demonstration programs for substance-abusing pregnant and postpartum women and their infants (3). This funding further ignited interest in women's treatment services (4,5). Now a growing body of research shows that substance abuse among women and the issues surrounding their abuse differ from that among men, requiring a specialized set of therapeutic interventions. A recent Institute of Medicine report has highlighted sex as an important

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variable that should be considered when designing and analyzing biomedical and health studies (6).

Unfortunately, these findings are just beginning to influence the way substance abuse treatment is provided for women, and few studies have examined the effectiveness of substance abuse treatment services for women. This article reviews the published literature on the extent and effectiveness of substance abuse treatment programming for women.

Women substance abusers differ from men in the antecedents of substance abuse, frequently initiating substance use as a result of traumatic life events such as physical or sexual violence, sudden physical illness, an accident, or disruption in family life (7–9). Women substance abusers are often drawn into substance use by partners (10,11) or are raised in an environment of heavy drinking or drug abuse (12,13).

Women demonstrate unique psychosocial characteristics associated with substance abuse. Women substance abusers are more likely than men to have poor self-concepts (low self-esteem, guilt, self-blame) and high rates of mental health problems, such as depression, anxiety, bipolar affective disorder, suicidal ideation, psychosexual disorders, eating disorders, and posttraumatic stress disorder (14–25). Furthermore, social stigma, labeling, and guilt serve as significant barriers to women's receiving treatment (7–9), and programs that treat men and women clients together are less able to attract and retain especially vulnerable women, such as lesbian women, women with a history of physical or sexual violence, and those who have worked as prostitutes (7,26–28).

Entering, engaging, and remaining in substance abuse treatment may require not only the availability of specialized treatment services but also an array of resources to help with specific issues, such as child care and physical and mental health (30). Using data from a large multisite prospective clinical epidemiological study, Wechsberg and colleagues (29) found that women entering substance abuse treatment were younger and had lower education and employment levels, health and mental health problems, greater exposure to physical and sexual abuse, and greater concerns about issues related to children compared with men. Responsibility for children, lack of access to child care services, and society's punitive attitude toward substance abuse by women as childbearers are barriers frequently cited by women who need help (7,31–34). In the 1980s, legislated offenses penalized chemically dependent mothers who used drugs during their pregnancies (35). Transportation to treatment sites has also been identified as a barrier for women (32,36). Furthermore, the interplay of gender-specific drug use patterns and sex-related risk behaviors creates an environment in which women are more vulnerable than men to infection with human immunodeficiency syndrome (HIV)



(37,38). For instance, women are more likely than men to inject drugs, use drugs with many partners, share paraphernalia after an injection partner, exchange sex for money or drugs, and have difficulty negotiating condom use with their sex partners (37).

A few studies have identified additional special needs of women. For example, women substance abusers are more likely than their male counterparts to report greater dysfunction in the family of origin (39), lacking adequate role models for parenting (40,41). Poor interactions with children can be a significant source of stress that interferes with treatment efforts (41,42). Women substance users are also more likely than male substance users to enter dependent relationships dominated by their partner (43), hindering their ability to perform basic life skills, such as managing money and planning for the future. Furthermore, women in treatment may need female role models for recovery. In fact, research in the 1980s found that structural factors of treatment facilities such as staff composition influenced use rates by women and impacted their entry and continuation in treatment (44,45).

For the purposes of this article, we use the term “substance abuse treatment programming for women” to refer to the delivery of services that (1) reduce women’s barriers to entering substance abuse treatment and/or (2) address the substance abuse treatment needs unique to women. There is no widely accepted definition of substance abuse treatment programming for women, but such treatment includes:

1. Social and medical ancillary services intended to increase women’s access to substance abuse treatment, such as child care or transportation.
2. Services intended to address special needs of women, such as prenatal care, psychosocial education, women-focused HIV prevention, or mental health programs.
3. Programs and services for women only, creating a unique treatment environment that is more focused on women’s issues and a more comfortable setting in which women may discuss sensitive and painful issues.
4. Modalities tailored to women’s special needs: a nurturing and supportive group therapy environment, emphasis on self-worth, or treatment that addresses the multiple roles of women (mother, partner, friend).

This latter type of substance abuse treatment programming for women focuses on how services are delivered rather than on the type or quantity of

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services. Treatment programs may incorporate a combination of two or more of the above factors.

Because substance abuse treatment programming for women is not a single intervention but consists of multiple interventions, determining the availability of such programming is difficult. However, the availability of some specialized services for women has been examined in several studies. The 1998 Uniform Facility Data Set (UFDS), a survey of facilities providing substance abuse treatment, found that 19% of facilities offered special programs for pregnant or postpartum women, whereas 28% offered special programs for other groups of women in treatment (46). These special programs for women were most often offered at local government-owned facilities, community mental health centers, and mixed outpatient and residential facilities. Almost 9% of all facilities offered child care, 7% offered prenatal care, and 5% offered perinatal care. More than one third (36%) offered transportation to treatment.

A 1994 survey of 161 drug treatment programs for adults in Los Angeles County found that 19% were women-only programs (47). Compared with mixed-gender programs, women-only programs were more likely to report priority admission for pregnant women, no fees, and longer planned treatment duration. They were more likely to offer pediatric/well-baby care, children's activities, and assistance finding housing but were less likely to offer group or family/couples therapy and educational information.

A recent study by Wechsberg et al. (48) surveyed 108 methadone treatment programs accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF) in 14 states. This study found that 54% of programs surveyed offered special services for women. Non-profit programs and programs serving more than 300 patients were more likely to offer such services than were for-profit programs and programs serving fewer patients. Sixty percent of programs offered psychological counseling, and transportation was offered at most programs. However, only 10% of programs offered on-site child care, and only 9% of programs matched female clients to female providers.

Although there is growing theoretical support for the provision of specialized women's substance abuse treatment services, few studies have investigated whether these programs improve outcomes in women. The purpose of this article is to provide a comprehensive review of existing literature evaluating the effectiveness of substance abuse treatment programming for women. Findings may suggest which types of substance abuse treatment programming for women should be implemented or require further evaluation.



METHOD

Evidence regarding the effectiveness of substance abuse treatment programming for women was gathered through a systematic literature search. This review focused on published literature. Publications from 1980 to November 2000 were retrieved through a Medline and Psychlit search performed by cross-matching the term "substance abuse treatment" with the terms "women," "child care," "mental health," "prenatal care," and "transportation." Relevant references cited in these articles were also included (i.e., the snowball technique). Other comprehensive reviews of substance abuse treatment programming for women (2,45,49,50) were also used as a source for important literature.

To be included in this review, studies must have explicitly defined the population at risk, the intervention, and appropriate outcome measures to evaluate the impact of treatment. Outcome measures included changes in the use of substances, mental health symptoms, perinatal/birth outcomes, employment, self-reported health status, and HIV risk reduction. Excluded from this review were studies based in psychiatric facilities and mental health clinics (unless they used substance abuse treatment outcome measures and behaviors); brief interventions based at primary care sites, such as smoking cessation programs; and studies evaluating the effectiveness of educational interventions not central to substance abuse treatment. For example, Eldridge et al. (51) evaluated the effectiveness of two interventions to reduce sexual risk behavior among women in inpatient drug abuse treatment. Outcome measures included HIV risk reduction, but neither intervention was integrated into the treatment of substance abuse. Although men may have also used services at the study sites, the findings presented in these studies are for women only. Study characteristics were examined, including study period and location, sample size, race/ethnicity and substance abuse characteristics of participants, nature of interventions, and multiple treatment outcomes.

RESULTS

Based on the above inclusion criteria, 38 studies were identified. Seven were randomized, controlled trials (Table 1)^a and 31 were nonrandomized studies (Table 2). The seven randomized, controlled trials included both

^aAn additional randomized controlled trial in progress in Tucson, Arizona, has been described in the literature (52), but results have not been published.

**Table 1.** Randomized studies of the effectiveness of substance abuse treatment programming for women.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Control group	Outcomes
Carroll et al. (59)	1990–1992, New Haven, CT	14	79% Caucasian	Pregnant, outpatient methadone clinic patients	Prenatal care, therapeutic child care during treatment visits, monetary rewards for abstinence, relapse prevention	Standard methadone treatment	At delivery: increased gestational length, birth weight, and number of prenatal care visits; no change in maternal drug use
Dahlgren and Willander (58)	1983–1986, Sweden	200	Not reported	Women entering alcohol treatment	Women-only outpatient and residential treatment	Treatment in regular wards and alcoholism treatment center	At 2-year follow-up: decreased alcohol use, decreased job loss
Elk et al. (83)	1994–1996, Houston, TX	12	59% African American	Pregnant cocaine-dependent women who had used the drug during this pregnancy but had ceased use	Contingent reinforcement for cocaine abstinence and attending prenatal visits, transportation, child care, behaviorally based drug counseling, weekly prenatal visits	Behaviorally based drug counseling, weekly prenatal visits	At delivery: improved perinatal outcomes and increased prenatal care, no significant difference in abstinence from cocaine
Hiller et al. (71)	1994, Houston, TX	17	62% African American	Women in residential treatment	Weekly sessions on women's health, HIV/AIDS prevention, and assertiveness/communication skills	No specialized treatment intervention	Upon intervention completion: increased self-esteem, more positive attitudes toward practicing safer sex

(continued)



Table 1. Continued.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Control group	Outcomes
Hughes et al. (62)	1990–1992, St. Petersburg, FL	53	81% African American	Female cocaine abusers with children	Children allowed to live with mothers in a therapeutic community	Standard (no child) community treatment	By discharge: improved retention
O'Neill et al. (79)	1992–1993, Sydney, Australia	73	Not reported	Pregnant women enrolled in methadone maintenance programs for pregnant women	Six-session cognitive behavioral intervention focused on the acquisition of skills aimed at helping prevent relapse to needle sharing and to unsafe sex, methadone maintenance treatment, counseling and advice about HIV risk-taking behaviors	Methadone maintenance treatment, counseling, and advice about HIV risk-taking behaviors	At 9-month follow-up: reduction of injecting risk behaviors associated both with “typical” drug use and “binge” use, no change in sexual risk behaviors, no change in drug use per se
Volpicelli et al. (70)	Not reported	84	96% African American	Cocaine-dependent mothers	Parenting skills class, access to a psychiatrist, individual therapy sessions, GED class	Case management-oriented outpatient treatment program	At 12-month follow-up: decreased drug use, increased program retention, no change in psychosocial functioning (including employment status)

**Table 2.** Non-randomized studies of the effectiveness of substance abuse treatment programming for women.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Outcomes
Bander et al. (80)	1977–1979, Hartford, CT	167	56% African American	Low-status women alcoholics	Outpatient behavior-modification counseling, vocational and recreational activities, medical care	At 21-month follow-up, 19% abstinent 6 months or more; employment increased from 11 to 26%
Bartholomew et al. (72)	1991–1993, Fort Worth, TX	81	26% Mexican American	Women admitted to outpatient methadone treatment programs	Assertiveness and sexuality workshop	Increased length of stay in the treatment program, greater increases in self-esteem and knowledge
Berkowitz et al. (93)	1994, California	460	29% African American	Women participating in perinatal alcohol and other drug treatment programs	Perinatal alcohol and other drug treatment, child care, transportation, and case management	Reduction in alcohol and other drug use; reduction in criminal activity; reduction in fighting, inability to care for children, homelessness, injury and physical violence, victimization, and suicidal feelings

(continued)

Table 2. Continued.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Outcomes
Camp and Finkelstein (82)	1990–1993, MA	170	72% African American	Pregnant and parenting chemically dependent women at two urban residential treatment programs	Urban residential treatment programs with a parenting component and aftercare services	Longer periods of abstinence; relatively few infants exhibited low birthweight, gestational age, or Apgar scores; dramatic improvements in self-esteem; considerable improvement in parenting knowledge and attitudes associated with positive parenting behavior
Chang et al. (64)	Not reported, New Haven, CT	12	Not reported	Pregnant methadone-maintained opiate-dependent women	Prenatal care, relapse prevention groups, monetary rewards for abstinence, and therapeutic child care during treatment visits	Fewer drug-positive urine screens, longer gestational ages and heavier birth weights
Copeland et al. (61)	1989–1991, Australia	160	Not reported	Women seeking treatment for drug and alcohol problems	Women-only program, child care	No significant differences at 6-month follow-up in substance use or mental health symptoms between subjects from a specialist women's service and subjects from two traditional mixed-gender treatment services
Cuskey and Wathey (94)	1974–1977, New York, NY	97	Almost 50% African American	Addicted women who were pregnant or mothers who wanted to have their children live with them during treatment	Residential therapeutic community designed for women and their children, therapy groups	At 6 months after discharge: all participants were free of drugs, 93% were arrest-free, 14% were employed



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de Zwart (95)	1985, The Netherlands	44	Not reported	Clients in an all-women's alcohol clinic	Women-only alcohol clinic	Lowered frequency of alcohol consumption, success in stopping alcohol consumption, decreased use of tranquilizers and sleeping pills
Egelko et al. (69)	1992–1995, New York, NY	48	75% African American	Perinatal cocaine-addicted women admitted to the day treatment program	Women-only program with a multisystems model for family reintegration	Improved retention, decreased substance use
Elk et al. (60)	Not reported, Houston, TX	35	54% African American	Pregnant women dependent on cocaine/opiates	Child care, prenatal care, HIV counseling, behaviorally based counseling, transportation	High rate of retention in treatment, high rate of compliance with prenatal care, good perinatal outcomes, high rate of cocaine abstinence
Field et al. (73)	Not reported	126	64% African American	Young mothers (ages 16–21) who had not completed high school	Parenting and vocational classes, relaxation therapy, child care involving mother participation, group therapy, psychoeducational sessions, urine monitoring, self-help group sessions, and individual and drug counseling	At 12-month follow-up: lower incidence of continued drug use, increased education and employment, improved mother-child interactions, improved child psychosocial and physical functioning, lowered incidence of repeat pregnancy
Grella (68)	1987–1994, Los Angeles County, CA	4117	50% African American	Women treated in publicly funded residential treatment programs	Women-only programs	Increased length of stay, more than twice as likely to complete treatment compared with women in mixed-gender programs

(continued)

*Table 2.* Continued.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Outcomes
Knight et al. (74)	1996–2000, Fort Worth, TX	41	51% African American	Addicted women admitted to treatment	Comprehensive residential substance abuse treatment program for women with dependent children (families living in independent apartments located on the facility's grounds, on-site child care, individual and group counseling, life skills training and instruction, transportation to community agencies, integration of children through play and family therapy and recreational activities, etc.)	73% of participants completed 91 days or more of treatment
Kukko and Halmesmaki (65)	1985–1995, Helsinki, Finland	111	Not reported	Drug-abusing pregnant women giving birth at the hospital	Outpatient counseling and prenatal care	In 61% of pregnancies, the woman succeeded in either quitting totally or reducing drug abuse; decreased incidence of preterm birth; higher gestational age and birth weight
Laken and Ager (96)	1990–1992, Detroit, MI	225	89% African American	Prenatal substance abusers	Home visits, telephone counseling, transportation, and referral	Increased length of stay in an outpatient treatment program



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Larsson (97)	1979, Stock- holm, Sweden	399	89% Swedish	Pregnant excessive drinkers, alcohol abusers, and occasional drinkers	Outpatient maternal counseling	76% of participants reduced or stopped drinking
McComish et al. (81)	1994–1996, Flint, MI	55	86% African American	Women in a gender-specific residential substance abuse treatment program	Therapy group addressing grief and loss	Increased length of stay, increased self-esteem
Prendergast et al. (98)	1993–1994, Southern California	64	48% African American	Paroled women who com- pleted substance abuse treatment while in prison	Community-based residential program for women	Lower self-reported drug use rates, higher levels of successful par- ole discharge
Roberts and Nishimoto (99)	1995, not reported	369	94% African American	Women in substance abuse treatment	Comprehensive woman-focused, women-only day treatment program including child care and transportation	Longer length of stay and higher likelihood of successful program completion
Rosett et al. (100)	1974–1977, Boston, MA	42	56% African American	Pregnant problem drinkers	Women-only outpatient counseling	35% of participants reduced drinking before third trimester
Saunders (75)	1990–1992, Des Moines, IA	79	73% Caucasian	Substance-abusing mothers admitted to residential treatment	Two-year program with thera- peutic day care, support services for children, health care, and educational and vocational training	Increased abstinence from alcohol and other drugs; decreased psychological distress; increased job, independent living, parent- ing, and interpersonal skills; increased mother-child reunification

(continued)

Table 2. Continued.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Outcomes
Schinka et al. (101)	1990–1992, FL	46	81% African American	Cocaine-dependent women treated at therapeutic community	Therapeutic community that included many features addressing women's special needs (women could keep children with them while in treatment)	Improvement in levels of depression
Stevens and Arbiter (55)	1994, Tucson, AZ	57	25% African American	Female clients in a therapeutic community	Comprehensive focus on women's needs (e.g., increasing male-female client ratios and female staff, adding women's groups/seminars/retreats, and permitting children to live with mothers in treatment)	Decreased alcohol and other drug use, decreased arrests for probation violations, increased part- or full-time employment and decreased government assistance, increase in mother-child reunification
Stevens et al. (63)	1981–1985, Tucson, AZ	Not reported	Not reported	Female clients in a therapeutic community	Putting women's issues and needs at the center of the therapeutic community's efforts (e.g., increasing male-female client ratios and female staff, adding women's groups/seminars/retreats, and permitting children to live with mothers in treatment)	Increased length of stay
Stevens and Glider (102)	1991, not reported	11 agencies	Not reported	Not reported	Specialized programs for women and children	Increased length of stay



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Svikis et al. (53)	1989–1990, Baltimore, MD	121	88% African American	Drug-abusing pregnant women enrolled in an urban, hospital-based obstetric clinic	On-site support group, free transportation, children allowed to attend	Heavier birth weights and better 1-minute Apgar scores, lower short-term medical care costs
Sweeney et al. (54)	1992–1995, Providence, RI	174	35% African American	Pregnant women receiving prenatal care	Substance abuse treatment program for pregnant and postpartum women	Increased birth weights and gestational ages, less likelihood of admission to the neonatal intensive care unit
Walitzer and Connors (76)	Not reported	192	Not reported	Women with mild to moderate alcohol-related problems	Weekly small-group meetings, alcohol education material, behavioral self-control strategies	Reduced alcohol consumption
Wexler et al. (84)	1992–1993, Tucson, AZ	83	22% African American	Women who had used alcohol or drugs for at least one year and were either pregnant or had children under 7 months of age	Therapeutic community providing long-term residential treatment, modified to fit the needs of women and children (e.g., family-style housing, on-site therapeutic nursery for children under the age of 3, parenting classes, family sessions with a developmental specialist, scheduling to balance treatment needs with parenting responsibilities, etc.)	At 6 and 12 months post treatment: increases in employment and decreases in criminality, substance abuse, and psychological disturbance

(continued)

*Table 2.* Continued.

Study citation	Study period and location	No.	Race/ethnicity	Population	Interventions	Outcomes
Wobie et al. (56)	1993–1996, Orlando, FL	86	62% African American	Pregnant or postpartum treatment center residents	Groups addressing addiction and women's issues, educational assessment and services, on-site health care and education, smoking cessation program, therapeutic child care services	Increased length of stay, increased child custody, decreased levels of depression, and increased self-esteem
Zankowski (77)	FY 1986, Eagle-ville, PA	Not reported	50% African American	Female patients at a large acute-care drug and alcohol treatment hospital	Multilevel restructuring of women's program, including women-focused seminars	Increased retention of women in treatment

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American and international studies, with sample sizes ranging from 14 to 200 subjects. International studies originated in Sweden and Australia. Subjects in both randomized and nonrandomized studies were either pregnant women, women with children, or women in treatment regardless of parenting status and were either predominantly Caucasian or predominantly African American. Substances used by subjects included alcohol, cocaine, and injecting drugs. Interventions included prenatal care, child care, women-only treatment, transportation, mental health services, sessions on women's issues, and combinations of these components.

Most studies addressed the question of whether substance abuse treatment programming for women produces better outcomes than those produced by other types of programming. Only two of the selected studies specifically addressed the question of whether substance abuse treatment programming for women produces better outcomes than does no treatment (53,54). Two other studies compared women who dropped out of women-focused substance abuse treatment with those who completed such treatment (55,56).

We used two major criteria to evaluate evidence of the effectiveness of substance abuse treatment programming for women: study design and consistency of findings. A third criterion, strength of association, was not specifically considered to evaluate effectiveness but was used to determine overall impact. A recent study by Orwin et al. (50) included a meta-analysis evaluating the effectiveness of 33 substance abuse treatment programs for women. Orwin et al. defined strength of association, or effect size, as the standardized mean difference between groups.

Optimally, health interventions are evaluated through *study designs* using randomized, controlled trials, the standard method for establishing efficacy (57). An example of the best evidence would be a controlled clinical trial or series of trials in which women are assigned to a "standard" program representing typical substance abuse treatment or a "women's" program, and long-term results are compared. To avoid confounding, the standard program should be compared with just one additional element of the women's program. Of the seven randomized, controlled trials reviewed here, Dahlgren and Willander's study (58) came closest to this study design. Women were randomly assigned to treatment in either a regular ward/alcoholism treatment center or a women-only outpatient or residential setting. Results were compared after 2 years. The 7 randomized trials differed in interventions and methodologies, whereas the 31 nonrandomized studies used a variety of descriptive, cohort, preexperimental, and quasi-experimental study designs.

Consistency refers to the replication of findings by different studies with different populations. The studies reviewed here varied widely in study populations. For example, prenatal care was provided as an intervention to



methadone patients in one study (59) and to cocaine-dependent women in another (60). Of the 38 studies analyzed, 37 reported improved treatment outcomes. As summarized in Table 1, all seven randomized, controlled trials showed positive results. Three studies showed decreased substance use and increased program retention. Two showed no change in substance use but increased gestational length and birth weight; decreased occurrences of premature rupture of the membranes, preterm labor, preterm birth, and low birth weight; and increased prenatal care. One showed decreased injecting risk behaviors but no change in sexual risk behaviors or drug use per se, and the last showed positive psychosocial and HIV prevention outcomes. Thirty of the 31 nonrandomized studies showed positive results, including those for (in order of frequency) length of stay, decreased substance use, improved perinatal/birth outcomes and prenatal care, self-esteem and depression, and HIV risk reduction (Table 2).

The one study that did not report improved treatment outcomes was conducted in Australia. This study found no differences in treatment outcomes for 80 women in a women-only program and 80 women in two mixed-gender treatment programs (61). Both the women-only program and the mixed-gender treatment programs were based on the traditional disease model and 12-step philosophy, but the women-only program employed only female staff and provided residential child care. The characteristics of clients entering treatment did differ, however, with more lesbian women, women with dependent children, and women with a history of childhood sexual abuse or maternal substance abuse participating in the women-only program.

In this review, we explored the effects of specific components of substance abuse treatment programming for women: child care, prenatal care, women-only admissions, supplemental education sessions that address women-focused topics, mental health programming, and comprehensive programs that combine multiple components. Transportation was infrequently provided within the studies reviewed and was not evaluated by any study as a primary intervention; therefore, it is not discussed independently of other components.

Child Care

Most of the studies that evaluated the impact of child care examined services for children living with their mothers in residential treatment settings. Some of these programs also provided therapeutic care for siblings living nearby. Child care services often included care coordination among developmental evaluation services and children's treatment providers or

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support services, such as counseling and tutoring, for school-age children in the evenings.

In a clinical trial by Hughes and associates, women who lived with their children in therapeutic community treatment programs remained in treatment significantly longer than women whose children were placed with caretakers (62). Fifty-three women were randomly assigned to either the standard community condition ($n = 22$), in which children were placed with the best available caretaker, or the demonstration condition ($n = 31$), in which one or two of the children lived with their mother in the therapeutic community. Survival analysis indicated that women who were allowed to remain with their children remained in treatment significantly longer (mean length of stay 300 days) than did women whose children were placed with caretakers (mean length of stay 102 days). Less rigorous studies also found that programmatic changes aimed at addressing women's needs and allowing women to bring their children into residential treatment were associated with increased length of stay (e.g., Refs. 56,63). A study by Wobie et al. (56) suggested that the earlier a mother's infant resides with her in the treatment setting, the longer the mother will stay in treatment. In addition, measures of depression were lower and measures of self-esteem were higher for women with their infants than for clients who did not have their infants in the treatment facility. In some studies, child care was provided to study participants, but its impact was not evaluated. For example, child care made it possible for women with preschool-age children to participate in one study (59) and proved essential to the effective recruitment and retention of women in another study (60).

Prenatal Care

Four studies have evaluated the impact of prenatal care on treatment outcomes. A small-scale randomized trial study conducted by Carroll et al. (59) compared standard methadone maintenance to an enhanced treatment program that offered prenatal care, relapse prevention groups, positive contingency awards for abstinence, and therapeutic child care. A second study by Chang et al. (64) involved a nonrandomized experiment for the same intervention. Both studies found that women in the enhanced methadone program had three times as many prenatal visits and better birth outcomes than women in the standard program, but both studies used small samples.

Two studies examined the effectiveness of mental health interventions coupled with prenatal care, child care, HIV counseling, parenting and nutrition classes, and transportation (60,65). These studies reported high rates of abstinence from drug use or reduced drug use, retention in treatment,



compliance with prenatal care, and good perinatal outcome. Two additional studies evaluated substance abuse treatment interventions among pregnant women (such as comparing women enrolled in prenatal care with women enrolled in both substance abuse treatment and prenatal care), but these studies did not evaluate the effectiveness of prenatal care (54,66).

Women-Only Programs

Single-gender treatment is often advocated for women because substance abuse treatment programs tend to be male dominated in terms of number of patients and treatment approach (67). Single-gender treatment can be organized at the program level or, alternatively, at the group level within mixed-gender programs. The literature contains many reports of all-female treatment programs. However, only one randomized study in Sweden conducted by Dahlgren and Willander (58) compared women treated in a female unit consisting of an outpatient clinic and a residential ward to women placed in the care of traditional mixed-gender alcoholism treatment centers. A 2-year follow-up of patients showed a more successful rehabilitation both in terms of alcohol consumption and social adjustment (including employment status) for the women treated in the specialized female unit.

Using a nonrandomized design, Grella's study (68) of 4117 women treated in publicly funded residential treatment programs in Los Angeles compared outcomes from women-only and mixed-gender programs. Although women in women-only programs reported that they had more problems, they actually spent more time in treatment and were more than twice as likely to complete treatment than were women in mixed-gender programs.

Copeland et al.'s study (61) compared the results achieved by 80 subjects from a women-only treatment program with the results for 80 subjects from two traditional mixed-gender treatment programs. All programs used group therapy and an introduction to the 12-step treatment philosophy. The women-only treatment program also used a feminist-oriented treatment approach, including female counselors and child care. At entry into treatment, the women-only program had significantly more lesbian women, women with dependent children, women sexually abused in childhood, and women with a maternal history of substance dependence than did the mixed-gender programs. Six months following treatment, there were no significant differences in any measure of treatment outcome between the women in the two types of treatment programs, including self-reports of alcohol or drug use, a detoxification episode, a drug-related conviction, and AA/NA attendance.



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Other studies have evaluated treatment models using women-only groups introduced within mixed-gender programs, such as a multisystems model for family reintegration (69) or psychosocially enhanced treatment (70). Volpicelli et al. (70) randomly assigned cocaine-dependent mothers to either a case management-oriented outpatient treatment program or a psychosocially enhanced treatment (PET) program. Both programs offered outpatient group therapy-based treatment, on-site child care, and daily women-only group therapy sessions. The PET program also offered services such as unlimited individual therapy sessions and access to a psychiatrist. Analyzed with use of linear regression, program retention was significantly better for patients in the PET group ($t = 2.1, p = 0.038$). Overall, PET patients averaged 15.4 weeks in treatment, compared to 13.9 weeks for the case management group. Although cocaine use decreased from baseline levels in both groups, the PET group had significantly fewer days of cocaine use at 12-month follow-up than did the case management group ($t = 2.16, p < 0.04$).

Use of Supplemental Education Sessions

Supplemental education sessions consisted of structured groups (typically women only) within a substance abuse treatment program. Sessions often involved dissemination of materials and provision of social support among participants. One randomized study by Hiller et al. (71) evaluated a standard substance abuse treatment program supplemented with psychosocial workshops that consisted of weekly sessions on topics such as breast health and breast self-examination; sexual and reproductive anatomy; sexually transmitted diseases (STDs), including HIV and acquired immune deficiency syndrome (AIDS) prevention; plus assertiveness and communication skills. This approach was associated with more positive attitudes toward practicing safer sex and increased self-esteem. These types of supplemental psychoeducational sessions and workshops were also evaluated in several nonrandomized studies. Standard substance abuse treatment supplemented by workshops was evaluated both as the primary focus of an intervention (72) and in combination with other components. The other components included child care and prenatal or health care (56,73–75), the provision of educational materials and behavioral strategies (76), and comprehensive program restructuring to address the special needs of women (55,63,77).

Workshops, training, and groups focused on women's issues have been identified elsewhere as techniques effective in dealing with substance abuse problems of women (49,78). Although topics such as sexual health may have



appeared tangential to substance abuse treatment, they may nevertheless have resulted in increased length of stay in treatment and improved outcome.

Mental Health Components

As mentioned previously, one study by Volpicelli et al. (70) randomly assigned 84 cocaine-dependent mothers to either a case management-oriented outpatient treatment program or to a PET program that offered access to a psychiatrist, individual therapy sessions, classes on parenting, and high school equivalency education. Because individual therapy was the most extensively used service in the PET group, the authors speculated that individual therapy may have been the primary cause of PET's marginally better outcomes. Another study randomly assigned pregnant injecting drug users either to a six-session cognitive behavioral intervention in addition to their usual methadone maintenance treatment or to their usual methadone maintenance treatment only (79). At a 9-month follow-up, the intervention group had significantly reduced some HIV risk-taking behaviors (in particular, injecting risk behaviors associated both with "typical" drug use and "binge" drug use).

Kukko and Halmesmaki (65) evaluated the efficacy of a counseling program for drug-abusing pregnant women. In 61% of pregnancies, the woman succeeded in either quitting totally or reducing drug abuse, resulting in lowered incidence of preterm birth and increased gestational age and birth weight. Bander et al. (80) reported on a program providing a combination of individual and group counseling, home and hospital visits, cultural and recreational activities, vocational training, employment counseling, access to medical care and legal advice, and bus passes to inner-city women alcoholics. At a 21-month follow-up, 19% of the patients were judged by their counselors to have been abstinent 6 months or more, and 26% of the patients were employed during their involvement with the program. Field et al. (73) investigated the effects of an intervention for polydrug-using adolescent mothers, consisting of group therapy, psychoeducational sessions, urine monitoring, self-help group sessions, and individual and drug counseling. The program also included child care and educational, vocational, and parenting classes. At 12 months, participants demonstrated a lower incidence of continued drug use and repeat pregnancy, and a greater number continued school, received a high school or general equivalency diploma, or were placed in a job. The drug-exposed infants (compared to a non-exposed control group) had improved psychosocial functioning, as well as significantly greater head circumference and fewer pediatric complications.

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The effectiveness of a therapy group addressing grief and loss among women enrolled in a gender-specific residential substance abuse treatment program was examined in another study (81). Women who participated in the grief group remained in treatment longer and had higher self-esteem at follow-up. A seventh study examined the living arrangements of mothers and babies in a residential treatment center that offered mental health programming, but it did not evaluate the effect of mental health programming per se (56).

Comprehensive Programs

Although several studies evaluated combinations of components that address women's needs (e.g., Refs. 70,82,83), certain studies described programs worth noting for their comprehensiveness in integrating women's needs into substance abuse treatment programming. Knight et al. (74) described a 12-month residential program for women with dependent children in which children were integrated into the treatment program through play therapy, family therapy, and recreational activities. Women applied what they learned in workshops, such as opening a savings account and making regular deposits, to help them strengthen basic life skills, build positive habits, and begin to plan for the future.

Stevens and Arbiter (55) described a therapeutic community that provided long-term residential treatment for addicted pregnant women and women with children. Under the direction of a female program director, the 18-month therapeutic community program put women's issues and needs at the center of its efforts. Aspects of the interventions included the following modifications: 1) increasing the number of female staff members or role models who are recovering substance abusers; 2) adding groups/seminars that focused specifically on women's issues (e.g., emotional safety, building female friendships, molestation, rape, abortion, prostitution, children); and 3) allowing children to live with mothers in treatment. Comparing women who completed treatment with those who dropped out, the authors found decreased alcohol and other drug use, fewer arrests for probation violations, less unemployment, and decreased reliance on government assistance among treatment completers.

Wexler et al. (84) presented findings from a later study of this same therapeutic community. Further modifications were made for the later study so that appropriate family-style housing for the mother and children was possible, and an on-site therapeutic nursery for children under the age of 3 could be provided. Changes in the program were also made to include parenting classes; family sessions with a developmental specialist;



after-school programs for the preschool and school-age children; an additional focus on nutrition and health, especially for the pregnant women; and adjustment of the schedule for curriculum and other daily activities to balance the women's treatment needs with parenting responsibilities. Major 6- and 12-month posttreatment improvements included increases in employment and decreases in criminality, substance abuse, and psychological disturbance.

Wobie et al. (56) examined the effects of babies living with their mothers in a residential treatment center that provided addiction and parenting groups; assessment and coordination of educational needs; on-site health care and health care education; smoking cessation programs; therapeutic child care; mental health counseling; addictions counseling; various other groups, such as play groups for mothers and babies; and workshops on self-esteem, sexual abuse, sexual orientation, and HIV and AIDS awareness. Findings suggested that the earlier a mother's infant resides with her in the treatment setting, the longer her length of stay will be. In addition, measures of depression were lower and measures of self-esteem were higher for women with their babies than for clients who did not have their infant in the treatment facility.

DISCUSSION

Review of the literature on the effectiveness of substance abuse treatment programming for women identified 38 studies of the effect of such programming on substance abuse treatment outcomes. Study characteristics and program components were examined. The studies were separated into two groups based on study design: randomized, controlled studies and non-randomized studies. Within each group, findings consistently showed improved treatment outcomes, based on multiple measures of outcome. The studies reviewed here provide some evidence of the effectiveness of the following six components of substance abuse treatment specifically designed for women:

1. Child care,
2. Prenatal care,
3. Women-only admissions,
4. Supplemental services and workshops that address women-focused topics,
5. Mental health programming,
6. Comprehensive programming.

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Prior reviews of one or more of these components also found positive outcomes. Duckert's review (49) indicated that most women-only programs reported favorable outcomes (e.g., 20%–60% of participants improved their drinking outcomes). Orwin et al. (50) found almost uniformly positive mean effect sizes when they compared women-only and traditional mixed-gender treatment programs. Findings from that analysis also suggested that enriching women-only or female-sensitive mixed-gender treatment programs with enhancements such as prenatal care, therapeutic child care, or HIV prevention intervention adds value above and beyond the effects of standard, women-only programs. Howell et al. (2) reviewed the literature on outcome studies of substance abuse treatment for pregnant women, suggesting that retention is facilitated by the provision of support services such as child care, parenting classes, and vocational training. Marsh and Miller's review (45) concluded that programs that provide ancillary services such as child care and those that involve family members and significant others hold the greatest promise for women with drug and alcohol problems. It is important to note that programs with such services may increase the number of women and alter the type of women who receive treatment (e.g., women who need child care).

There are several possible explanations for the consistent findings of positive outcomes associated with substance abuse treatment programming for women. First, certain components of substance abuse treatment programming for women may reduce barriers to treatment entry and retention. Research suggests that the provision of child care may facilitate women's entry into or completion of drug abuse treatment (34). In addition, Copeland and Hall's (28) research suggests that women-only programs may be more able to attract and retain women in treatment than mixed-gender programs because women with a history of trauma and other women (e.g., lesbian women and those who have worked as prostitutes) are especially vulnerable to humiliation in mixed-sex treatment services. Second, combining substance abuse treatment and supplemental services such as prenatal care, workshops, and mental health programming may increase the likelihood that women will receive supplemental services. In particular, prenatal care has been linked to reductions in the adverse effects of ongoing maternal drug abuse (85). Third, such services may provide emotional and tangible supports to allow substance-abusing women to concentrate on recovery and may give special attention to women who generally feel stigmatized because of their substance use and rejected by health professionals (86).

There are several important limitations of our findings. First, our findings may not be generalizable to all treatment programs and treatment populations because we focused on peer-reviewed articles only. In contrast to the fugitive literature, peer-reviewed articles may be more likely to



present positive results (87,88). Second, most of the articles reviewed here used nonrandomized designs, although randomized, controlled trials will remain invaluable in analyzing the effectiveness of substance abuse treatment programming for women. Other potential limitations are the small sample sizes used by many studies and differences in outcome measures, measurement instruments, and procedures, which make comparisons of studies difficult. Furthermore, many of the studies used self-reported data, which have in general been demonstrated to be reliable and valid (89) but which may not be fully reliable for the populations in question here, such as perinatal populations (90). To substantiate or complement the information derived from participant self-report, research protocols for future studies of effectiveness of substance abuse treatment programming for women should include corroborating evidence from external sources of information, such as health care providers, social services agencies, and criminal justice records.

Follow-up periods varied widely among studies. Many studies acknowledged that it was not possible to find some women after they left treatment, necessitating the use of data available at discharge. Long-term randomized, controlled trials using standardized data collection instruments will provide vital information about the effectiveness of substance abuse treatment programming for women.

Few of the studies identified in this or any previous review evaluated cost-effectiveness. In their analysis of neonatal intensive care and drug treatment costs, Svikis et al. (91) used cost-effectiveness criteria in comparing outcomes for two samples, a treatment ($n = 100$) and a nontreatment ($n = 46$) control group. Service measures included costs per mother/infant pair and duration of neonatal intensive care. Treatment patients showed better clinical outcome at delivery, with higher average infant birth weight measures and Apgar scores. These outcomes, adjusted for differences in age, education, and income, were statistically significant. The authors also reported significant mean net savings for the sample of women who attended substance abuse treatment, compared to the cost for non-treatment controls ($p < 0.01$, controlling for age, education, and cocaine use).

Another study by Williams compared the costs of crime and treatment for detoxification only, methadone only, residential only, and residential/outpatient combined within a sample of 439 pregnant women who entered publicly funded treatment programs (92). Projected to a year, the avoided costs of crime minus treatment costs ranged from \$33,000 for residential only to \$3,000 for detoxification. Multivariate regressions controlling for baseline differences between the groups showed that reductions in crime and related costs were significantly greater for women in the two residential programs.

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Additional research studies with cost-effectiveness evaluation components are needed to provide a sufficient basis for future funding decisions regarding substance abuse treatment programming for women. However, there are a number of important clinical measures that also need to be employed, and programming for women should not be judged solely on the basis of whether it saves money. Preferably, the estimated cost-effectiveness of programming for women should be compared with that of traditional substance abuse treatment programming. To make reliable comparisons, however, cost-effectiveness analyses must use data from better controlled studies.

In conclusion, this review suggests that for substance-abusing women, treatment programming that includes components that specifically address women's needs can be beneficial. Programs that narrowly define the problems women face solely as drug and alcohol abuse may not substantially improve outcomes. This review underscores the continued need for well-designed studies of substance abuse treatment programming to improve the future health and well-being of women and their offspring.

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