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Substance Abuse in Women

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EPIDEMIOLOGY

Gender differences in rates of substance abuse have been consistently observed in the general population and treatment-seeking samples, with men exhibiting significantly higher rates of substance use, abuse, and dependence.[1-3] However, recent epidemiologic surveys suggest that this gap between men and women has narrowed in recent decades.[3,4] For example, surveys in the early 1980s estimated the male/female ratio of alcohol-use disorders as 5:1,[5] in contrast to more recent surveys that report a ratio of approximately 3:1.[6]

Data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC; N = 43,093), the largest and most recent study of substance use and other psychiatric disorders, showed that men were 2.2 times more likely than women to have drug abuse, and 1.9 times more likely to have drug dependence.[1] Data regarding prescription drugs are less consistent. Although several studies indicate that rates of nonmedical prescription drug use are higher among women than men, particularly for narcotic analgesics and tranquilizers,[7] other studies report equivalent or higher rates among men.[8]

Telescoping

Telescoping is a term used to describe an accelerated progression from the initiation of substance use to the onset of dependence and first admission to treatment.[9-11] The phenomenon has been consistently observed in investigations of gender and substance-use disorders, with studies typically reporting an accelerated progression among women for opioids, cannabis, and alcohol.[9] Thus, when women enter substance abuse treatment they typically present with a more severe clinical profile (eg, more medical, behavioral, psychological, and social problems) than men, despite having used less of the substance and having used the substance for a shorter period of time compared with men.

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BIOLOGICAL ISSUES

Neuroactive Gonadal Steroid Hormones

Ovarian steroid hormones (eg, estrogen, progesterone), metabolites of progesterone, and negative allosteric modulators of the γ-aminobutyric acid A (GABA-A) receptor, such as dehydroepiandrostenedione (DHEA), may influence the behavioral effects of drugs.[12,13] In human studies, the follicular phase of the menstrual cycle, in which estradiol levels are high and progesterone low, is associated with the greatest responsivity to stimulants.[14] A study investigating response to cocaine administration found that women in the luteal phase reported lower ratings of feeling high than women in the follicular phase or men.[14] Whether observed differences are accounted for by enhancing effects of estradiol or attenuating effects of progesterone remains unclear. However, one study found that progesterone attenuates the subjective response to smoked cocaine in women, but not men.[15] Studies of nicotine show a potential greater saliency in the luteal phase of the cycle,[12,16] although the effect of gonadal steroids on responses to alcohol is less clear than for other substances of abuse.[17]

Sex Differences in Stress Reactivity and Relapse to Substance Abuse

Sex differences in neuroendocrine adaptations to stress and reward systems may mediate women's susceptibility to drug abuse and relapse.[18] Several studies have examined sex differences in stress response (eg, subjective, autonomic) and relapse.[18,19] Among substance-dependent subjects, attenuated neuroendocrine stress response in women (ie, blunted adrenocorticotropic hormone and cortisol) has been shown following exposure to stress and drug cues.[20] This hypothalamic-pituitary-adrenocortical (HPA) dysregulation in women may be one key to enhanced vulnerability to relapse in response to negative affect, as it may be associated with greater emotional intensity at lower levels of HPA arousal.[21]

ROLE OF CO-OCCURRING DISORDERS

Mood and Anxiety Disorders

Lifetime rates of mood and anxiety disorders are significantly higher among women than men, with and without substance-use disorders.[22] A recent study by Goldstein[23] using the wave 1 NESARC (n = 24,575) found that the 12-month prevalence rates of mood and anxiety disorders among women with substance-use disorders were 29.7% and 26.2%, respectively. The most common mood disorder was major depressive disorder (15.4%) and the most common anxiety disorder was specific phobia (15.6%).

Given this high co-occurrence, a comprehensive psychiatric assessment is critical. Because chronic alcohol or drug use may enhance vulnerability for these disorders, or lead to organic changes that manifest as a mood or anxiety disorder, careful assessment is necessary to differentiate substance-induced, transient symptoms from a disorder that warrants treatment. One way to do this is to carefully monitor symptoms during a period of abstinence from alcohol or drugs. A family history of mood/anxiety disorders, onset of mood/anxiety symptoms before the onset of the substance-use disorder, and sustained mood/anxiety symptoms during periods of abstinence all point toward an independent mood or anxiety disorder.[24]

If an independent mood or anxiety disorder is diagnosed, evidence-based treatment that will adequately address both conditions is warranted. Few investigations have examined gender differences in response to psychotherapeutic or pharmacotherapeutic treatments for mood and anxiety disorders among individuals with co-occurring substance-use disorders, and studies examining agents targeting substance use, such as naltrexone or disulfiram, as add-

on treatment of individuals with co-occurring mood or anxiety disorders is under explored. One study[25] examined gender differences among alcohol-dependent outpatients in the effectiveness of sertraline among type A and B alcoholics, of whom 57.9% had major depression. Type A alcoholic men, but not women, responded more favorably to sertraline than placebo (ie, longer time to relapse, fewer days drinking). No gender differences among type B alcoholics were observed.

Eating Disorders

Ninety percent of the cases of anorexia nervosa (AN) and bulimia nervosa (BN) are found in women. Eating disorders (EDs) are estimated to be 2 to 3 times higher in women than men.[26] Among women with substance-use disorders, high rates of EDs, in particular the purging subtypes of bulimia, have been reported. In their review of clinical populations, Holderness and colleagues[27] reported that lifetime ED behaviors co-occurred with substance-use disorders in up to 40% of women. Among women with BN or binge-eating disorder, rates of substance abuse are greater among those with, compared with without, a history of sexual or physical abuse.[28]

Treatment is complex and requires a multidisciplinary approach including, for example, nutritional counseling and medication supervision.[29] Evidence-based behavioral treatments for EDs include cognitive behavioral therapy and interpersonal therapy, and pharmacotherapy for EDs has focused on antidepressant medications. At present, no integrated, evidence-based treatments for EDs and substance-use disorders are available.[30] Like many co-occurring psychiatric conditions, individuals presenting to treatment with substance-use disorders and EDs typically receive treatment in programs specializing in substance-use disorders or EDs. They rarely receive services for both disorders. A recent national survey of screening and treatment practices at 351 addiction treatment programs revealed that only half (51%) screen for EDs at intake or assessment, and only 29% admit patients who screen positive for EDs.[30]

Posttraumatic Stress Disorder

The prevalence of posttraumatic stress disorder (PTSD) is 1.4 to 5 times higher among individuals with, compared to those without, co-occurring substance-use disorders.[31] Similarly, data from the Australian National Survey of Mental Health and Well-being found that 34.4% of respondents with PTSD also had at least 1 substance-use disorder.[32] Among treatment-seeking women with substance abuse, rates of physical or sexual abuse are high, ranging from 55% to 99%,[33] with many of these women manifesting trauma-related symptoms consistent with a diagnosis of PTSD.

Consensus is lacking regarding the best treatment approach for co-occurring PTSD and substance-use disorders; however, accumulating data confirm the efficacy (ie, significant before and after decreases in PTSD and substance-use symptoms) of integrated interventions that address both conditions simultaneously.[34-37] Addressing trauma-related symptoms early in treatment may provide the opportunity for improved likelihood of recovery from substance-use disorders, as many individuals report using alcohol or drugs in response to symptoms of PTSD (eg, sleep impairment, flashbacks, nightmares, avoidance of trauma reminders, hyperarousal). Selective serotonin reuptake inhibitors are the pharmacological treatments of choice for PTSD. However, only 3 published studies have examined their use among patients with co-occurring alcohol- or drug-use disorders, and all of these studies have examined the use of sertraline.[38-40] The findings suggest that the medication-responsive group tended to have onset of PTSD preceding the onset of the substance-use disorder (ie, primary PTSD), highlighting the potential relationship between temporal order of onset and treatment outcome.

SPECIFIC SUBSTANCES

Alcohol

Although men consume and misuse alcohol at significantly higher rates than women, this gender gap has decreased over time[3] and has been well documented in several large epidemiological studies. For example, the 2001 to 2002 NESARC, which sampled more than 42,000 individuals, found that sex differences in rates of alcohol use and abuse or dependence were smallest for younger cohorts (with cohorts ranging from 1913–1932 to 1968–1984).[3] In a similar vein, examination of changes in the age of initiation of alcohol use in the past 50 years shows significant narrowing of the gender gap.[3,41] In the 1950s, the male/female ratio of initiation in the 10- to 14-year-old age group was 4:1, and by the early 1990s it was 1:1.

Compared with men, women experience significantly shorter time intervals between the initiation of alcohol use and the onset of significant alcohol-related problems and treatment entry.[9] This accelerated course, known as telescoping, may be attributed to a variety of biological, socioeconomic, psychological, and cultural factors that affect women. For example, compared with men, women may be more adversely affected by alcohol because of the lower percentage of total body water, decreased first pass metabolism because of lower levels of alcohol dehydrogenase in the gastric mucosa, and slower rates of alcohol metabolism.[42,43]

Gender differences in motives for alcohol use have been observed, with women being more likely than men to consume alcohol in response to stress and negative emotions. In contrast, men seem more likely than women to consume alcohol to enhance positive emotions or to conform to a group.[44] Compared with men, women with alcohol-use disorders are significantly more likely to have co-occurring psychiatric disorders[22,23,27] that may serve to impede substance-use treatment efforts. Thus, prevention and treatment intervention efforts should incorporate these gender differences in motives and co-occurring psychiatric conditions to enhance effectiveness.[45]

Women are less likely than men to seek treatment, and more likely to face gender-specific treatment barriers.[46] Various factors, such as childcare responsibilities, transportation, financial status, and social stigma, may help explain this finding. To enhance treatment seeking and retention, programs should consider offering childcare, prenatal care, women-only treatment, and services specific for women's issues.[47] Interventions specifically designed for women-only groups show promise, indicating that women-only treatment is associated with fewer relapses and higher treatment satisfaction ratings.[48,49]

Stimulants

Although rates of stimulant use are similar among men and women,[50] preclinical and clinical studies suggest that women may be particularly vulnerable to the reinforcing effects of stimulant drugs.[51,52] Recent public health monitoring indicates that methamphetamine use is increasing, with an estimated 5.8% of individuals aged 12 years and older in the United States endorsing lifetime methamphetamine use.[53] According to the Treatment Episode Dataset (TEDS), admissions for methamphetamine between 1995 and 2005 more than doubled from 3.7% to 9.2%.[54] Increased use among pregnant women has also been observed. Among pregnant women admitted to federally funded substance abuse treatment centers in 1994, 8% were admitted for methamphetamine dependence; that proportion rose to 24% in 2006,[55] leading the study's investigators to conclude that methamphetamine is the primary substance of abuse for which pregnant women seek care.

The reinforcing effects of stimulants may be strongly influenced by women's hormonal milieu. Basic and clinical studies show that estrogen increases, and progesterone decreases, the reinforcing effects of stimulants for women.[14,15,51,56] In response to cocaine administration, women have been found to report increased subjective feelings of high and increased heart rate during the follicular phase, when levels of estrogen are high and progesterone levels are low.[14,15] Moreover, exogenous administration of progesterone among women has been shown to result in attenuated subjective responses to cocaine administration among women.[15]

Cognitive behavioral therapy has been shown to be as effective in treating stimulantuse disorders among women as among men.[57] Modified therapeutic community programs may also be effective for methamphetamine-using women.[58] At present, there are no approved pharmacotherapy treatments for cocaine dependence. However, preclinical studies suggest that baclofen, a GABAergic drug, may help reduce cocaine use among women, in particular.[59] In contrast, studies using naltrexone to reduce cocaine use,[60] and bupropion to decrease methamphetamine use,[61] indicate that these pharmacotherapies may be more effective for men than for women.

Opioids

Prescription opioids—The use of prescription opioids has soared in the past 2 decades. For example, from 1992 to 2003, a 141% increase in prescription opioid abuse was reported.[62] Two large epidemiological surveys found that women engage in the nonmedical use of prescription opioids more often than men.[7] In contrast, other studies suggest that rates of nonmedical use are similar for men and women,[53] or higher among men.[63] Gender differences in prescription opioid use may also occur within specific age groups. Regarding prescription opioid abuse or dependence, data from the 2002 to 2004 National Survey on Drug Use and Health (NSDUH) found that women aged 12 to 17 years had higher rates than men, but that men aged 18 to 25 years had higher rates than women.[64]

Gender differences in motives for use and aberrant drug-taking behaviors have also been observed. Among college students, McCabe and colleagues[65] found that men were significantly more likely than women to use prescription opioids for experimentation (35.3% vs 18.4%) or to get high (39.4% vs 24.4%). A recent study of 121 chronic pain patients found that women were significantly more likely than men to hoard unused medications and to use additional drugs (eg, sedatives) to enhance the effectiveness of prescription opioids.[66]

Heroin and intravenous drug abuse—Approximately 0.2% of the population of the United States aged 12 years and older endorses lifetime heroin use.[50] One study (N = 408) found that, compared with men, women use smaller amounts of heroin, use heroin for shorter periods of time, and are less likely to inject heroin.[67] A recent study of 111 individuals who were opioid-dependent and not in treatment found that women, compared with men, had more severe vocational impairment and used significantly more cocaine.[68]

Research indicates that women's injection of drugs may be particularly influenced by their sexual partner's injection risk behavior.[69] Powis and colleagues[67] found that women who injected heroin were significantly more likely than men to have a sexual partner who also injected heroin (96% vs 82%). In addition, women are also more likely than men to be introduced to injection by their sexual partners.[67] Powis and colleagues[67] reported that 51% of the female heroin users were first injected by their male sexual partner, whereas 90% of men were injected the first time by a friend. Compared with men who inject, women who inject report being more influenced by social pressure and by sexual partner encouragement.[70]

Risks of sharing needles or preparation equipment include enhanced vulnerability to numerous physical diseases, including hepatitis B and C, as well as human immunodeficiency virus (HIV).[70] To date, it is unclear whether there are significant sex differences in injection risk behaviors. Frajzyngier and colleagues[70] failed to observe sex differences in sharing needles during the first injection. However, women were significantly more likely than men to share preparation equipment. Other results suggest that, although women may be more likely to share needles,[71,72] women are also more likely than men to engage in risk-reducing behaviors such as carrying clean syringes.[72]

Treatment—Less than one-fourth of individuals with opioid-use disorders receive treatment.[73] Preliminary findings for a manual-based, 12-session group treatment of women using methadone suggests that this may be an effective way to treat opioid dependence in women.[74] Regarding opioid agonist therapies, Jones and colleagues[75] found that men and women remained in treatment for a significantly longer period of time when given methadone as opposed to *L-α acetylmethadol* (LAAM). Although buprenorphine, LAAM, and methadone reduced drug use for all participants, results suggest that sex differences may occur in the effectiveness of these pharmacologic agents. Specifically, buprenorphine was associated with significantly fewer positive urine samples and less self-reported opioid use than methadone among women. LAAM was associated with less drug use than buprenorphine among men.

Cannabis

Marijuana is the most commonly used illicit drug in the United States. According to the 2004 NSDUH, approximately 96.6 million Americans (40.2%) have tried marijuana.[76] Compared with women, men are more likely to use marijuana daily (2.0% vs 0.7%),[77] have more initial opportunities to use marijuana,[78] and initiate marijuana use at a younger age (16.4 years vs 17.6 years).[79]

Unlike other substances, such as stimulants, a relationship between the menstrual phase and women's use of,[80] or response to, marijuana (eg, mood, pulse rate)[81,82] has not been observed. However, marijuana use may be related to the menstrual cycle for women who have severe premenstrual syndrome or premenstrual dysphoric disorder.[82]

Attention processes and memory may be affected by marijuana use for up to 7 days following use.[83] The effects of marijuana use on neuropsychological processes may differ by sex. In a study of heavy versus light marijuana users, Pope and colleagues[84] reported that visual-spatial memory was impaired for women who smoked heavily, compared with women who were light smokers. However, no such difference was observed for men.

Research suggests that women enter treatment for marijuana-use disorder after significantly fewer years of use than men do (ie, telescoping effects).[9] Because of the low numbers of women in treatment, no studies have been published regarding gender differences in the effectiveness of treatment of marijuana-use disorders. However, research suggests that cognitive behavioral therapy, contingency management treatments, motivational enhancement therapies, and administering oral tetrahydrocannabinol (THC) and nefazodone are effective treatments for marijuana dependence.[85-88] However, a limitation of these studies is that they were predominately conducted with male participants.

Nicotine

In 2008, approximately 28.4% citizens of the United States reported being current nicotine users. Men use nicotine at higher rates than women (34.5% vs 22.5%),[50] but women may be at an increased risk for health problems caused by smoking. Women who smoke are twice as

likely as men to have heart attacks,[89] women experience faster lung deterioration than men, and are at increased risk for chronic obstructive pulmonary disease[90] and lung cancer.[91] Smoking may also cause women to commence menopause earlier, experience increased menstrual bleeding, have difficulty becoming pregnant, or to experience spontaneous abortion.

Pharmacological and nonpharmacological factors influence nicotine use. Non-pharmacological factors are stimuli that are often paired with nicotine. Such stimuli can be proximal (eg, the smell of a cigarette) or distal (eg, people associated with smoking).[92] Compared with men, women seem to be less influenced by nicotine factors[93,94] and more influenced by proximal cues.[95] These gender differences in underlying motivations or triggers for use may help inform etiologic understanding of nicotine use and help improve the design of gender-sensitive treatment approaches.

Compared with men, women may have more difficulty quitting smoking. A study conducted by the Centers for Disease Control and Prevention,[96] which surveys more than 100,000 citizens of the United States, indicates that more than 1 million fewer women than men older than 35 years are able to quit smoking.[97] Gonadal steroid hormones may be associated with women's success at smoking cessation.[12,16] Women who attempt to quit during the first 14 days of their menstrual cycle (ie, the follicular phase) seem more likely to succeed than women who attempt to quit in the second half of the cycle (ie, the luteal phase).[12,16] Another obstacle to smoking cessation is women's concern about weight gain. Women worry twice as much about weight gain caused by smoking cessation than men,[98] and relapse 3 times more often than men because of weight gain.[99]

Sex differences in the efficacy of nicotine replacement therapy (NRT) may exist, but research to date is inconclusive. For example, a meta-analysis of 11 placebo-controlled NRT patch trials found that NRT is equally effective for men and women.[100] More recently, Perkins and Scott[101] added 3 placebo-controlled trials to this meta-analysis. The findings revealed that NRT is significantly more effective for men than women. Studies examining non-nicotine medication (eg, bupropion, varenicline) report equal effectiveness in men and women up to 12 weeks after treatment,[102,103] and bupropion may be a particularly effective method for women because it has been found to also help relieve depression.[103] Although medications are the standard treatment approach, therapy and counseling enhance the efficacy of medication treatment and may be more effective in women than men.[104] Interventions that teach women how to cope with cues and address co-occurring mood and anxiety disorders may be particularly helpful.

A pertinent nicotine-related concern for women is smoking during pregnancy.[105] Behavioral treatment approaches are particularly important for smoking cessation during this time, as many medications are contraindicated in pregnancy. Modifications may be made to therapy to tailor it for pregnant women (eg, incentives for cessation, such as vouchers that can be exchanged for baby supplies) while women are pregnant and after delivery. These modifications should continue after the baby has been delivered, because the majority (65%) of women who quit smoking during pregnancy relapse within 6 months of delivery.[106]

TREATMENT OUTCOME FOR WOMEN WITH SUBSTANCE-USE DISORDERS

Data from the TEDS, which captures data on national treatment admission rates, report that the overall proportion of men to women within the treatment system has remained fairly constant from 1995 to 2005 at 2:1.[107] A recent review of the literature between 1975 and 2005 concluded that women are less likely to enter substance abuse treatment than men.[46]

However, once women enter treatment, gender itself is not a predictor of treatment retention, completion, or outcome.[46] Several gender-specific predictors of outcome, and patient characteristics and treatment approaches can affect outcomes differentially by gender.[46] Some characteristics have been shown to be associated with more favorable outcomes for men and women, such as greater financial resources, fewer mental health problems, and less severe drug problems.[46,108] Studies in women-only samples have found associations between certain characteristics and retention, including better psychological functioning, higher levels of personal stability and social support, lower levels of anger, treatment beliefs, and referral source.[46,109,110]

Gender differences in treatment referral sources have been documented, highlighting the differential pathways by which women and men enter substance abuse treatment facilities. For example, significantly more men than women are referred to treatment through the criminal justice system (40% men vs 28% women). Approximately twice as many women as men (15% women vs 6% men) are referred from other community agencies, such as welfare, mental health, and other health care providers.[107,111] The number of female prisoners in the United States is growing rapidly (eg, 53% since 1995), which means that the criminal justice system is increasingly becoming more relevant to the lives of women with substance-use disorders.[112] This increase in the number of female prisoners is largely the result of changes in sentencing for drug-related charges that have disproportionately affected women, particularly women of color.[112]

In treatment seeking for women, their relationship with and responsibility for children is particularly important. Most women who enter substance abuse treatment are mothers, and at least half have had contact with child welfare.[113,114] One study of methadone maintenance treatment found that women who were residing with their children were significantly more likely than women not residing with their children to enter treatment.[115] For some women, residing with their children may serve as an impediment to treatment entry if they fear they may lose custody of their children.[116] Once in treatment, women who are able to keep their children with them or retain custody of their children while in treatment are more likely to stay in treatment.[117]

Differences in the sources of payment for substance abuse treatment have also been reported. Significantly more men than women report self-pay (26% men vs 18% women) and more women than men report being dependent on public insurance (26% women vs 12% men).[107] This finding suggests that women may be more vulnerable to changes in insurance-related benefits and coverage because of their greater reliance on public insurance to pay for treatment. In addition to childcare and financial issues, other factors may present as impediments to women's treatment seeking and use. Social stigma, lack of awareness regarding treatment options, concerns about confrontational approaches that were pervasive in male-dominated traditional substance abuse treatment, co-occurring mental disorders or a history of trauma and victimization, as well as homelessness all present possible barriers for women.

Gender-specific Treatment of Women with Substance-use Disorders

To date, most substance abuse treatment models have been designed for men and based predominantly on male norms.[46,118] However, gender-specific interventions that are designed to deliver information and services tailored for women are beginning to emerge in response to mixed-gender programs, which often fail to address women's specific needs, such as childcare assistance, pregnancy, parenting, domestic violence, sexual trauma and victimization, psychiatric comorbidity, housing, income support, and social services.[46,118-120]

It is unclear at this point whether gender-specific treatments are superior.[46,47,121] However, this research is severely limited because only a few randomized clinical trials have examined the relative effectiveness of comparable women-only versus mixed-gender interventions.[49] In a meta-analysis examining single-gender substance abuse treatment of women, Orwin and colleagues[119] concluded that single-gender treatment was effective, but its strongest effect was on pregnancy outcomes, psychological well-being, attitudes/beliefs, and HIV risk reduction. One study that randomized women (N = 1573) to women-only versus mixed-gender treatment found no significant differences in retention.[122] In contrast, another study that randomized cocaine-dependent women to a women-only day treatment program or a mixed-gender outpatient program found that participants in the women-only program had significantly higher retention rates[123] (60.2% vs 46.1%). More recently, treatment outcomes and costs of women-only and mixed-gender day treatment programs were compared among 122 women randomized to a women-only program or 1 of 3 standard mixed-gender programs.[124] Compared with the hospital-based program, participants in the women-only program showed significantly lower total abstinence during the follow-up. Limitations included a small sample size and the focus on only day treatment programs.[46]

In a recent stage I behavioral development trial, Greenfield and colleagues[49] developed a manual-based, 12-session women's recovery group (WRG; n = 16) and compared WRG with mixed-gender group drug counseling (GDC; n = 7), an effective manual-based treatment of substance-use disorders. During the 12-week treatment phase, WRG and GDC were equally effective in reducing substance use, but WRG showed significantly greater improvement in reductions in drug and alcohol use during the 6-month follow-up phase. In addition, women were significantly more satisfied with WRG than GDC.[49] Secondary analyses revealed a 3-way interaction effect of treatment condition, time, and baseline Brief Symptom Inventory scores, indicating that women with greater baseline psychiatric severity had greater reductions in substance use during treatment and follow-up if they were in the WRG rather than the GDC condition.[125] Furthermore, women with low self-efficacy showed improved treatment outcomes if assigned to WRG compared with the GDC group.[126]

Behavioral Couples Treatment

For women, the risk of consuming alcohol secondary to marital discord, divorce, negative emotional states, and interpersonal conflict is higher than for men.[44,127] Similarly, having a partner who abuses alcohol or drugs is more strongly related to relapse for women than for men.[114] Because of this, treatment interventions designed specifically to address these dyadic issues may be particularly beneficial. Behavioral couples therapy (BCT) is founded on 2 fundamental assumptions: (1) family members, specifically spouses or other intimate partners, can reward abstinence; and (2) a reduction of relationship distress and conflict leads to improved substance-use outcomes by reducing possible antecedents to relapse and heavy use. Participation in BCT results in significantly less partner violence, higher rates of marital satisfaction, lower substance-use severity, greater improvements in psychosocial functioning of children living with parents, and better cost benefit and cost-effectiveness compared with traditional individual-based treatments (IBTs).[128] In one study of 138 married or cohabiting women, Fals-Stewart and colleagues[128] randomly assigned subjects to: (1) BCT, (2) IBT, or (3) a psychoeducational attention control treatment (PACT) condition. The findings showed that women who received BCT, compared with IBT or PACT, had significantly fewer days drinking and higher levels of dyadic adjustment during a 1-year follow-up period.[128]

CONCLUSIONS AND FUTURE DIRECTIONS

Gender differences in substance-use disorders and treatment outcomes for women with substance-use disorders have been a focus of research in the last 15 years. The initiation, use patterns, acceleration of disease course, and help-seeking patterns are affected by gender differences in biologic, psychological, cultural, and socioeconomic factors. Important gender-specific factors also predict women's substance abuse treatment entry, retention, and outcomes. Understanding the basic biological mechanisms that underlie these gender differences in vulnerability and responsiveness to substances will enhance the development of gender-specific treatments. Additional research is also necessary to elucidate gender differences in response to specific pharmacologic and behavioral treatments, to identify subgroups of women who can benefit from single-gender versus mixed-gender treatments, and to improve understanding of the effectiveness and cost-effectiveness of gender-specific versus standard treatments.

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