

Nursing Knowledge about Alcohol Use and Alcohol Problems in Women: a Review of the
Literature

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Abstract

In this paper, we review the nursing empirical literature on alcohol and women's health published over the last five years (2005 to 2010). A total of 36 data-based papers authored by nurse investigators met eligibility criteria and were included in this review. Most were single studies by individual nurse investigators; few studies reflected ongoing programs of research related to alcohol and women's health. Studies were categorized into four main groups including; 1) determinants of alcohol use and alcohol problems, 2) patterns of use, assessment of alcohol use, and comorbidity; 3) consequences of alcohol use, and, 4) the effects of treatment or specific interventions and the contributions of nursing research to the knowledge base of each group are summarized. Then, we propose a research agenda for nursing that addresses the most pressing issues related to alcohol use and alcohol problems in women.

Key words: women's health; sex differences, gender differences, risk behavior, comorbidity

Nursing Knowledge about Alcohol Use and Alcohol Problems in Women: a Review of the Literature

Alcohol dependence among women is an area of growing concern. Although alcohol dependence is more prevalent in men than women, the gender gap for alcohol dependence is converging, particularly for persons between 30 and 64 years of age (Grant et al., 2004). In addition, the physical consequences of alcohol use to various organ systems, e.g. liver and brain, are more severe in women, suggesting that women have a greater physiologic vulnerability to the effects of alcohol than men (Epstein, Fischer-Elber, & Al-Otaiba, 2007; Mancinelli, Vitali, & Ceccanti, 2009). Women also have unique challenges in obtaining treatment for alcohol dependence. Treatment seeking is often hindered by a complex array of issues such as a lack of transportation, social stigma, denial, fear of losing children, and reluctance of primary care physicians to refer women (Small, Curran, & Booth, 2010).

Despite the clinical significance and magnitude of alcohol-related problems to the health of women of all ages, alcohol use and alcohol problems in women have been grossly understudied among nurse researchers. Indeed, research from a variety of disciplines is necessary to fully address the myriad biological, psychosocial and environmental issues associated with the problem of alcohol use disorders among women. However, numerous questions of particular relevance to nursing remain unanswered. For example, the best methods of assessment for women at different stages of the lifespan, interventions that are most effective for different subgroups of women (e.g. women of childbearing age, older women, women of color, lesbian women), and time points that are most sensitive to assessment and intervention in women are not known. Because nurses are uniquely positioned to assess for alcohol problems in women in a variety of clinical settings and to intervene at the primary, secondary and tertiary levels of care,

nursing research on alcohol use and alcohol problems in women is critical to direct and guide effective clinical practice.

In the 2005 volume of the *Annual Review of Nursing Research* that was focused on alcohol use, misuse, abuse and dependence, Stevenson and Sommers (2005) argued that the lack of nursing research related to alcohol use and alcohol problems in women and in racial and ethnic minorities represent major gaps in the nursing literature and are issues of very high public health priority. Given that five years have passed since this call to action, we review the literature on alcohol and women's health, including racial and ethnic minority women, to identify the contribution of nursing to the knowledge base and outline a research agenda so that nurse researchers can address the most urgent alcohol-related issues that affect the health of women.

Methods

We conducted a search of the CINAHL and Pubmed databases with the key words 'alcohol' and 'women' (or 'female') and 'nursing.' We also conducted a second search focused on ethnic minority women using the keywords 'Latina,' 'Hispanic,' 'African American,' 'Black,' and 'minority females' in addition to the original key words. We limited the searches to: abstract available, English language, journal article and publication date in last five years. Our **inclusion criteria** included: data-based paper, alcohol as the main focus of the paper, female sample (or gender-based analysis), and at least one nurse author. **Exclusion criteria** included: literature reviews and clinical reports that were not data-based. We also excluded papers focused on alcohol use in nurses or nursing students, attitudes of nurses or nursing students toward care of patients with alcohol problems, or nursing management of impaired professionals.

Our initial search yielded 497 citations. Our ethnic minority women search yielded 66 citations (3 of the 66 were duplicates from original search). All authors independently reviewed

the titles and abstracts of these citations and found that a total of 36 papers met the inclusion criteria. We categorized the studies according to whether they focused on *determinants* of alcohol use, abuse or dependence; characteristics of alcohol use *disorder itself* (including assessment and comorbidity); *consequences* of alcohol use/abuse/dependence; or whether they investigated the *effects of interventions*.

Results

The 36 papers included in this review focused on diverse samples including healthy women with or without alcohol use disorders (n=12), lesbians (n=6), pregnant or postpartum women (n=6), rural women (n=5), adolescent girls (n=2), older women (n=2), Latina migrant farm workers (n=2), and studies using animal models (n=1). Some studies included multiethnic samples. Most of the studies (n=28) were cross-sectional in nature and most (n=29) used quantitative methods. The 36 papers included in this review were authored by 30 different nurse investigators - 26 of whom published single studies. Four of the studies were authored by nurse investigators with established programs of research related to women's health and alcohol use or sex or gender differences in alcohol use.

Using our organizational framework to categorize the studies, we determined that 8 focused on the determinants of alcohol use/abuse/dependence; 14 focused on patterns of alcohol use, assessment, and/or comorbidity issues; 11 focused on consequences of alcohol use; and 6 focused on the effects of treatment or interventions. Some papers were in more than one category. In the following sections, we summarize the findings from the studies in each of the categories.

Determinants. The studies that were focused on determinants of alcohol use and alcohol problems included very diverse samples in terms of age (adolescents to older women) and

subgroups of women (lesbians, rural women, pregnant and postpartum women, Latina farm workers, and Taiwanese high schoolers). The determinants examined in these studies included primarily *vulnerability factors*, e.g. heritability of specific alcohol use disorder symptoms, childhood sexual and physical abuse, sexual orientation identity, hassles, psychological distress, emotion-focused coping, peer and family influences, and positive beliefs about the effects of alcohol (positive alcohol expectancies), but also *protective factors*, e.g. religious involvement, uplifting events, refusal self-efficacy, and positive family and peer relationships.

Only one study focused on sex differences in the heritability of alcohol problems and these investigators found that alcohol problems may be etiologically distinct in women. In a community-based sample of monozygotic and dizygotic twin pairs (613 females and 519 males), Hardie, Moss, and Lynch (2008) examined genetic, unique environmental, and shared environmental effects of seven symptoms of alcohol problems: increased chance of injury or harm; emotional problems related to alcohol; desire to drink, increased time drinking alcohol or getting over its effects; the need to drink more alcohol in order to get the same effect, drinking larger amounts over longer periods of time than intended; and using alcohol while at work, school, or caring for children. They found sex differences in the amount of variance accounted for by genetics in five of the seven symptoms. Women had higher heritability than men for the following symptoms: increased chance of injury or harm, emotional problems related to drinking, and desire to drink. Men had higher heritability than women for the following symptoms: increased time drinking alcohol or getting over its effects and the need to drink more alcohol in order to get the same effect. Using larger amounts of alcohol over a longer period of time than intended was equally heritable for women and men. Using alcohol while at work,

school, or caring for children was not heritable for women or men. Taken together, the data from this study suggests that alcohol use disorders may be more heritable in women than in men.

Three studies found disturbingly high rates of abuse in women and also that a positive history for abuse/violence were important determinants of alcohol problems in women. In an ethnically diverse community-based sample of 447 lesbians, Hughes, Johnson, Wilsnack, and Szalacha (2007) found that one third of the women reported child sexual abuse and one fifth of the women reported child physical abuse. Furthermore, the specific type of abuse in childhood influenced alcohol abuse in different ways. Child sexual abuse predicted lifetime alcohol abuse directly as well as indirectly through early age of first heterosexual intercourse. Child physical abuse indirectly predicted lifetime alcohol abuse through psychological distress. In another study of 405 lesbians and 548 age and education matched heterosexual women, the same nurse investigator and her team found that exclusively heterosexual women reported lower levels of childhood sexual abuse, hazardous drinking and early drinking compared to mainly heterosexual women, bisexual women, mostly lesbian women or exclusively lesbian women (Wilsnack et al., 2008). In a sample of 142 rural African American women, Boyd, Berger, Baliko and Tavakoli (2009) found that having experienced violence was one of the most powerful predictors of alcohol use.

Several studies in diverse samples of women suggest that women use alcohol to manage a variety of different types of negative affective states. In her study of lesbian women reported earlier, Hughes et al. (2007) found that high levels of psychological distress (depression and anxiety symptoms) predicted a lifetime history of alcohol problems. The major contributors to psychological distress in this sample were parental alcohol problems (reported in 36% of the sample) and parental strictness (reported by 58% of the sample). In this study, the majority of

women (66%) reported experiencing adverse consequences of alcohol use and 62% of the women had at least one symptom of alcohol dependence. In a qualitative study of 13 midlife and older lesbian women in recovery from alcohol dependence, Pettinato (2008) found that women reported that they used alcohol in order to “disconnect” from the discomfort associated with ‘coming out’ as a lesbian. In rural African American women, Boyd, Baliko, Cox, and Tavakoli (2007) found that those with alcohol dependence had fewer uplifting events, higher levels of emotion-focused coping, and more positive beliefs about the effects of alcohol than those without alcohol dependence. In a sample of 173 (n=80 women) Mexican immigrant farm workers, Loury and Kulbok (2007) found that although men were more likely to be current drinkers than women, occupational and economic stress and pre-immigration alcohol use predicted the current level of alcohol use for both men and women.

A study of adolescents in Taiwan suggests that family and peer relationships may have more influence on alcohol use and problematic drinking in adolescent girls compared to adolescent boys. In a cross-sectional survey of 771 Taiwanese 10th graders (n=444 girls) from four randomly selected high schools in Taiwan, Yeh, Chiang, and Huang (2006) found that for *girls only*: maternal drinking, having peers that approve of drinking, and having unsatisfactory peer relationships predicted significantly higher odds of *alcohol use* in the last year (odds ratios 3.5, 2.1, and 2.7 respectively), and having unsatisfactory peer relationships predicted 2.9 times higher odds of having *problematic drinking*. Peer drinking also predicted *alcohol use in boys* (though it was not as strong a predictor as it was for girls). *Predictors of problematic drinking were different for boys*. They included paternal drinking, peer alcohol use, and having a deviant self-image.

There is also some evidence that having strong beliefs about one's ability to refuse alcohol and religious involvement may be protective against the development of alcohol problems in women and girls. For Taiwanese adolescent girls, having confidence in one's ability to refuse alcohol was associated with 3.7 times lower odds of engaging in alcohol use and 2.8 times lower odds of having alcohol problems, whereas in boys, the effects of confidence in ability to refuse alcohol were weaker for alcohol use (odds ratio=2.5) and not significant for alcohol problems (Yeh et al., 2006). In another study of 1035 ethnically diverse pregnant or postpartum women, Page (2009) examined relationships between religious involvement and a variety of health risk behaviors including alcohol, tobacco and marijuana use. Frequent (more than once weekly) church attendance was associated with 80% lower odds of drinking alcohol while regular (weekly) church attendance was associated with 60% lower odds of alcohol use. A similar pattern was also found for both tobacco use and marijuana.

Pattern of Use, Assessment and Comorbidity Issues. Most of the studies conducted by nurse investigators were in this category. These studies showed very high prevalence rates of alcohol use and alcohol-related problems in lesbian and bisexual women as well as high rates of comorbid risk behaviors. In a large and diverse community-based sample of lesbians, Hughes (2006) found a 65% lifetime prevalence and 30% 12-month prevalence of alcohol dependence, rates that are considerably higher than population-based estimates for women (Grant et al. 2004). Also in contrast to population-based studies of women, they found that rates of heavy drinking did not decrease with age (≤ 30 , 31-40, 41-50, ≥ 51) and that Black lesbians reported more adverse consequences of alcohol use than White or Latina lesbians. In a predominantly Caucasian sample, Ridner (2006) found that lesbian/bisexual college women (n=21) were 10.7 times more likely to be current drinkers, 4.9 times more likely to be current tobacco users, and

4.9 times more likely to be current marijuana users than heterosexual college women (n=517). High levels of comorbid behaviors were also found in a cross-sectional survey study of 901 postpartum aboriginal women in Taiwan. Chou, Yang, Kuo, Chan & Yang (2009) found that 32% of the women reported drinking during pregnancy, 23% reported smoking during pregnancy, and 35% of women reported betel quid chewing (a substance believed by some to decrease nausea) during pregnancy.

Other work by nurse researchers suggests that alcohol use may not be as problematic as other health risk behaviors in adolescent girls. In a large and diverse sample of 8th graders, Wu, Rose & Bancroft (2006) found that boys were more likely to have tried alcohol than girls; however, there were no differences between boys and girls in alcohol use in the last 30 days. Girls were also more likely to engage in unhealthy weight control behaviors (i.e., fasting, vomiting, laxative and diet pill use) than boys. In an ethnically diverse sample of pregnant adolescents, Kaiser and Hayes (2005) found that in comparison to smoking and drug use, alcohol use was the most modified health risk behavior during pregnancy. While only one of the 65 adolescent girls who were drinkers continued to drink during pregnancy, more than half of the smokers continued to smoke and 20% of those who used street drugs continued to do so during pregnancy.

Alcohol use and smoking were found to be more stable over time than other types of health risk behaviors. In a nationally representative sample of midlife Swedish women, Benzies, Wangby, and Bergman (2008) examined the stability and change in alcohol use, tobacco use, diet, and exercise over 4 years, and predictors of stability and change in these behaviors over time. They found that alcohol use and tobacco use were the most stable behaviors over time (alcohol quantity $r=.63$, alcohol frequency $r=.73$, tobacco quantity $r=.80$, tobacco frequency

$r=.87$), though healthy diet ($r=.53$) and exercise ($r=.44$) were also fairly stable. Alcohol use quantity and frequency four years earlier were the strongest predictors of alcohol use quantity and frequency at the 4-year follow-up, accounting for 55% and 41% of the variance in alcohol use respectively. Smoking quantity and frequency four years earlier, maternal education, and having children at home were the strongest predictors of smoking at the 4-year follow-up.

The T-ACE, a 4-item screening tool was found to be a valid predictor of alcohol use in pregnant women and in older adult women, albeit with different cutoff scores. Chiodo, Sokol, Delaney-Black, Janisse, & Hannigan (in press) examined the predictive ability of the T-ACE with several different cutoff scores in 75 African American pregnant women. They found that increasing the total T-ACE cutoff score from 2 (the recommended cutoff score) to 3 significantly improved the ability of the T-ACE to predict maternal at-risk drinking by doubling the specificity (from .40 to .81) while maintaining adequate sensitivity (.79). Of particular importance to maternal child health was that a cutoff score of 3 also significantly predicted alcohol-related neurobehavioral deficits in the children 4-5 years later. With a much lower cutoff score, the T-ACE was found to be a valid predictor in older women. Stevenson and Masters (2007) compared the T-ACE, a variety of biomarkers, and behavioral and physical measures to determine the best predictor of the quantity and frequency of alcohol use in female drinkers ($n=72$) and abstainers ($n=63$) with a mean age of 70 years. They found that any score greater than zero on the T-ACE was the best predictor of alcohol use quantity and frequency. However, in this sample of older women, behavioral indicators (smoking, mixing over-the-counter medications with alcohol, using alcohol to sleep, and heavy coffee drinking) and biomarkers (high mean corpuscular volume, hemoglobin, hematocrit and high-density lipoprotein) also

predicted alcohol use. They also found that the heaviest drinking women had enlarged livers and broken blood vessels in their noses.

A new instrument called the Identification of Alcohol Dependence in Women Scale was developed by O'Neil & Maranda (2007) to distinguish women with and without alcohol use disorders. They psychometrically tested the measures in a sample of 151 women with alcohol dependence and 150 women without alcohol dependence. Other than the alcohol use disorder, no information was provided about the demographics of the sample. A discriminant function analysis showed that the measure correctly classified 95% of the women as either alcohol dependent women or non-alcohol dependent. Internal consistency reliability estimates were .96 in the alcohol dependent group and .91 in the non-alcohol dependent group. Test-retest reliability was reported at .99; however, the length of time between the test and retest was not specified.

Three qualitative studies revealed that nurses do not adequately assess alcohol use in their female patients. In face-to-face semi structured interviews with 12 pregnant women and telephone interviews with 12 midwives in Australia, Jones et al (in press) explored the advice that midwives believed they imparted to their clients about alcohol use during pregnancy and the advice the pregnant women believed they received. The investigators found that alcohol use was assessed with brief screening questions at the first visit, but that neither specific risks of alcohol use during pregnancy nor recommendations for adherence to the Australian guidelines were routinely discussed. In fact, most of the midwives and pregnant women were unaware that there were specific Australian guidelines for alcohol use during pregnancy, but most knew that the safest option was abstinence during pregnancy. In the primary care setting, Vandermause (2007) found that 23 experienced adult nurse practitioners had variable knowledge of diagnostic indicators for alcohol abuse and dependence, differed widely in their comfort with assessing for

alcohol use disorders, were hesitant to “overdiagnose,” and sometimes misdiagnosed alcohol problems. This investigator also examined the primary care experience from the patient's perspective. Female primary care patients with alcohol problems reported that despite considerable ‘suffering,’ alcohol problems were often not assessed during the primary care visit (Vandermause, 2009).

Several studies showed that depressive symptoms or other forms of psychological distress were common in women with alcohol use disorders. A qualitative study of women with alcohol use disorders who were abstinent for at least two weeks revealed that depressive symptoms antedated alcohol use in all of the women in the sample (Ambrogne, 2007). Participants reported that managing depressive symptoms during abstinence is a major challenge, and that separating care for depressive symptoms and alcohol use disorders was not helpful. In a lesbian sample, Hughes et al. (2007) found that psychological distress (depressive symptoms and anxiety symptoms) was an important proximal predictor of alcohol use that mediated the effects of parental alcohol problems and as well as child physical abuse. Psychological distress was highest among lesbians who were White, younger and less educated. Additional evidence for high levels of comorbid psychological distress and alcohol use in women comes from the validity of the psychological distress subscale in the new Identification of Alcohol Dependence in Women (O'Neil & Maranda, 2007).

Consequences of Alcohol Use and Alcohol Problems in Women. Studies have shown that alcohol use in women and girls contributes to involvement in other high risk behaviors as well as leading to a vast array of negative health and interpersonal outcomes. In a Taiwanese adolescent sample, Yeh et al. (2006) found that predictors of alcohol-related negative consequences (e.g. skipping school, sleeping or fighting during school, dropping out of school)

differed for boys and girls. For girls, the odds of experiencing alcohol-related negative consequences were 8.1 times higher if their peers approved of drinking, 6.3 times higher if their peers drank, 3.2 times lower if they were confident in their ability to refuse alcohol, and 2.4 times higher if they had unsatisfactory family relationships. In contrast, for boys, the odds of experiencing alcohol-related negative consequences were 4.5 times higher if they had a deviant self-image, 3.2 times higher if their peers drank, and 2.6 times lower if they had confidence in their ability to refuse alcohol. Hughes et al. (2006) found in a large and ethnically diverse sample of lesbians that 71% experienced adverse consequences (e.g. driving while intoxicated, getting into fights, or interpersonal problems) of alcohol use at some point in their lifetime and 29% had experienced these consequences in the last 12 months. In a qualitative study of 15 multiethnic college women, participants reported that they used alcohol during sex to avoid taking responsibility for their behavior (Kennedy & Roberts, 2009). In women seeking care in the emergency department after sexual assault, White women were more likely than Black women (47% vs 24%) to report alcohol use prior to the sexual assault (Boykins, 2010). Perhaps not surprisingly, a very strong positive correlation between alcohol use and intimate partner violence ($r=.92$) was found in a study of Latino migrant farm workers (Kim-Godwin & Fox, 2009). Sommers et al. (2005) examined the pattern of alcohol use during the four weeks prior to a motor vehicle crash in non-alcohol dependent young adult women and men and found that alcohol use increased by 2.6 and 2.8 standard drinks/day in the 48 hours prior to the crash for women and men respectively, but binge drinking also gradually increased during the month prior to the crash for women but not for men.

The physical health consequences of alcohol use in women have received considerable attention in nursing research over the last five years. Piano (2007) examined gender differences

in the myocardial consequences of long-term ethanol consumption in rats. Using echocardiography to examine the myocardium after 8 months of ethanol containing diet (considered long-term in the life of a rat), she found that all of the ethanol groups (male, sham operated female, and ovariectomized female) showed evidence of dilated cardiomyopathy, but the effects were more pronounced in males than in females. In a cross-sectional study of midlife women, Pederaro-Zamorano et al. (2009) examined the effects of beer drinking on bone mass. The sample included premenopausal (n=710), perimenopausal (n=176) or postmenopausal (n=811) women from Spain who were divided into those that were beer drinkers (n=793) and those who were either wine drinkers or non-drinkers (n=904). Ultrasonic bone scans showed that beer drinkers had higher bone density than non-beer drinkers. The authors hypothesized that this may be due to the phytoestrogen content of beer. In a large, longitudinal sample of healthy Japanese men and women (total n=1578; n=390 women), Omagari et al. (2009) examined gender differences in the development and regression of fatty liver as measured by abdominal ultrasound. Surprisingly, results showed that alcohol consumption was not a predictor of fatty liver in either men or women. However, Chueh, Yang, Chen, & Chiou (2009) used a cross-sectional design with a sample of 1621 elderly Taiwanese women and found that women with higher scores on an alcohol screening test had 1.4 times higher odds of having sleep disturbances including poor subjective sleep quality and daytime dysfunction than those with lower scores.

Only one study since 2005 examined consequences to the child of alcohol use during pregnancy. In 75 African American women participating in an ongoing study of long-term effect of parental alcohol exposure, Chiodo (in press) found that alcohol abuse during pregnancy (as indicated by a score of 3 or more on the T-ACE) predicted 14 distinct neurobehavioral deficits

including (e.g. memory, intellect, attentional processes, vision problems) in their child at age 4-5 years.

Effects of treatment or specific interventions. Nurse investigators have conducted comparatively fewer studies to examine the effectiveness of treatment or specific interventions than studies of determinants of alcohol use, patterns of alcohol use, or consequences of alcohol use. Some of these interventions were focused on rural women. Boyd et al. (2005) conducted a pilot test of a peer-based counseling intervention for alcohol and other substance abuse in 13 HIV+ rural women. The intervention consisted of 4 peer counseling sessions over 8-12 weeks. The peers had to have at least one year of sobriety. Results showed that at post-intervention, all of the subscales of the Stages of Change Readiness were higher and drinking consequences were lower, suggesting that the intervention was successful at helping rural HIV+ women to acknowledge their alcohol use disorders. Despite the preliminary success of the pilot intervention, the investigator noted that it was difficult to keep the peer counselors involved and no follow-up studies have been published. Finfgeld-Connett and Madsen (2008) conducted a pilot test of a web-based self-guided harm-reduction intervention for alcohol problems in rural women. The web-based intervention materials included alcohol-related information and decision-making modules as well as a chat-room and the ability to talk to the nurse researcher. The control condition was a hard copy manual version of the same materials and they did not have the opportunity to have discussions with other participants or with the nurse researcher. At the 3 month follow-up, both groups decreased the number of drinking days and the number of drinks per day, but there were no differences between the 20 women in the intervention group and the 24 women in the control group who completed the pre- and post-tests. In 2009, Finfgeld-Connett reported that the women were satisfied with the web-based treatment, found that it was

easy to use, and that it promoted communication about alcohol with other rural women in the web-based treatment and with the researcher.

Other studies focused on other specific subpopulations of women. Fals-Stewart, O'Farrell, and Lam (2009) conducted a randomized clinical trial to test the effectiveness of a behavioral couple's therapy for alcohol problems in 48 lesbian couples where one of the partners had a SCID-diagnosed alcohol use disorder. The intervention group received behavioral couple's therapy plus individual therapy and the control group had individual therapy only. There were no differences at pretest or immediate post-test in the percent of heavy drinking days, but at 3, 6, 9, and 12 months follow-up, the percent of heavy drinking days was significantly lower in the intervention group compared to controls. Walker, Fisher, Sherman, Wybrecht, and Kyndely (2005) conducted a pilot intervention (fetal alcohol syndrome brochure) to increase knowledge about fetal alcohol syndrome in 50 women seeking emergency contraception or pregnancy test. Results showed that knowledge about fetal alcohol syndrome increased significantly from pre to post test (which was immediately after reading the brochure) but behavioral changes and longer term changes in knowledge were not measured.

The last study examined a negative effect of inpatient treatment — unhealthy eating patterns and weight gain (Emerson, Glovsky, Amaro, & Nieves, 2009). The sample included 52 African American and Latina women who were in long-term (12 month) residential treatment for alcohol use disorders in Boston. The individual and group treatment focused on preventing relapse, comorbid disorders, spirituality, improving self-esteem, and leadership. The investigators found that despite interest in improving nutrition, the women had very little knowledge about healthy eating and gained on average 6.4 lbs during 12 weeks of treatment.

Staff reported that unhealthy high fat diets were served at the treatment site due to limited financial resources,

Discussion

In this paper, we reviewed the literature published over the last five years on alcohol and women's health to identify the *contribution of nursing to the knowledge base* and to outline a *research agenda* so that nurse researchers can address the most urgent alcohol-related issues that affect the health of women. We categorized the studies according to whether they focused on 1) determinants of alcohol use/abuse/dependence, 2) patterns of alcohol use, assessment, and comorbidity issues, 3) consequences of alcohol use/abuse/dependence, or 4) effects of treatment or specific interventions.

The studies that were focused on determinants of alcohol use and alcohol problems included very diverse subgroups and ages of women. Most studies focused on vulnerability factors rather than protective factors. The key findings from these studies were: 1) alcohol use disorders may be more heritable in women than in men; 2) abuse and violence were prevalent in lesbian and rural women samples, and these variables were powerful predictors of alcohol problems; 3) women use alcohol to manage negative affect; 4) family and peer relationships have more influence on alcohol use and problematic drinking in Taiwanese adolescent girls compared to Taiwanese adolescent boys; 5) having strong beliefs about one's ability to refuse alcohol may be protective against the development of alcohol problems in adolescent girls, and 6) religious involvement may be protective in women.

Most of the studies conducted by nurse investigators focused on patterns of alcohol use in women, assessment of alcohol use in women, and comorbidity issues in women. The key findings from studies conducted by nurse investigators on patterns of use, assessment and

comorbidity were: 1) very high prevalence rates of alcohol use and alcohol-related problems in lesbian and bisexual women; 2) high rates of comorbid risk behaviors; 3) alcohol use may not be as problematic as other health risk behaviors such as weight control behaviors in adolescent girls; 4) alcohol use is quite stable over time in women; 5) The 4-item T-ACE is a valid and reliable screening test for alcohol problems in diverse samples of women, but different cutoff scores should be used for older women and pregnant women; 6) a new screening test for women called the Identification of Alcohol Dependence in Women Scale shows promise but requires further validation; 7) nurses in primary care and maternal child health have variable knowledge about alcohol use disorders, differ widely in their comfort with assessing for alcohol use disorders, and do not adequately assess alcohol use in women, and 8) depressive symptoms are common in women with alcohol use disorders.

The key findings from studies conducted by nurse investigators on the consequences of alcohol use and alcohol problems for women and girls were: 1) peer approval of drinking, peer drinking, refusal self-efficacy, and unsatisfactory family relationships were the strongest predictors of alcohol-related consequences to academic success in Taiwanese girls, whereas having a deviant self-image, peer drinking and refusal self-efficacy were the strongest predictors of alcohol-related consequences for Taiwanese boys; 2) a large proportion of community-based lesbians experience adverse consequences of alcohol use including driving while intoxicated, fighting, and interpersonal problems; 3) alcohol may be used to avoid responsibility for risky sexual behavior in college women; 4) sexual assault is a more common consequence of alcohol use for White women than for Black women; 5) gradual increases in binge drinking were noted to occur in the month prior to a motor vehicle crash for women; 6) high levels of alcohol use are associated with sleep disturbances in elderly Taiwanese women; 7) alcohol abuse during

pregnancy predicts neurobehavioral deficits in children 4-5 years of age; and 8) contrary to much existing literature that suggests that the physical consequences of alcohol are much worse in women, the three studies reviewed here did not support this claim. Myocardial effects of long-term alcohol use were more pronounced in male rats than female rats, beer drinking women had higher bone density than women who drank wine or were non-drinkers, and there were no effects of alcohol use on the development of fatty liver in healthy Japanese women or men.

The least amount of research by nurse investigators is focused on examining the effectiveness of treatment or specific interventions. Key findings of these studies were: 1) peer counseling may be effective for helping rural HIV+ women to acknowledge alcohol problems; 2) a web-based self-guided intervention for alcohol problems in rural women is feasible, though may not be any more effective at reducing alcohol use than a manual-based version; 3) behavioral couples therapy shows promise for reducing the percentage of heavy drinking days over time in lesbian couples; 4) administering a brochure about fetal alcohol syndrome to women seeking emergency contraception or pregnancy test increases knowledge about fetal alcohol syndrome in the short-term; 5) long-term alcohol treatment may be associated with weight gain in women due to lack of knowledge about healthy eating and lack of healthy food choices while in treatment.

Research Agenda. Based on this review, we propose the following research agenda to address the most urgent alcohol-related issues that affect the health of women:

- Although 36 papers met inclusion criteria for review, in general, very few nurse investigators have *programs of research on alcohol and women's health*. Nearly 90% of the papers included in this review represent single isolated studies. Although each of these studies contains useful information, as a whole, the

contribution of nursing to the knowledge base of alcohol and women's health represents a patchwork of isolated studies rather than focused areas of systematic investigation. To more effectively contribute to the knowledge base, we need more nurse researchers who have dedicated programs of research on alcohol use and women's health.

- Most of the studies reviewed were cross-sectional and preclude drawing inferences about causal direction of effects. Longitudinal studies are essential.
- Given that abuse/violence is both a strong predictor and a negative outcome of alcohol use, health promoting interventions to prevent childhood abuse may be important to prevent problem alcohol use and the associated negative behavioral consequences.
- Large randomized controlled trials and meta-analyses are needed to inform nursing practice with women and girls.
- Many studies focus on vulnerabilities for alcohol use and alcohol problems in women. Given that nursing is a health-focused discipline, more research needs to be conducted to identify protective factors.
- There is a need for interdisciplinary work, but nurses must be at the table to ensure that questions of relevance to nursing care are addressed.
- More studies are needed on women and girls worldwide so that culture-specific factors that predict alcohol use and alcohol problems can be specified and used to inform culturally-targeted interventions.
- Despite valid assessment and screening tools for women, nurses are not yet conducting adequate assessments of alcohol use in women. We need to determine

best methods of translating research findings on assessment to clinical practice for nurses in all practice settings. We also need further research to determine time points that are most sensitive to assessment and intervention for different subgroups of women across the lifespan.

- While some nursing research on alcohol use and alcohol problems in women includes racially and ethnically diverse samples, little attention has been paid to the mechanisms underlying differences between racial and ethnic groups. We need to move from understanding more than just that there are differences between groups to understanding what factors cause these differences, how they work, and which differences are clinically significant.

In summary, the determinants of alcohol use and alcohol problems are not the same in women and girls as they are in men and boys. As such, we reiterate the urgent call for systematic programs of nursing research related to alcohol use and alcohol problems in all subgroups of women and girls. Nursing is lagging behind other disciplines in this regard, despite the relevance of alcohol use and alcohol problems to women's health. Because nurses are uniquely positioned to assess for alcohol problems in women in a variety of clinical settings, and to intervene at the primary, secondary and tertiary levels of care, nursing research on alcohol use and alcohol problems in women is critical.

Psychiatric nurses in particular are committed to "promoting mental health through the assessment, diagnosis, and treatment of human responses to mental health problems and psychiatric disorders" (ANA, 2000). As such, psychiatric nurses have a unique orientation to alcohol-related research with a strong emphasis on: 1) risk factors/determinants to guide

development of prevention programs, 2) barriers to case identification and adherence to treatment, and 3) development of gender based interventions to address barriers.

References

- Ambrogne, J. A. (2007). Managing depressive symptoms in the context of abstinence: Findings from a qualitative study of women. *Perspectives in Psychiatric Care, 43*(2), 84-92. doi:10.1111/j.1744-6163.2007.00115.x
- American Nurses Association. (2000). Scope and standards of practice for psychiatric mental health nursing. Author, Silver Spring, MD.
- Benzies, K. M., Wangby, M., & Bergman, L. R. (2008). Stability and change in health-related behaviors of midlife Swedish women. *Health Care for Women International, 29*(10), 997-1018. doi: 10.1080/07399330802269675
- Boyd, M. R., Baliko, B., Cox, M. F., & Tavakoli, A. (2007). Stress, coping, and alcohol expectancies in rural African-American women. *Archives of Psychiatric Nursing, 21*(2), 70-79. doi:10.1016/j.apnu.2006.11.001
- Boyd, M. R., Berger, K. C., Baliko, B., & Tavakoli, A. (2009). Predictors of alcohol and drug problems in rural African American women. *Issues in Mental Health Nursing, 30*(6), 383-391. doi:10.1080/01612840802509478
- Boyd, M. B., Mackey, M. C., Phillips, K. D., & Tavakoli, A. (2006). Alcohol and other drug disorders, comorbidity and violence in rural African American women. *Issues in mental health nursing, 27*(10), 1017-1036. doi:10.1080/01612840600943622
- Boykins, A. D., Alvanzo, AA. H., Carson, S., Forte, J., Leisey, M., & Plichta, S. B. (2010). Minority women victims of recent sexual violence: Disparities in incident history. *Journal of Women's Health, 19*(3), 453-461. doi:10.1089/jwh.2009.1484
- Chiodo, L. M., Sokol, R. J., Delaney-Black, V., Janisse, J., & Hannigan, J. H. (in press). Validity of the T-ACE in pregnancy in predicting child outcome and risk drinking. *Alcohol*.

- Retrieved from http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6T40-4Y3K145-1-1&_cdi=4960&_user=186797&_pii=S074183290900158X&_orig=browse&_coverDate=01%2F06%2F2010&_sk=999999999&view=c&wchp=dGLbVIW-zSkzV&md5=ee72d7c3723864d4706dfea7c9912f67&ie=/sdarticle.pdf
- Chou, F. H., Yang, Y. H., Kuo, S. H., Chan, T. F., & Yang, M. S. (2009). Relationships among smoking, drinking, betel quid chewing and pregnancy-related nausea and vomiting in Taiwanese aboriginal women. *The Kaohsiung Journal of Medical Sciences*, 25(2), 62-69. doi:10.1016/S1607-551X(09)70042-7
- Chueh, K. H., Yang, M. S., Chen, C. S., & Chiou, S. M. (2009). Poor sleep quality and alcohol use problems among elderly Taiwanese aboriginal women. *International Psychogeriatrics*, 21(3), 593-599. doi:10.1017/S1041610209008850
- Emerson, M. H., Glovsky, E., Amaro, H., & Nieves, R. (2009). Unhealthy weight gain during treatment for alcohol and drug use in four residential programs for Latina and African American women. *Substance Use and Misuse*, 44(11), 1553-1565. doi:10.3109/10826080802494750
- Epstein, E. E., Fischer-Elber, K., & Al-Otaiba, Z. (2007). Women, aging, and alcohol use disorders. *Journal of Women and Aging*, 19(1), 31-48. doi:10.1300/J074v19n01_03
- Fals-Stewart, W., O'Farrell, T. J., & Lam, W.K. (2009). Behavioral couple therapy for gay and lesbian couples with alcohol use disorders. *Journal of Substance Abuse Treatment*, 37(4), 379-387. doi:10.1016/j.jsat.2009.05.001
- Finfgeld-Connett, D. (2009). Web-based treatment for rural women with alcohol problems: Preliminary findings. *Computers Informatics Nursing*, 27(6), 345-353. doi:10.1097/NCN.0b013e3181bca64b

- Finfgeld-Connett, D., & Madsen, R. (2008). Web-based treatment of alcohol problems among rural women. *Journal of Psychosocial Nursing and Mental Health Services, 46*(9), 46-53.
- Grant, B. F., Stinson, F. S., Dawson, D. A., Patricia Chou, S., Dufour, M. C., Compton, W., ... Kaplan, K. (2004). Prevalence and Co-occurrence of Substance Use Disorders and Independent Mood and Anxiety Disorders: Results From the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of general psychiatry, 61*, 807-816.
doi: 10.1001/archpsyc.61.8.807
- Hardie, T. L., Moss, H. B., & Lynch, K. G. (2008). Sex differences in the heritability of alcohol problems. *The American Journal on Addictions, 17*(4), 319-327.
doi:10.1080/10550490802139010
- Hughes, T. L., Johnson, T. P., Wilsnack, S. C., & Szalacha, L. A. (2007). Childhood risk factors for alcohol abuse and psychological distress among adult lesbians. *Child Abuse and Neglect, 31*(7), 769-789. doi:10.1016/j.chiabu.2006.12.014
- Hughes, T. L., Wilsnack, S. C., Szalacha, L. A., Johnson, T., Bostwick, W. B., Seymour, R., ... Kinnison, K. E. (2006). Age and racial/ethnic differences in drinking and drinking-related problems in a community sample of lesbians. *Journal of Studies on Alcohol, 67*(4), 579-590. Retrieved from http://www.jsad.com/jsad/downloadarticle/Age_and_RacialEthnic_Differences_in_Drinking_and_DrinkingRelated_Problems/1003.pdf
- Jones, S.C., Eval, M., Telenta, J., Cert, G., Shorten, A., & Johnson, K. (in press). Midwives and pregnant women talk about alcohol: What advice do we give and what do they receive?. *Midwifery*. Retrieved from http://sciencedirect.com/science?_ob=MIimg&_imagekey=B6WN9-502Y34B-1-1&_cdi=6957&_user=186797&_pii=

S0266613810000525&_orig=search&_coverDate=05%2F14%2F2010&_sk=999999999
&view=c&wchp=dGLzVlz-zSkWb&md5=80e9e551bb71a20c750f62749f234f11
&ie=/sarticle.pdf

Kaiser, M. M., & Hays, B. J. (2005). Health-risk behaviors in a sample of first-time pregnant adolescents. *Public Health Nursing, 22*(6), 483-493. doi:10.1111/j.0737-1209.2005.220611.x

Kennedy, B. L., & Roberts, S. T. (2009). Truths and myths that influence the sexual decision-making process among young multiethnic college women. *Archives of Psychiatric Nursing, 23*(5), 366-375. doi:10.1016/j.apnu.2008.10.007

Kim-Godwin, Y. S., & Fox, J. A. (2009). Gender differences in intimate partner violence and alcohol use among Latino-migrant and seasonal farm workers in rural southeastern North Carolina. *Journal of Community Health Nursing, 26*(3), 131-142. doi:10.1080/07370010903034474

Loury, S., & Kulbok, P. (2007). Correlates of alcohol and tobacco use among Mexican immigrants in rural North Carolina. *Family & Community Health, 30*(3), 247-256. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=rzh&AN=2009607297&site=ehost-live>

Mancinelli, R., Vitali, M., & Ceccanti, M. (2009). Women, alcohol and the environment: An update and perspectives in neuroscience. *Functional Neurology, 24*(2), 77-81.

Omagari, K., Morikawa, S., Nagaoka, S., Sadakane, Y., Sato, M., Hamasaki, M., ..., Sera, K. (2009). Predictive factors for the development or regression of Fatty liver in Japanese adults. *Journal of Clinical Biochemistry and Nutrition, 45*(1), 56-67. doi:10.3164/jcbn.08-269

- O'Neil, C., & Maranda, M. (2007). The development and initial validation of the identification of alcohol dependence in women scale. *The American Journal of Drug and Alcohol Abuse*, 33(2), 333-340. doi:10.1080/00952990601175128
- Page, R. L., Ellison, C. G., & Lee, J. (2009). Does religiosity affect health risk behaviors in pregnant and postpartum women?. *Maternal and Child Health Journal*, 13(5), 621-632. doi: 10.1007/s10995-008-0394-5
- Pedreira-Zamorano, J. D., Lavado-Garcia, J. M., Roncero-Martin, R., Calderon-Garcia, J. F., Rodriguez-Dominguez, T., & Canal-Macias, M. L. (2009). Effect of beer drinking on ultrasound bone mass in women. *Nutrition*, 25(10), 1057-1063. doi:10.1016/j.nut.2009.02.007
- Pettinato, M. (2008). Nobody was out back then: a grounded theory study of midlife and older lesbians with alcohol problems. *Issues in Mental Health Nursing*, 29(6), 619-638. doi:10.1080/01612840802048865
- Piano, M. R., Geenen, D. L., Schwertz, D. W., Chowdhury, S. A., & Yuzhakova, M. (2007). Long-term effects of alcohol consumption in male and female rats. *Cardiovascular Toxicology*, 7(4), 247-254. doi:10.1007/s12012-007-9002-y
- Ridner, S. L., Frost, K., & Lajoie, A. S. (2006). Health information and risk behaviors among lesbian, gay, and bisexual college students. *Journal of the American Academy of Nurse Practitioners*, 18(8), 374-378. doi:10.1111/j.1745-7599.2006.00142.x
- Small, J., Curran, G. M., & Booth, B. (in press). Barriers and facilitators for alcohol treatment for women: Are there more or less for rural women?. *Journal of Substance Abuse Treatment*. Retrieved from http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6T90-4YTD7FM-1-1&_cdi=5100&_user=186797&_pii=S0740547210000620&_orig=search

&_coverDate=04%2F09%2F2010&_sk=999999999&view=c&wchp=dGLbVzz-zSkzS&md5=6a2f2116480915ffd360cf232a3df62c&ie=/sdarticle.pdf

(doi:10.1016/j.jsat.2010.03.002)

Sommers, M. S., Howe, S. R., Dyehouse, J. M., Fleming, M., Fargo, J. D., & Schafer, J. C.

(2005). Patterns of drinking four weeks prior to an alcohol-related vehicular crash. *Traffic Injury Prevention, 6*(2), 110-116. doi:10.1080/15389580590931563

Stevenson, J. S., & Masters, J. A. (2005). Predictors of alcohol misuse and abuse in older

women. *Journal of Nursing Scholarship, 37*(4), 329-335. doi:10.1111/j.1547-5069.2005.00057.x

Stevenson, J. S., & Sommers, M. S. (2005). The case for alcohol research as a focus of study by

nurse researchers. *Annual Review of Nursing, 23*(1), 3-26. Retrieved from <http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=3&hid=14&sid=8820f0ce-5624-4be7-8ecf-756930a89e3e%40sessionmgr11>

Vandermause, R. (2007). Assessing for Alcohol Use Disorders in Women: Experiences of

Advanced Practice Nurses in Primary Care Settings. *Journal of Addictions Nursing, 18*(4), 187-198. doi:10.1080/10884600701699347

Vandermause, R., & Wood, M. (2009). See my suffering: Women with alcohol use disorders and

their primary care experiences. *Issues in Mental Health Nursing, 30*(12), 728-735. doi:10.3109/01612840903230081

Walker, D. S., Fisher, C S. D., Sherman, A., Wybrecht, B., & Kyndely, K. (2005). Fetal alcohol

spectrum disorders prevention: An exploratory study of women's use of, attitudes toward, and knowledge about alcohol. *Journal of the American Academy of Nurse Practitioners, 17*(5), 187-193. doi:10.1111/j.1745-7599.2005.0031.x

- Wilsnack, S. C., Hughes, T. L., Johnson, T. P., Bostwick, W. B., Szalacha, L. A., Benson, P., ... , Kinnison, K. E. (2008). Drinking and drinking-related problems among heterosexual and sexual minority women. *Journal of Studies on Alcohol and Drugs*, 69(1), 129-139. Retrieved from <http://find.galegroup.com/gtx/infomark.do?&contentSet=IAC- Documents&type=retrieve&tabID=T002&prodId=AONE&docId=A173021043&source=gale&srcprod=AONE&userGroupName=uic&version=1.0>
- Wu, T. Y., Rose, S. E., & Bancroft, J. M. (2006). Gender differences in health risk behaviors and physical activity among middle school students. *The Journal of School Nursing*, 22(1), 25-31. doi:10.1177/10598405060220010501
- Yeh, M. Y., Chiang, I. C., & Huang, S. Y. (2006). Gender differences in predictors of drinking behavior in adolescents. *Addictive Behaviors*, 31(10), 1929-1938. doi:10.1016/j.addbeh.2005.12.019