

Mental Health During Pregnancy: A Study Comparing Asian, Caucasian and Native Hawaiian Women

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Abstract *Objective:* This study examines perinatal mental health issues, ethnic differences, and comorbidity among pregnant women in Hawaii. *Methods:* Eighty-four participants were recruited from women, ages 18–35, seeking prenatal care on Oahu. They were interviewed at their initial prenatal visit about substance use, depression, and anxiety. *Results:* Sixty-one percent of women screened positive for at least one mental health issue. Thirteen percent of all pregnant women reported drinking during pregnancy with 5% reporting problem drinking, 15% reported smoking cigarettes on a regular basis, 5% of pregnant women had probable depression, and 13% of pregnant women had probable anxiety. Significant ethnic differences were found in cigarette smoking, with the highest rate among Native Hawaiian women (35%). Native Hawaiian women were also more likely to binge drink. *Conclusion:* Given the high rates of potential mental health issues in our sample, our findings highlight the importance of screening and treatment for mental health issues early in pregnancy in Hawaii.

Keywords Pregnancy · Mental health · Perinatal depression · Substance use · Anxiety

Introduction

Pregnancy and childbirth are gaining recognition as significant risk factors in the development and exacerbation of mental health issues. They are major biological, psychological, and social stressors of a woman's life. However, current national epidemiology studies have paid surprisingly little attention to ethnic variation in perinatal mental health issues. This critical gap must be addressed, as clinical and epidemiological studies form the basis of intervention research. While perinatal mental health issues are likely a cross-cultural phenomenon, there is some evidence to suggest that their prevalence will vary by cultural context. Research on incidences of symptoms during pregnancy appears to vary greatly depending on the cultural context. Early anthropological studies supported the theory that perinatal mental illness was culture-bound and specific to industrialized countries [1]. Women in developing, rural countries where kin networks are strong do not exhibit symptoms described as postpartum depression [2]. Shimizu and Kaplan [3] found equivalent rates of postpartum depression between mothers in the United States and those in Japan. However, they found significant differences in factors contributing to depression such as role concept. Kruckman [4] has characterized the activities involved in the various transitions to parenthood that provide protection to the new mother. There are differences in transition rituals among Asian, North American, Latino and African practices. These practices, and disruption to these practices, have been shown to have an impact on adjustment. Ethnocultural identity may be an important factor in mental health issues during pregnancy and childbirth. This study examines the

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prevalence of substance use, depression and anxiety among Asian, Caucasian and Native Hawaiian women in Hawaii during pregnancy.

Over half of all U.S. women of childbearing age report consuming alcohol in the past month [5]. In a Dutch study, up to one in seven women reported consuming five or more drinks on one occasion (binge drinking) at least once in the past month [6]. Over the past two decades, the use of alcohol, tobacco, and other drugs during pregnancy has become a major public health concern [7]. Concern over the consequences of prenatal substance use on health outcomes among infants and their subsequent behavior and development led to guidelines advising women who are pregnant or may become pregnant not to drink at all [8]. Many women reduce their cigarette and/or alcohol use during pregnancy, but a significant number continue to engage in one or both of these behaviors after conception [9]. Ebrahim and Gfroerer [10] reported on pregnancy-related substance use in the United States from 1996 to 1998. Rates of alcohol use among women during pregnancy ranged from 54% in the first trimester, to 21% in the second trimester, and 31% in the third trimester. Nearly 15% of pregnant women reported regular use. Twenty percent of pregnant women reported regularly smoking cigarettes, the most common form of substance use during pregnancy. Nearly 75% of women who smoked reported continued use during the first trimester, but this number was reduced to 53% during the third trimester. It should be noted that about 30% of women do stop or significantly reduce their habit [6]. Curry [11] found a trend for indigenous (Native American) women to report more substance abuse and for Asian women to be more likely to smoke cigarettes. This difference could be due, in part, to partner use.

Depression and anxiety disorders are more prevalent in reproductive-aged women, and appear to be linked to hormonal and reproductive events. The significant incidence of depression, and the remarkable peak in the number of new cases diagnosed following delivery, demonstrates that the puerperal period is unique in the development of mental illness. It is estimated that 40% of births in the United States are complicated by some form of mood disorder [12]. Postpartum depression, which is increasingly recognized as a unique and serious complication of childbirth, impacts 10% to 15% of all deliveries [13] and a staggering 26% to 32% of all adolescent deliveries [14]. The majority of patients suffer from this illness for more than 6 months and, if untreated, 25% of patients are still depressed a year later [15]. Perinatal onset is the index depression episode in more than 50% of cases, again underscoring the unique triggering effect of childbearing. More than 60% of patients with postpartum depression have an onset of symptoms within the first 6 weeks postpartum [16]. While attention has primarily been focused on postpartum depression, prevalence rates appear to be at

least as high, during pregnancy. In one recent study, while 9% of women had probable depression scores at 8 weeks after delivery, 14% had probable depression scores at 32 weeks of pregnancy [17].

Few community-based studies have investigated rates of perinatal anxiety. Muzik and colleagues [18] found the same rates for postpartum depression and anxiety disorders (18%) using a structured interview. Wenzel and colleagues [19] reported that 28% of women endorsed subsyndromal difficulties with generalized anxiety in the postpartum period with an additional 4% meeting DSM-IV criteria for generalized anxiety disorder. Less than 3% of the women in the study met criteria for major depressive disorder, demonstrating that postpartum generalized anxiety disorder may have a higher prevalence than postpartum depression. These studies clearly show the need to assess for both perinatal depression and anxiety.

Few epidemiological studies have examined mental health issues during pregnancy by ethnicity. This study examines perinatal mental health issues and ethnic differences among pregnant women in Hawaii. Specifically, rates of substance use, depression, and anxiety were assessed among pregnant women in Hawaii and comorbidities were examined. Additionally, possible ethnic differences (Asian, Caucasian and Native Hawaiian) in prevalence rates of mental health issues during pregnancy were explored.

Design and methods

This study was approved by the local Institutional Review Board and was conducted in accordance with prevailing ethical principles. Participants were involved in the study over the course of their pregnancy. They were assessed on four occasions: (1) initial visit, preferably during first trimester, (2) second trimester, (3) third trimester, and (4) postpartum. Data included participants' self-report of stress, health and associated behaviors, and social support as well as the treating physicians' reports. Findings from the initial visit are presented herein.

Sample

Eighty-four women of Asian, Caucasian or Native Hawaiian ethnicity were recruited from among those seeking prenatal care at a prenatal clinic and private physicians offices associated with a community medical center specializing in the care of women and children on Oahu, Hawaii. Women ages 18–35 presenting for their initial prenatal care visit were invited to participate in this study. Women were recruited over the course of two years at intervals when the investigators were available to conduct interviews. One hundred and eight women were approached for a response rate of 78%.

Procedures

A list of eligible women for the study was provided weekly to the investigators. After informed consent was given, participants were interviewed in a sequestered area in the obstetric/gynecology (OB/GYN) waiting room. The interview, conducted in English, included the following: demographics, medical history, substance use and health behaviors, general stress, posttraumatic stress disorder (PTSD) symptomatology, history of trauma, anxiety, depression, and social support. The interview required approximately 30 minutes to complete. Participants were also interviewed with a briefer questionnaire during their second and third trimesters, and during their postpartum visit, however, discussion of methodology and findings are only considered for data acquired during participants' initial visit.

Instruments

In addition to demographic data, information on alcohol consumption (frequency, type, amount, binge), smoking (frequency, amount), and drug use (frequency, type, amount) was assessed. Participants were asked to report usual use before pregnancy and since pregnancy.

Alcohol Use

The participants' report of problems with alcohol use was obtained using the TWEAK (Tolerance, Worry, Eye-opener, Amnesia, & Cut down drinking [20], a 5-item self-report measure used for screening. The TWEAK is a good screener for the detection of harmful and dependent drinking in primary care settings that was developed and validated among women [21, 22]. The utility of items included in the TWEAK was demonstrated in studies of obstetric and gynecologic outpatients [20, 23]. When used with a population of pregnant women, this measure was found to have good sensitivity (.68–.79) and good specificity (.83–.93; 23). A total score of 2 or more indicated that obstetric patients were likely to be risk drinkers [24], such that scores of 2 were labeled "at risk". Because cut-points of 3 or 4 are better than 2 for identifying alcoholism [25], scores of 3 or more were labeled "probable".

Depressive symptoms

Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale [CES-D; 26], a 20-item self-report screening instrument developed to measure symptoms of depression in community populations. This scale contains items inquiring about depressive symptoms in the past 7 days, with responses ranging from 0 (rarely or none of the time) to 3 (most or all of the time). The

CES-D has been used in many studies as a screen for the presence of depressive illness, including women during and after pregnancy with an internal reliability of .87 [27]. Established cut-off scores were used to categorize participants [28]. CES-D scores range from 0 to 60 with higher scores indicating more severe depressive symptoms. A score of 16–34 identified possible depressive illness, labeled "at risk." A score of 35 or higher was identified and labeled as "probable" depressive illness.

Anxiety

Level of anxiety was measured using the State-Trait Anxiety Inventory [STAI; 29] scale which contains 20 self-report items that index state anxiety using a 4-point scale ranging from 1 (not at all) to 4 (very much). The STAI possesses sound test-retest reliability (.73–.86) and strong internal consistency (.83–.92). As the most widely used self-report measure of anxiety in adults, the STAI evaluates essential qualities of anxiety in feelings of apprehension, tension, nervousness, and worry. Using established cutoff scores, scores of 40–46 were considered to be screen positive for an anxiety disorder, labeled "at risk" [30]. A score of 47 or higher was labeled "probable."

Results

Eighty-four women between 18 and 35 years of age were recruited for this study, with a mean age of 27. Only data for Asian, Caucasian, and Native Hawaiian women are reported herein. The ethnic distribution was as follows: 46% Asian (20% Filipino, 13% Japanese, 13% other Asian), 25% Caucasian, and 29% Native Hawaiian. Significantly more Caucasian women were married when compared to Asian and Native Hawaiian women (86% vs. 59% and 29%, respectively; $\chi^2 = 14.7$, $df = 2$, $p < 0.001$). Caucasian and Asian women were significantly more likely to have received some college education when compared to Native Hawaiian women (81% and 74% vs. 29%, respectively; $\chi^2 = 16.9$, $df = 2$, $p < 0.001$). There were no ethnic differences in household income (13% made less than \$20,000 per year, 13% made between \$21,000–40,000 per year, 40% made more than \$41,000 per year, and 33% did not respond).

Table 1 displays prevalence rates for alcohol, tobacco, depression and anxiety as well as any mental health issue for the entire sample and by ethnic group. Overall, 61% of pregnant women screen positive for any mental health issue. Thirty-five percent of pregnant women met criteria for at least one probable disorder (alcohol dependence, depression, and/or anxiety). An additional 26% screened positive for at least one at-risk category. Prevalence rates for probable

Table 1 Prevalence rates based on mental health screeners among pregnant women in Hawaii

Mental Health Issue	Total Sample (<i>N</i> = 84)	Asian (<i>N</i> = 39)	Caucasian (<i>N</i> = 21)	Native Hawaiian (<i>N</i> = 24)	Statistical test
Any Disorder-					$\chi^2 = 2.86, df = 4, p > 0.10$
Probable	35%	28%	28%	42%	
At Risk	26%	33%	24%	17%	
Alcohol Use	13%	13%	19%	9%	$\chi^2 = 1.13, df = 2, p > 0.10$
Alcohol Dependence					
Probable	5%	5%	5%	8%	$\chi^2 = 1.17, df = 4, p > 0.10$
At Risk	18%	15%	24%	17%	
Cigarette Smoking	15%	5%	10%	35%	$\chi^2 = 10.16, df = 2, p = 0.005$
Depression					
Probable	5%	5%	5%	5%	$\chi^2 = 0.68, df = 4, p > 0.10$
At Risk	31%	29%	29%	36%	
Anxiety					
Probable	13%	13%	5%	21%	$\chi^2 = 3.23, df = 4, p > 0.10$
At Risk	14%	15%	19%	8%	

disorders among pregnant women were 5% for alcohol dependence, 5% for depression, and 13% for anxiety. Additionally, pregnant women screened positive in the at risk category at 18% for alcohol dependence, 31% for depression, and 14% for anxiety. Depression scores were significantly correlated with anxiety scores ($r = .48, p < 0.001$) and alcohol scores ($r = .29, p = .008$). Anxiety scores were also significantly correlated with cigarette smoking ($r = .39, p < .001$) and alcohol scores ($r = .24, p = .03$).

There were no statistically significant differences by ethnic group for any mental health issue or for alcohol dependence, depression, and anxiety. Native Hawaiian women reported significantly more cigarette smoking during pregnancy when compared to Asian and Caucasian women ($\chi^2 = 10.16, df = 2, p = 0.005$). While Native Hawaiian women were significantly more likely to abstain from drinking during pregnancy, they were significantly more likely to drink more than 4 drinks per occasion when they did drink when compared with Asian and Caucasian women ($\chi^2 = 12.9, df = 4, p = 0.012$).

Discussion

We found extremely high prevalence rates for alcohol dependence, depression, anxiety and comorbidity among pregnant women in Hawaii, similar to studies conducted elsewhere. We found a prevalence rate for probable major depression of 31% with an additional 5% at risk or having moderate depression compared to a rate any mood disorder of 40% [12]. Previous studies on anxiety in postpartum women found rates ranging from 18–28% while we found a rate of 13% for probable with an additional 14% at risk in our sample. Nearly 15% of pregnant women reported regular use and 20% of pregnant women reported regularly smoking cigarettes (10%)

compared to 13% and 15% in our sample. However, rates for substance abuse (tobacco and drinking) were particularly high among Native Hawaiian women. Many mental health difficulties went unrecognized as few women in our study mentioned being treated for any mental health issue. However, because most women regularly receive health care during childbearing, the possibility of diagnosing and treating mental health issues is excellent [31].

Our findings indicate that interventions aimed at early detection and treatment in Hawaii should be shifted forward from the postpartum to antepartum period. Given the growing evidence that mental health during pregnancy is associated with reduced uterine blood flow, premature delivery, low birth weight, and increased cesarean section, systematic screening and treatment is needed [32]. Methods used to identify risk during pregnancy include self-report, interview and observation. All pregnant women should be screened, ideally at every encounter, for substance use, abuse and dependency, depression, and anxiety. The screening instruments used in this study (TWEAK, CES-D, and STAI) can be used as interview-based or self-administered screening tools and are the most effective way to determine risk and/or allow for self report and have a total administration time of 5–10 minutes.

One promising approach for reaching pregnant women is the routine integration of substance use (alcohol, tobacco, other drug) counseling into prenatal care. Several studies have shown that women can be successfully engaged in efforts to decrease their substance use when approached by their perinatal providers. Moreover, follow-up evaluations of babies born to mothers who reduced their drinking during their pregnancies have revealed better infant outcomes [33]. There is consistent evidence from a large number of studies, including studies with pregnant women, that brief intervention in primary care can reduce total alcohol consumption

and episodes of binge drinking in hazardous drinkers, for periods lasting up to a year [34, 35, 36, 37, 38]. The effectiveness of brief interventions (5–10 minutes) has been demonstrated across cultural groups. The “talk story” approach appears congruent with local informational styles and has had anecdotal success. Mullen [39] conducted a meta-analysis of pregnancy smoking cessation interventions; finding that one or more brief counseling sessions and self-help material tailored for pregnant women was the most effective. For women unable to stop using alcohol, tobacco and other drugs, harm reduction approaches have resulted in positive outcomes.

Whether major depression or anxiety should be treated with selective serotonin reuptake inhibitors (SSRIs) and/or with nonpharmacotherapy is controversial, and treatment decisions must be individualized and based on the choice of the pregnant woman and her physician. SSRIs are typically considered the first line of pharmacotherapy due to low side-effect rate and high efficacy [31, 41, 42, 43]. There are several successful, nonpharmacological treatments. With regard to psychotherapy, the experts clearly prefer cognitive-behavioral therapy and interpersonal therapy as first-line treatments for depression and anxiety during pregnancy [42, 44, 45]. Interpersonal therapy helps an individual deal with changing roles and other stressors by learning how to communicate more effectively with others. Interpersonal psychotherapy is based on the idea that there is a link between mood disorder and interpersonal relationships, such as those with a partner or new baby. This therapeutic approach may help to balance the role of mother with that of partner, worker, or friend.

Cognitive and behavioral interventions for anxiety disorders are considered well established, empirically validated treatments [42, 44]. Cognitive behavioral therapy targets negative thoughts and behaviors that tend to worsen depressed mood and teaches better ways of thinking and behaving. Many women have also found support groups to be very helpful [46]. Having a strong home support base, talking with their partner about how they feel and getting out of the house regularly to socialize with friends have been found to significantly help women with perinatal depression.

Our findings provide evidence for ethnic differences in the rate of cigarette smoking, with Native Hawaiian women at least 3.8 times more likely to smoke. The reasons underlying these disparities are unclear. It is postulated that inadequate social support can explain some, but not all, cultural differences. The significance of a woman’s social supports to postpartum depression is well documented, suggesting that deficiencies in personal social support systems precede the development of postpartum depression and potential depression during pregnancy as well. In a longitudinal study of depression, not having relatives in the resettlement area was a significant predictor; suggesting immigrants without lo-

cal families will likely need additional support [47]. It is likely that the similar findings would occur among women moving to isolated regions of the country. Zayas and colleagues [48] demonstrated an association between prenatal depression and social support among a sample of African-American and Hispanic women with uncomplicated pregnancies. They found significant differences in the type of social support by ethnicity. Stuchbery and colleagues [49] found significant differences in the type of support desired by women with postpartum depression varying by ethnic group (Anglo-Celtic, Arabic, and Vietnamese). The aforementioned risk factors increase stress during pregnancy and have been postulated as psychological factors leading to perinatal depression as well. Cultural factors may mediate the relation between social support and perinatal depression.

Researchers have suggested that mental health disparities based on research among non-pregnant individuals in Hawaii result from ongoing environmental stressors [50], social disorganization and cultural disintegration from a historical perspective [e.g., 51, 52], a psychiatrically-oriented clinical perspective [53] and a Hawaiian-specific perspective [54, 55, 56, 57, 58]. Although there is general agreement that mental health disparities are at least partially due to sociopolitical history, Native Hawaiians may be more vulnerable to psychopathology because of collective loss associated with their ethnocultural identity [59]. Therefore, the need to understand Native Hawaiian ethnocultural identity and its relationship to psychopathology are underscored in order to close the Hawaiian disparity gap. Our findings highlight a need for such research among pregnant women in Hawaii.

Although this study is a unique contribution to the literature on mental health issues during pregnancy, several limitations must be noted. While the power was sufficient to assess overall prevalence rates, the numbers were small for subgroups. However, it appeared there might be differences worth exploring. These findings will need to be validated in a larger study. The reliance on self-report questionnaires to ascertain the presence of perinatal mental illness remains a major methodological problem, particularly given that cross-cultural studies have found ethnic minorities may be missed with screeners [60]. Although we used well-established screening instruments, we did not use diagnostic interviews. Therefore, the findings should be interpreted with caution. Additionally, this study is descriptive in nature and leaves open many questions about the characteristics and course of substance use, depression, and anxiety during pregnancy. Finally, the study assessed questions of a sensitive nature and participants may have been more likely to respond in a socially desirable way. Therefore, rates may be underestimated. Despite these limitations, this study provides important information about the rates of substance dependence, depression and anxiety in a community sample of pregnant women in Hawaii. Results from this study

indicate that pregnant women exhibit a substantial number of mental health symptoms including substance use, depression and anxiety disorders, which are common occurrences. The findings demonstrate the significant practical utility of screening for perinatal mental health issues, and the need for intervention and prevention. This study lays the groundwork not only for future research, which may have important implications for the interface of medical and mental health disparities. Future research should explore linkages of ethnocultural identity, social support, stress, and perinatal mental illness. We need to improve our understanding about how ethnocultural factors affect vulnerability and resilience to perinatal depression, anxiety and substance dependence in women in order to develop interventions that decrease and ultimately eliminate the burden of mental health issues among pregnant women in Hawaii.

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