Prevalence and Risk Factors for Self-Reported Postpartum Depression Symptoms (SRPDS) in Hawai'i, 2012-2015

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Abstract

Postpartum depression (PPD) affects an estimated 10% to 20% of women in the United States, but little is known about the risk factors for PPD in Hawai'i. This study sought to identify PPD risk factors and examine whether disparities exist in Hawai'i. Aggregated 2012-2015 Hawai'i Pregnancy Risk Assessment Monitoring System (PRAMS) data from 5572 women with a recent live birth were analyzed. Two questions on the PRAMS survey about mood and interest in activities were used to create a brief measure of Self-Reported Postpartum Depression Symptoms (SRPDS). Multivariate generalized logit analysis was conducted to identify risk factors associated with SRPDS or possible SRPDS, adjusting for maternal race and age, intimate partner violence (IPV), prenatal anxiety, prenatal depression, illicit drug use before pregnancy, and stressful life events (SLEs). About 10.0% of women surveyed had SRPDS and 27.7% had possible SRPDS. SRPDS was more common among Native Hawaiians (adjusted odds ratios=1.77; 95% confidence interval: 1.17-2.70), Filipinos (2.16; 1.33-3.50), Japanese (2.88; 1.67-4.98), and other Pacific Islanders (OPI; 3.22; 1.78-5.82), when compared to white. Women aged 20-29 years (0.39; 0.24-0.65) and 30-52 years (0.41; 0.24-0.69) were less likely to have SRPDS than those 19 years and younger. SRPDS was highest among women who experienced IPV (2.65; 1.37-5.13), prenatal anxiety (2.10; 1.28-3.42), prenatal depression (2.78; 1.47-5.25), or used illicit drugs before pregnancy (1.97; 1.21-3.20). There was an upward trend in SRPDS based on the number of SLEs. Possible SRPDS had similar but smaller effects, suggesting the importance of clinical screening and appropriate follow-up for these high-risk groups.

Keywords

Postpartum depression, risk factors, prenatal depression, stressful life events

Abbreviations

AOR = Adjusted odds ratios
CI = Confidence Interval
IPV = Intimate Partner Violence
OPI= Other Pacific Islanders
PPD = Postpartum Depression
PRAMS = Pregnancy Risk Assessment Monitoring System
SLE = Stressful Life Event
SRPDS = Self-Reported Postpartum Depression Symptoms

Introduction

According to the Centers for Disease Control and Prevention (CDC), about 1 in 9 women experiences postpartum depression (PPD), which is one of the most common mental health disorders that occurs after childbirth, with symptoms including sadness, loss of interest, feelings of hopelessness, and worthlessness.[1] A study of 27 states in the United States (US) found that in 2012, prevalence for PPD symptoms ranged from 8.0% to 20.1%, with an overall rate of 11.5%.[2] Although the Diagnostic and Statistical Manual of Mental Disorder (DSM-5) defined PPD as a major depressive episode "with peripartum onset" during pregnancy or within 4 weeks of delivery,[3] significant heterogeneity exists in the onset and severity of symptoms.[4,5] Data showed that women with prenatal depression experienced more severe PPD symptoms, compared with those with later onset of symptoms after giving birth.[5] PPD limits the ability of the woman to care for her new infant resulting in increased use of health care services and more hospitalizations, and has detrimental effects on the newborn and the mother's life.[6-8] In severe cases, women with PPD may harm themselves.[9] PPD is diagnosed by mental health professionals through interviews, depression screening tools, and lab tests to rule out other problems that might cause the symptoms.[10] Distinguishing between PPD and natural consequences of childbirth (eg, changes in weight, sleep, and energy), or a major depressive episode occurring at any other time in a woman's life might be challenging to clinical diagnosis.[11,12] PPD might persist for many months beyond the perinatal period, and women who suffer from it might experience relapses in subsequent pregnancies even after successful treatment.[13]

Past researchers have identified risk factors associated with PPD including prenatal depression, prenatal anxiety, stressful life events (SLEs), low self-esteem, socioeconomic status, and history of abuse.[8,14-18] For example, a meta-analysis conducted by Robertson et al. (2004) of over 22 000 participants from studies between 1990 and 2002 revealed that depression and anxiety during pregnancy, SLEs, low social support, and history of depression were strongly associated with PPD.[16]

In addition to these risk factors, recent researchers have examined the associations between PPD and selected sociodemographic characteristics including race, age, education, and household income.[2,8,19-21] For example, Ko, et al, (2017) analyzed 2012 data from the 27-state Pregnancy Risk Assessment Monitoring System (PRAMS) and reported that the overall prevalence of PPD symptoms was higher among American Indian/Alaska Native and Asian/Pacific Islanders, those who had experienced 3 or more prenatal stressful life events, or women who gave birth to low birthweight infants.[2] Segre, et al, (2007) reported significant associations of financial poverty, occupation, and age with PPD.[22] Others researchers showed an increased risk

for PPD among certain racial groups such as black[20,23] and Hispanic women[20] compared with white women, after adjusting for the covariates in their studies. These results revealed that PPD symptoms appeared to be highly associated with certain race or other sociodemographic groups.

Hawai'i consists of diverse populations of Native Hawaiian, Asian, and other Pacific Islander (OPI) that are not commonly reported in the scientific literature. According to 2015 American Community Survey, there were approximately 1.4 million persons living in Hawai'i with 37.1% classified as Asian, 26.0% as white, 9.4% as Native Hawaiian and OPI, and 24.5% as 2 or more races.[24] Using 2004-2007 Hawai'i PRAMS data, Hayes, et al, (2010) reported that Asian and OPI women with a recent live birth were significantly more likely to experience PPD symptoms than their white counterparts,[21] suggesting PPD occurred more frequently in some racial groups than others in Hawai'i. However, to date, few studies have examined risk factors for PPD in Hawai'i. The present study aims to determine the risk factors for PPD symptoms in Hawai'i using the PRAMS data from 2012-2015, and to examine the associations between PPD symptoms with racial groups and other selected demographic characteristics.

Methods

Aggregate data from the 2012-2015 Hawai'i PRAMS were used for this study. Developed in 1987, PRAMS is a national surveillance project conducted by the CDC in collaboration with state and metropolitan health departments. The Hawai'i State Department of Health has conducted PRAMS data collection since 2000. PRAMS provides an ongoing state-specific, population-based surveillance system for selected maternal behaviors before, during, and the first few months after pregnancy, with aims to identify high-risk women and infants for adverse health outcomes and monitor progress towards improving maternal and infant health.[25] Based on birth certificate data, participants are selected among women with a recent live birth (within the last 2 months), and are mailed a self-administered questionnaire focusing on maternal and infant health behaviors and experiences around the time of pregnancy.[25] Non-respondents are further contacted with subsequent questionnaire mailings and telephone interviews up to 6 months postpartum. In this study, a total of 8741 women were contacted, with an overall response rate of 63.7%, resulting in a total of 5572 respondents.

Self-reported postpartum depression symptoms (SRPDS) were measured in PRAMS using 2 questions on a 5-point Likert scale: (1) "Since your new baby was born, how often have you felt down, depressed, or hopeless?"; and (2) "Since your new baby was born, how often have you had little interest or little pleasure in doing things?" Respondents could choose from 5-response option categories: (1) "always", (2) "often", (3) "sometimes", (4) "rarely", and (5) "never". Similar to the classification reported in Hayes, et al, (2010),[21] respondents were classified as having SRPDS if they answered "always" or "often" to either question. They were defined as having possible SRPDS if they answered "sometimes" to either question and did not choose "always" or "often" for either question. Those who answered "rarely" or "never" but did not choose the other response categories were classified as not having SRPDS. Those who answered only one question (0.3%) were also included in the analyses. Forty respondents (0.7%) who did not answer both questions were classified as missing and were excluded from the analyses, resulting in 5532 participants. These 2 questions were developed and slightly modified based on the 2 screening questions from Patient Health Questionnaire-2 (PHQ-2), a screening instrument with high sensitivity in identifying adults in the general population with high and intermediate risk for depression.[26-28] The modification of the questions was assessed, reviewed, and piloted by the CDC before use by PRAMS.

For our analysis, the 22 single-coded maternal racial groups were recategorized by the Office of Health Status Monitoring in the Hawai'i State Department of Health,[29] into 6 racial groups for larger samples in order to get reliable estimates: white, Native Hawaiian, Filipino, Japanese, OPI, and others/unknown. Mothers who were coded as Native Hawaiian and part-Hawaiian were included in the Native Hawaiian group. Those who were coded as Caucasian or Portuguese were included in the white group. Portuguese was also included in the white group based on the work by Sorensen, et al, (2003) and on previous Hawaii PRAMS analyses.[21,29] Guamanian, other Pacific Islanders, and Samoan were classified as OPI. For this analysis, Chinese, Korean, Vietnamese, other Asians, Asian Indian, American Indian, Hispanic (ie, Puerto Rican, Cuban, and Mexican), those who were not grouped into the above groups, and the "unknown" (0.57%) were included in the others/unknown group.

PRAMS included a question with 14 maternal SLEs within the 12 months before the birth of the child such as losing a job, illness of a family member, financial difficulties, separation or divorce, homelessness, or moving to a new address. The total of the 14 events were obtained and was categorized as 0, 1-2, 3-5, and ≥ 6, which aligned with standard PRAMS categorization. The other covariates (ie, unintended pregnancy, intimate partner violence [IPV], prenatal depression, and prenatal anxiety) for this analysis were recategorized and described as below. Women were classified as having an unintended pregnancy if they chose the option category "I wanted to be pregnant later" or "I didn't want to be pregnant then or at any time in the future." Conversely, women were classified as having an intended pregnancy if they reported "wanting to be pregnant then or sooner", and those who answered "I wasn't sure what I wanted" were classified as "Not Sure" (19.5%). Women who experienced IPV were defined as those who answered "yes" to physical abuse during pregnancy or 12 months before pregnancy by husband or partner. Illicit drug use before pregnancy was defined as those who answered "yes" to the use of marijuana, amphetamines, cocaine, tranquilizers or hallucinogens, or sniff-

ing products such as gasoline, glue, hairspray, or other aerosols at least 1 time in the month before pregnancy. Respondents were classified as having prenatal depression if the women answered "yes" to being told by a doctor, nurse, or health care provider that they had depression before pregnancy, and as having prenatal anxiety if they self-reported as having anxiety 3 months before pregnancy.

Prevalence estimates of selected sociodemographic data and other characteristics by SRPDS categories were obtained. Multivariate generalized logit modeling was used to obtain crude and adjusted odds ratios for SRPDS and possible SRPDS, with those without SRPDS as the reference group for both outcomes. The model controlled for maternal race and age, pregnancy intendedness, IPV before or during pregnancy, illicit drug use before pregnancy, prenatal depression, prenatal anxiety, and SLE before pregnancy. The final model included a total of 4735 participants, after listwise deletion of missing values in the independent and outcome variables. All analyses were conducted using SAS 9.4 (SAS Institute, Inc.: Cary, NC) with $P < .05$ considered statistically significant.

Results

Table 1 reports that the 2 largest racial groups represented in the 2012-2015 Hawai'i PRAMS data were white (24.1%) and Native Hawaiian (27.5%). Two of the major Asian subgroups, Filipino (17.0%) and Japanese (9.2%), together made up about a quarter of live births in the state. Approximately 48.7% of women were 20-29 years, 46.5% were 30-52 years, and 4.8% were under 20 years.

SRPDS

Results showed that 10.0% of women with a recent live birth in Hawai'i had SRPDS (Table 2). The prevalence of SRPDS was significantly higher among Native Hawaiian and OPI women compared to whites, who had the lowest estimate (Table 2). Estimates of SRPDS were highest among women under 20 years, those "not sure" on pregnancy intendedness, those who experienced IPV, used illicit drugs before pregnancy, had prenatal anxiety, had prenatal depression, or those who experienced ≥6 SLEs before pregnancy (Table 2).

Many of these differences were demonstrated in the final adjusted model (Table 3). Women who are Native Hawaiian (adjusted odds ratios [AOR] = 1.77; 95% CI: 1.17-2.70), Filipino (AOR = 2.16; 95% CI: 1.33-3.50), Japanese (AOR = 2.88; 95% CI: 1.67-4.98), and OPI (AOR = 3.22; 95% CI:1.78-5.82) had a higher likelihood of SRPDS than white women (Figure 1). Women aged 20-29 years (AOR = 0.39; 95% CI: 0.24-0.65) and 30-52 years (AOR = 0.41; 95% CI: 0.24-0.69) were less likely to have SRPDS than those under 20 years. Women who experienced IPV (AOR = 2.65; 95% CI: 1.37-5.13) or used illicit drugs before pregnancy (AOR = 1.97; 95% CI: 1.21-3.20) had higher odds of SRPDS than those who did not (Table 3). SRPDS was most common among women who had prenatal anxiety (AOR = 2.10; 95% CI: 1.28-3.42) or prenatal depression (AOR = 2.78; 95% CI: 1.47-5.25). There was an upward trend in SRPDS among women who experienced 1-2 SLEs (AOR = 2.27; 95% CI: 1.58-3.27, 3-5 SLEs (AOR = 3.50; 95% CI: 2.36-5.20), ≥6 SLEs (AOR = 5.84; 95% CI: 2.89-11.80) compared to those with no SLE (Figure 1). There were no significant differences in the likelihood of SRPDS for pregnancy intendedness.

Possible SRPDS

Approximately 27.7% of women with a recent live birth in Hawai'i had possible SRPDS (Table 2).

Compared to whites, the prevalence of possible SRPDS was significantly higher among Filipino, OPI women, and those in the other/unknown race category. Estimates of possible SRPDS were highest among women under 20 years, had an unintended pregnancy, those who experienced IPV, used illicit drugs before pregnancy, had prenatal anxiety, had prenatal depression, and those who experienced ≥6 SLEs (Table 2).

In the final adjusted model (Table 3), Native Hawaiian (AOR = 1.33; 95% CI: 1.03-1.72), Filipino (AOR = 2.13; 95% CI: 1.58-2.87) or OPI women (AOR = 2.02; 95% CI: 1.37-3.00) were more likely to have possible SRPDS compared with white women (Figure 2). Those with an unintended pregnancy (AOR = 1.72; 95% CI: 1.39-2.12) or those who were not sure what they wanted (AOR = 1.31; 95% CI: 1.02-1.67) were more likely to have possible SRPDS than women who intended to be pregnant (Table 3). After adjustment, possible SRPDS was most likely among women who had prenatal anxiety (AOR = 1.60; 95% CI: 1.07-2.40), prenatal depression (AOR = 2.26; 95% CI: 1.32-3.87) as well as those who experienced 1-2 SLEs (AOR = 1.69; 95% CI: 1.36-2.10), 3-5 SLEs (AOR = 2.03; 95% CI: 1.57-2.64), or ≥ 6 SLEs (AOR = 3.35; 95% CI : 2.11-5.33; Table 3, Figure 2).

Table 1. Selected Sociodemographic Characteristics of Pregnancy Risk Assessment and Monitoring System (PRAMS) Study Sample, Hawai'i, 2012 to 2015 (N=5572)

	Frequency	Weighted Percentage	95% CI[a]
Maternal Race			
White	1303	24.1	22.6-25.6
Native Hawaiian	1693	27.5	26.0-29.0
Filipino	1025	17.0	15.7-18.3
Japanese	466	9.2	8.1-10.2
Other Pacific Islander[b]	337	6.9	6.0-7.8
Other/Unknown[c]	748	15.3	14.0-16.6
Maternal Age (years)			
Under 20	277	4.8	4.0-5.5
20-29	2625	48.7	47.0-50.5
30-52	2670	46.5	44.7-48.3
Pregnancy Intendedness			
Intended Pregnancy	2766	52.2	50.4-54.0
Unintended Pregnancy	1523	28.7	27.1-30.3
Not Sure	1040	19.1	17.7-20.5
Missing	243		
Intimate Partner Violence			
No	5295	96.8	96.2-97.4
Yes	175	3.2	2.6-3.8
Missing	102		
Illicit Drug Use			
No	4831	93.8	93.0-94.6
Yes	395	6.2	5.4-7.0
Missing	346		
Prenatal Anxiety			
No	4996	93.4	92.5-94.3
Yes	384	6.6	5.7-7.5
Missing	192		
Prenatal Depression			
No	5125	95.8	95.0-96.5
Yes	238	4.2	3.5-5.0
Missing	209		
Stressful Life Events			
0	1799	33.9	32.2-35.6
1-2	2194	41.4	39.7-43.2
3-5	1187	20.4	19.0-21.8
≥ 6	232	4.3	3.5-5.0
Missing	160		

Note: Individual subgroup column totals may not sum to overall total due to missing/unknown data and row percentages may not sum to 100% due to rounding.
[a] CI = confidence interval.
[b] Other Pacific Islander includes Samoan, Guamanian, other Pacific Islander.
[c] Other/Unknown group includes Chinese, Korean, Vietnamese, other Asians, Asian Indian, Puerto Rican, Cuban, Mexican, American Indian, all others, and unknown.

Table 2. Sociodemographic Characteristics of Respondents by Self-Reported Postpartum Depression Symptoms (SRPDS), Pregnancy Risk Assessment and Monitoring System (PRAMS), Hawai'i, 2012-2015

	SRPDS Prevalence (95% CI[a])	Possible SRPDS Prevalence (95% CI)	None Prevalence (95% CI)
Overall	10.0 (8.9-11.0)	27.7 (26.2-29.3)	62.3 (60.6-64.0)
Maternal Race			
White	6.7 (4.9-8.5)	22.9 (19.8-25.9)	70.5 (67.2-73.8)
Native Hawaiian	11.5 (9.5-13.5)	27.9 (25.0-30.7)	60.6 (57.5-63.7)
Filipino	9.3 (7.0-11.5)	35.0 (30.9-39.0)	55.8 (51.5-60.0)
Japanese	11.1 (7.4-14.9)	22.1 (17.1-27.2)	66.7 (61.1-72.4)
Other Pacific Islander[b]	15.1 (9.9-20.3)	33.5 (27.0-40.1)	51.4 (44.4-58.3)
Other/Unknown[c]	10.1 (7.3-13.0)	27.8 (57.5-66.6)	62.1 (57.5-66.6)
Maternal Age (years)			
Under 20	19.4 (13.3-25.5)	34.5 (27.0-42.0)	46.1 (38.4-53.7)
20-29	10.2 (8.7-11.6)	27.2 (24.9-29.4)	62.7 (60.2-65.1)
30-52	8.8 (7.3-10.2)	27.6 (25.3-29.9)	63.6 (61.1-66.1)
Pregnancy Intendedness			
Intended Pregnancy	8.5 (7.1-9.8)	22.8 (20.8-24.9)	68.7 (66.4-71.0)
Unintended Pregnancy	11.1 (9.0-13.1)	34.6 (31.4-37.8)	54.3 (51.0-57.7)
Not Sure	12.5 (9.8-15.3)	30.0 (26.3-33.7)	57.5 (53.4-61.5)
Intimate Partner Violence			
No	9.3 (8.2-10.3)	27.4 (25.8-29.0)	63.3 (61.6-65.1)
Yes	31.1 (21.9-40.4)	36.2 (26.8-45.7)	32.7 (23.4-41.9)
Illicit Drug Use			
No	8.9 (7.8-9.9)	26.8 (25.1-28.4)	64.4 (62.6-66.2)
Yes	20.2 (14.5-25.8)	35.9 (29.4-42.4)	43.9 (37.4-50.5)
Prenatal Anxiety			
No	9.4 (8.3-10.4)	26.7 (25.1-28.3)	63.9 (62.1-65.7)
Yes	19.8 (14.5-25.1)	40.0 (33.3-46.6)	40.3 (33.5-47.0)
Prenatal Depression			
No	9.5 (8.5-10.6)	26.9 (25.3-28.5)	63.6 (61.8-65.4)
Yes	22.2 (15.4-29.0)	42.7 (34.3-51.1)	35.1 (26.8-43.4)
Stressful Life Events			
0	5.5 (4.2-6.9)	22.1 (19.5-24.7)	72.3 (69.6-75.1)
1-2	9.6 (8.0-11.3)	28.5 (26.0-31.0)	61.9 (59.2-64.6)
3-5	15.2 (12.4-17.9)	31.9 (28.3-35.4)	53.0 (49.1-56.8)
≥ 6	23.3 (15.8-30.8)	45.5 (36.8-54.1)	31.2 (23.3-39.2)

[a] CI = confidence interval.
[b] Other Pacific Islander includes Samoan, Guamanian, other Pacific Islander.
[c] Other/Unknown group includes Chinese, Korean, Vietnamese, other Asians, Asian Indian, Puerto Rican, Cuban, Mexican, American Indian, all others, and unknown.

Table 3. Generalized Logit Model: Crude and Adjusted Odds Ratios (OR) for Self-Reported Postpartum Depression Symptoms (SRPDS) by Selected Sociodemographic Characteristics, Pregnancy Risk Assessment and Monitoring System (PRAMS), Hawai'i, 2012-2015

	SRPDS		Possible SRPDS	
	Crude OR[a] (95% CI[b])	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR[e] (95% CI)
Maternal Race				
White	Referent	Referent	Referent	Referent
Native Hawaiian	2.00 (1.40-2.86)	1.77 (1.17-2.70)	1.42 (1.13-1.78)	1.33 (1.03-1.72)
Filipino	1.76 (1.17-2.63)	2.16 (1.33-3.50)	1.93 (1.50-2.49)	2.13 (1.58-2.87)
Japanese	1.77 (1.09-2.86)	2.88 (1.67-4.98)	1.02 (0.72-1.44)	1.23 (0.83-1.82)
Other Pacific Islander[c]	3.10 (1.85-5.20)	3.22 (1.78-5.82)	2.01 (1.42-2.87)	2.02 (1.37-3.00)
Other/Unknown[d]	1.73 (1.12-2.67)	2.15 (1.32-3.50)	1.38 (1.05-1.82)	1.51 (1.11-2.05)
Maternal Age (years)				
Under 20	Referent	Referent	Referent	Referent
20-29	0.36 (0.23-0.56)	0.39 (0.24-0.65)	0.59 (0.41-0.85)	0.67 (0.44-1.01)
30-52	0.34 (0.21-0.57)	0.41 (0.24-0.69)	0.53 (0.35-0.78)	0.83 (0.55-1.27)
Pregnancy Intendedness				
Intended Pregnancy	Referent	Referent	Referent	Referent
Unintended Pregnancy	1.66 (1.25-2.19)	1.22 (0.88-1.70)	1.92 (1.59-2.32)	1.72 (1.39-2.12)
Not Sure	1.77 (1.29-2.43)	1.21 (0.84-1.75)	1.57 (1.27-1.95)	1.31 (1.02-1.67)
Intimate Partner Violence				
No	Referent	Referent	Referent	Referent
Yes	6.52 (3.89-10.91)	2.65 (1.37-5.13)	2.56 (1.58-4.14)	1.57 (0.91-2.69)
Illicit Drug Use				
No	Referent	Referent	Referent	Referent
Yes	3.34 (2.25-4.95)	1.97 (1.21-3.20)	1.97 (1.44-2.68)	1.44 (1.00-2.08)
Prenatal Anxiety				
No	Referent	Referent	Referent	Referent
Yes	3.36 (2.27-4.97)	2.10 (1.28-3.42)	2.38 (1.73-3.27)	1.60 (1.07-2.40)
Prenatal Depression				
No	Referent	Referent	Referent	Referent
Yes	4.22 (2.63-6.77)	2.78 (1.47-5.25)	2.88 (1.92-4.32)	2.26 (1.32-3.87)
Stressful Life Events				
0	Referent	Referent	Referent	Referent
1-2	2.03 (1.47-2.80)	2.27 (1.58-3.27)	1.51 (1.24-1.83)	1.69 (1.36-2.10)
3-5	3.73 (2.66-5.24)	3.50 (2.36-5.20)	1.97 (1.57-2.48)	2.03 (1.57-2.64)
≥ 6	9.73 (5.64-16.79)	5.84 (2.89-11.80)	4.77 (3.11-7.31)	3.35 (2.11-5.33)

[a] CI = confidence interval.
[b] Other Pacific Islander includes Samoan, Guamanian, other Pacific Islander.
[c] Other/Unknown group includes Chinese, Korean, Vietnamese, other Asians, Asian Indian, Puerto Rican, Cuban, Mexican, American Indian, all others, and unknown.

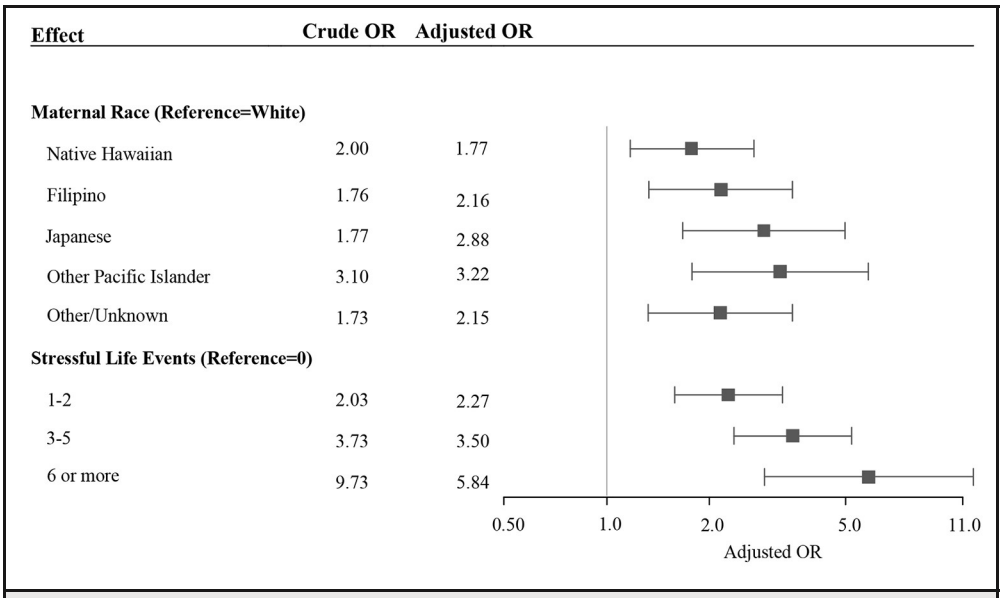

Figure 1. Forest Plot of Adjusted Odds Ratios (OR) for Self-Reported Postpartum Depression Symptoms (SRPDS) by Maternal Race and Stressful Life Events. The Plot Displays the Adjusted Odds Ratio with 95% Confidence Intervals. The Vertical Line Represents an Odds Ratio of 1.0, Where There is No Effect. Note that Other Pacific Islander includes Samoan, Guamanian, Other Pacific Islander; Other/Unknown Group Includes Chinese, Korean, Vietnamese, Other Asians, Asian Indian, Puerto Rican, Cuban, Mexican, American Indian, All Others, and Unknown.

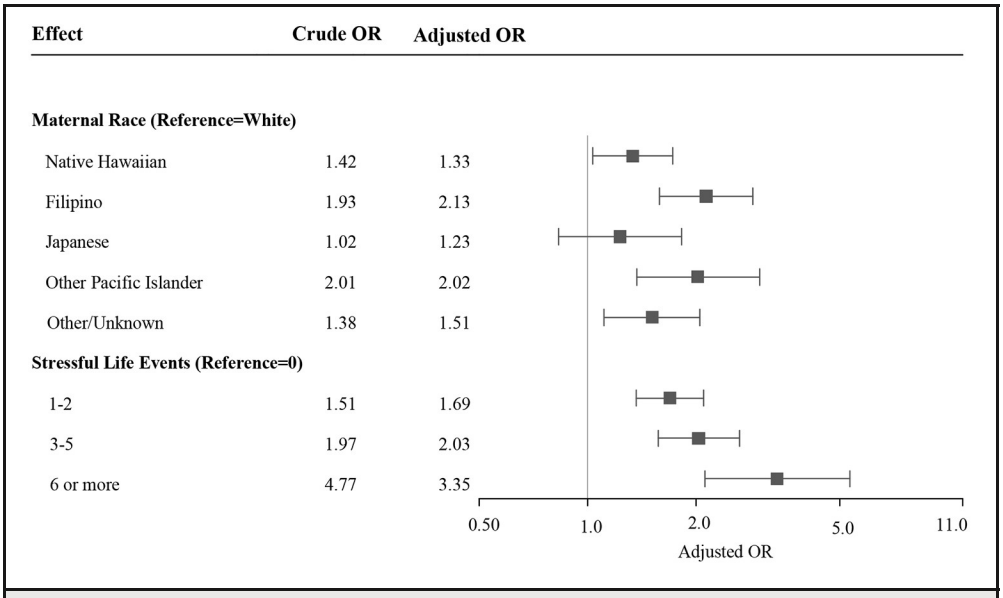

Figure 2. Forest Plot of Adjusted Odds Ratios (OR) for Possible Self-Reported Postpartum Depression Symptoms (SRPDS) by Maternal Race and Stressful Life Events. The Plot Displays the Adjusted Odds Ratio with 95% Confidence Intervals. The Vertical Line Represents an Odds Ratio of 1.0, Where There is No Effect. Note that Other Pacific Islander Includes Samoan, Guamanian, Other Pacific Islander; Other/Unknown Group Includes Chinese, Korean, Vietnamese, Other Asians, Asian Indian, Puerto Rican, Cuban, Mexican, American Indian, All Others, and Unknown.

Discussion

This study examined the risk factors for postpartum depression symptoms in Hawai‘i and revealed that 37.7% of women with a recent live birth reported symptoms of postpartum depression. About 10.0% of women were at high risk, and 27.7% of women were at intermediate risk of postpartum depression. Our study revealed that women who are Native Hawaiian, Filipino, Japanese, and OPI were significantly more likely to have SRPDS than white women. Most of these racial groups also had a higher likelihood of having possible SRPDS. Other significant risk factors for SRPDS included being under 20 years of age, experiencing IPV, illicit drug use before pregnancy, prenatal anxiety, prenatal depression, or experiencing SLEs.

Hawai‘i consists of diverse populations of Native Hawaiian, Asian, and OPI. This study revealed Japanese and OPI women were about 3 times as likely, and Filipino women were about twice as likely, to report SRPDS as white women. Past studies also revealed higher estimates of postpartum depression for Asian and OPI women.[21,30,31] However, other studies of postpartum depression for different ethnic groups showed varying results,[14,32,33] which might be due to contrasting cultural factors, type of data collection instruments, and methodologies used in assessing the prevalence of postpartum depression.

The strongest predictor for SRPDS and possible SRPDS was the experience of SLEs, where relocation, relationship, and financial stress were the most commonly reported stressors for women in Hawai‘i. An incremental, upward trend was found for SLEs, with women who experienced 6 or more stressors to be almost 6 times as likely to have SRPDS compared to those without any stressors. Experiencing multiple stressors might alter the individuals' appraisal of the stressors and perception of their capacity to cope, increase their feelings of lack of control,[34] and increase the likelihood of depressive symptoms.[35] This study provides valuable information of the impact of SLEs on postpartum depression and highlights the need of screening women for prenatal stressors.

In this study, similar effects were found for possible SRPDS, but of a smaller magnitude. Several different effects were found between SRPDS and possible SRPDS. For example, IPV was a significant risk factor for SRPDS but not for possible SRPDS, suggesting that women experiencing IPV were more likely to be in highest risk category for postpartum depression. Unintended pregnancy had significant effects for possible SRPDS but not for SRPDS, indicating women with unintended pregnancy were more likely to be in the intermediate risk category for postpartum depression. These findings demonstrated in this study revealed the importance of identifying women with intermediate risk, in addition to high-risk individuals, for further diagnostic evaluation.

To improve the health of mothers in Hawai‘i, it will be important to develop culturally appropriate programs that will increase awareness of postpartum depression. For example, the Healthy Mothers Healthy Babies Coalition of Hawaii (HMHB) provides resources and referral for maternal mental health counselling for postpartum depression.[36] There are depression treatment centers in Hawai‘i that provide screening and treatment programs for postpartum depression. The Hawai‘i Screening, Brief Intervention, and Referral to Treatment (SBIRT) Program is implemented across the state health system to include screening to identify risk for alcohol and substance abuse, and other behavioral health issues.[37] It aims to implement early screening and provide appropriate referral for early intervention. In addition, the Perinatal Support Services Program within the Maternal and Child Health Branch in the Hawai‘i State Department of Health requires screening for their clients for depression during pregnancy and referrals to appropriate services when needed.

There are limitations of this study and caution is necessary for the interpretation and application of the results. First, the data are from the PRAMS survey, where the source of information is all based on self-report. Response bias, ranging from simply misunderstanding the question to social desirability bias, often exist in self-report data.[38] Moreover, the data in this study was based on the years 2012-2015, where 2016 data was not available yet at the time and there was no data collection between 2017-2018 in Hawai‘i. Also, PRAMS survey measures for PPD symptoms are based on 2 screening questions, which cannot be used for diagnosis purposes. In addition, pregnancy intention might change over the 9-month period from conception through postpartum, which makes results related to unintended pregnancy difficult to interpret. Finally, race categorization from the Hawai‘i birth certificate data is limited to the single race category. A study showed that 33.4% of mothers in Hawai‘i reported more than one of the 5 federally-designated racial groups.[39] As multiracial category for a large proportion of mothers was not accounted for due to the single-race coding, the ability to generalize the results is limited.

Pregnancy and childbirth can be a very rewarding and exciting time, but it can also be a period of severe emotional stress. Educating prenatal care providers to evaluate for signs and symptoms of depression as well as other risk factors and improving knowledge of appropriate referral services is needed to help reduce the impact of postpartum depression symptoms in women. Increasing awareness of disparities in postpartum depression among the Asian and OPI populations and providing additional care, especially for those who experienced prenatal depression and SLEs, would be crucial to help reduce occurrence of postpartum depression symptoms.

Conflict of Interest

The authors declare that they have no conflict of interest.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Hawai‘i State Department of Health.

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