



Preconception Obesity Factsheet (September 2023)

Pregnancy Risk Assessment Monitoring System

Background

Obesity is associated with multiple health consequences, including the leading causes of death such as coronary heart disease, stroke, cancers of the breast and colon, and type 2 diabetes. Obesity is also associated with poor female reproductive health, with pre-pregnancy obesity being an independent risk factor for adverse pregnancy and neonatal outcomes.¹ Pregnancy complications associated with obesity include gestational diabetes, gestational hypertension, pre-eclampsia, and cesarean delivery. The Healthy People 2030 objective is to increase the proportion of women delivering a live birth who had a healthy weight prior to pregnancy to 47.1% nationally by focusing on helping people eat healthy and get enough physical activity to reach and maintain a healthy weight.

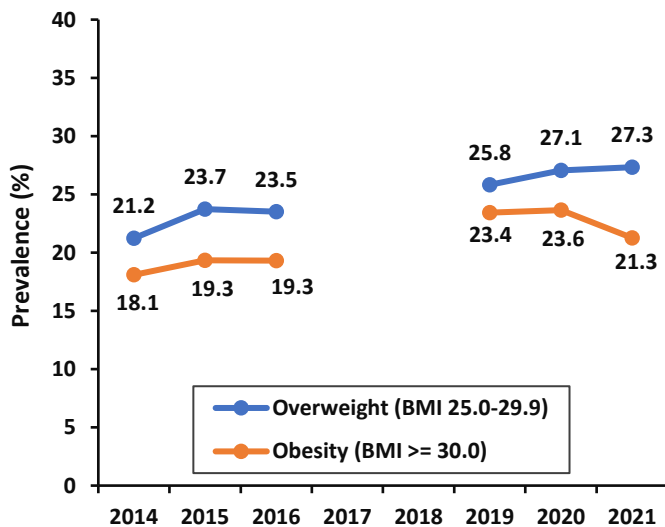
Trends over Time

In Hawaii, preconception obesity, defined as having a body mass index (BMI) of 30.0 or above before pregnancy, increased from 18.1% in 2014 to 21.3% for new mothers. There was no data collection in 2017 and 2018. Only half a year of 2019 data was available. Similarly, being overweight (BMI 25.0-29.9) prior to pregnancy increased from 21.2% in 2014 to 27.3% in 2021. These increases were non-significant, which might be due to small samples.

Data Highlights

- In 2021, approximately 21.3% of mothers in Hawaii were obese and 27.3% were overweight before pregnancy.
- Women who were more likely to report preconception obesity included Native Hawaiian and other Pacific Islander; those between the ages of 35 to 52; those who resided in Hawaii County; those who were on Medicaid/Quest before pregnancy; those who participated in the WIC program during pregnancy; those who had depression before pregnancy; and those who smoked during pregnancy.
- Women with preconception obesity were more likely to have high blood pressure or gestational diabetes. They were more likely to have a cesarean delivery.
- Infants delivered from mothers with preconception obesity were more likely to have low birthweight, be admitted to NICU, and have a longer hospital stay. They were less likely to be breastfed for eight weeks or more.

Preconception Obesity and Overweight, Hawaii PRAMS 2014-2021



Data Source

Data from a total of 3,077 respondents were analyzed from the 2019-2021 Hawaii Pregnancy Risk Assessment Monitoring System (PRAMS), a population-based surveillance system for maternal behaviors before, during, and just after pregnancy. The 2019-2021 aggregated data were used in this analysis as there was no Hawaii PRAMS data collection for 2017-2018. Only half a year of data was available for 2019.

Maternal Characteristics Related to Preconception Obesity and Overweight

In Hawaii, estimates of preconception obesity appeared to be higher in Native Hawaiian and other Pacific Islander; those between the ages of 35 to 52; those who resided in Hawaii County; those who were on Medicaid/Quest before pregnancy; those who participated in the WIC program during pregnancy; those who had depression before pregnancy; and those who smoked during pregnancy (Table 1). However, due to small samples, most of these comparisons were non-significant. Different groups were found to have higher estimates of preconception overweight.

Perinatal Risks and Outcomes Associated with Preconception Obesity and Overweight

Women with preconception obesity may be associated with an increased rate of high blood pressure (reported on birth certificate) and an increased rate of gestational diabetes (reported on the PRAMS survey), compared to those who were overweight or normal weight (BMI 18.5-24.9) before pregnancy (Figure 1). Mothers with preconception obesity (39.3%) were significantly more likely to have a cesarean delivery compared to those who were overweight (29.3%) or normal weight (20.9%) before pregnancy.

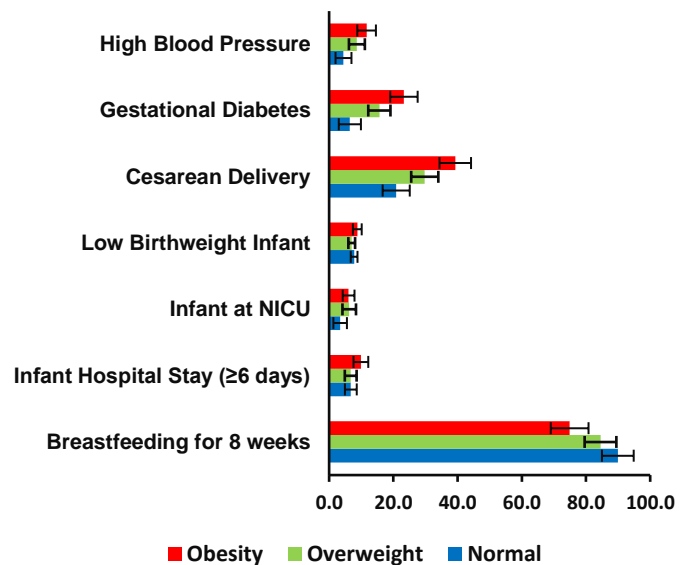
The rate of low birthweight infants was slightly higher for women with preconception obesity (8.8%), compared to overweight (7.0%) or normal weight (7.8%) mothers. The rate of infants admitted to the newborn intensive care unit (NICU) was slightly higher for those who were obese (6.8%) or overweight (6.3%), compared to those whose weight was normal weight before pregnancy (3.4%). Moreover, infants were more likely to have a longer hospital stay (6 or more days) for those with preconception obesity (9.9%), compared to overweight (6.7%) or normal weight mothers (6.8%). The rate of breastfeeding for 8 weeks or more was slightly lower for those with preconception obesity (74.9%), compared to those who were overweight (84.5%) or at a normal weight (89.9%) before conception.

Table 1. Bivariate associations of preconception obesity and overweight with selected maternal characteristics, Hawaii PRAMS 2019 to 2021

	Obese Prevalence (%) 95% CI ¹	Overweight Prevalence (%) 95% CI
Maternal Race		
White	16.0 (12.2-19.8)	27.7 (23.2-32.3)
Native Hawaiian	32.2 (28.1-36.3)	28.1 (24.0-32.2)
Filipino	21.5 (16.8-26.2)	29.3 (24.1-34.5)
Japanese	9.5 (4.9-14.1)	13.1 (8.1-18.1)
Other Pacific Islander	42.2 (32.4-52.0)	27.5 (18.6-36.4)
Other/Unknown	18.0 (12.9-23.2)	28.8 (23.0-34.6)
Maternal Age (years)		
Under 20	20.4 (8.4-32.5)	15.4 (5.0-25.8)
20-34	22.3 (19.9-24.7)	27.1 (24.5-29.7)
35-52	23.9 (19.9-27.9)	27.7 (23.5-31.9)
County of Residence		
Honolulu	21.6 (15.2-28.1)	26.6 (19.9-33.3)
Hawaii	30.0 (22.2-37.8)	25.8 (18.6-33.1)
Maui	28.0 (19.5-36.4)	21.5 (14.0-29.0)
Kauai	21.1 (14.2-28.0)	24.4 (17.0-31.7)
Health Insurance Prior to Pregnancy		
None	20.7 (9.5-31.9)	26.4 (15.0-37.9)
Medicaid/Quest	30.8 (26.7-35.0)	24.2 (20.2-28.1)
Military	17.5 (12.2-22.7)	34.5 (28.1-40.8)
Private Insurance	20.3 (17.7-22.9)	25.7 (22.9-28.6)
WIC Participation During Pregnancy		
No	19.3 (16.9-21.6)	27.7 (25.0-30.3)
Yes	30.6 (26.5-34.6)	25.4 (21.5-29.3)
Prenatal Depression		
No	22.0 (19.9-24.1)	27.1 (24.8-29.4)
Yes	29.3 (22.0-36.7)	24.8 (17.8-31.8)
Smoking During Pregnancy		
No	22.6 (20.5-24.7)	26.8 (24.6-29.0)
Yes	27.9 (16.3-39.6)	28.3 (17.4-39.3)

¹95% CI refers to the 95% confidence interval around estimate.

Figure 1: Perinatal Risks and Outcomes by Preconception Weight Status, Hawaii PRAMS 2019-2021



Discussion

In Hawaii, approximately 21.3% of mothers were obese and 27.3% were overweight before pregnancy. The 2019-2021 PRAMS data demonstrated associations between preconception obesity and selected maternal characteristics, as well as adverse health outcomes for mothers and infants for those with preconception obesity. Pre-pregnancy weight is important and efforts should be targeted to all women of reproductive age. Although many factors contribute to preconception body weight, early assessment of health status, dietary counseling, and monitoring women who are overweight or obese before and during pregnancy will promote healthy outcomes for both the mother and her child. Further, it is important to increase the awareness that being overweight and obese increases the risk for disease among all populations and that increased efforts are needed to decrease this burden on society.

About the PRAMS Data

The Hawaii Pregnancy Risk Assessment Monitoring System (PRAMS) is a self-reported survey of recent mothers conducted by mail with telephone follow-up. It is designed to monitor the health and experiences of women before, during, and just after pregnancy. Every year in Hawaii, about 2,400 women who deliver an infant are randomly selected to participate. **Race** is singly coded based on the mother's self-report from the birth certificate.

Suggested Citation:

Fok, CCT; Awakuni, J; Shim, M. "Preconception Obesity Factsheet" Honolulu, HI: Hawaii State Department of Health, Family Health Services Division; September 2023.

References

- Centers for Disease Control and Prevention, "Increases in Pre-pregnancy Obesity: United States, 2016–2019," <https://www.cdc.gov/nchs/products/databriefs/db392.htm> (accessed February 24, 2023).