



WYOMING PRAMS

Quarterly Snapshot

March 29, 2024
High Blood Pressure

Risk Factors and Potential Complications of High Blood Pressure among Pregnant Women in Wyoming

High blood pressure (HBP), also known as hypertension, is when a person’s blood pressure consistently measures above the normal and/or elevated blood pressure levels (see chart below). If someone believes they have HBP, they should contact their healthcare team.¹

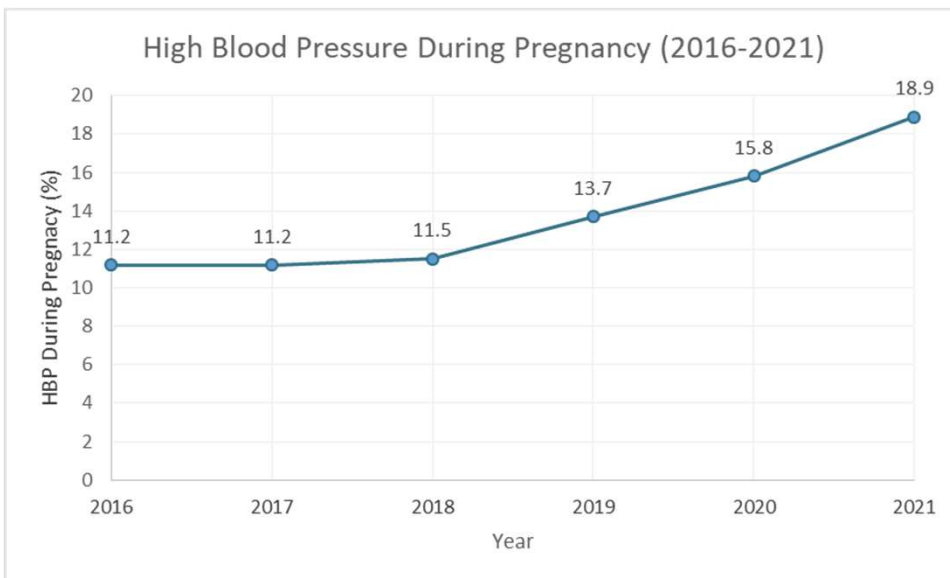
Blood Pressure Categories



BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120-129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130-139	or	80-89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

heart.org/bplevels

High Blood Pressure During Pregnancy



The percent of women in Wyoming reporting having HBP during their most recent pregnancy has increased from **11.2%** in 2016 to **18.9%** in 2021.

Overall, **13.6%** of women in Wyoming who gave birth between 2016-2021 reported having HBP during their most recent pregnancy.

Prevalence of High Blood Pressure (HBP) During Pregnancy Among Those with Known Risk Factors (WY PRAMS 2016-2021):

High Blood Pressure *Before* Pregnancy is a Risk Factor for High Blood Pressure *During* Pregnancy

While HBP *before* pregnancy can be a risk factor for HBP *during* pregnancy, HBP before pregnancy does not automatically mean one will have HBP during pregnancy.

Among women in Wyoming who gave birth between 2016-2021, 4.2% reported having HBP during the 3 months before becoming pregnant (WY PRAMS).



HBP before Pregnancy:

Out of the mothers who reported having HBP before pregnancy, **29.3%** reported having HBP during pregnancy, compared to the 12.9% of those that did not have HBP before pregnancy.

Yes: 29.3% (21.2-39.1)

No: 12.9% (11.5-14.4)



Other risk factors for HBP during pregnancy include the following: being over the age of 35, obesity, diabetes before pregnancy, excessive weight gain during pregnancy, smoking, multiple births, first time pregnancies, in vitro fertilization (IVF), chronic conditions, family history, and autoimmune conditions such as lupus.^{2,3}

WY PRAMS (2016-2021) data was analyzed to see if potential associations exist among known risk factors and the percent of mothers in Wyoming who reported having HBP during pregnancy. Below are the significant findings from this analysis.

In our analysis of Wyoming mothers during 2016-2021, being over the age of 35, having diabetes before pregnancy, and smoking during pregnancy were not associated with higher rates of HBP during pregnancy.

BMI

Out of the mothers who were obese, **23.6%** reported having HBP during pregnancy compared to 13.3%, 9.0% and 4.3% of those who were overweight, normal weight or underweight, respectively.

Underweight:	4.3% (1.6-11.3)
Normal:	9.0% (7.4-10.9)
Overweight:	13.3% (10.7-16.3)
Obese:	23.6% (20.1-27.6)



Gravida - Number of Pregnancies

Out of the mothers who were experiencing their first pregnancy, **18.2%** reported having HBP during pregnancy compared to 11.2% and 9.5% of those who were experiencing their 2nd or 3rd pregnancy or 4th + pregnancy, respectively.

First Pregnancy:	18.2% (15.6-21)
2nd or 3rd Pregnancy:	11.2% (9.5-13.3)
4th + Pregnancy:	9.5% (6.7-13.2)



Weight Gain during Pregnancy

Out of the mothers who experienced excessive weight gain, **17.6%** reported having HBP during pregnancy compared to 9.2% and 8.1% of those who experienced insufficient or adequate weight gain during pregnancy, respectively.

Adequate Weight Gain:	8.1% (6.2-10.5)
Insufficient Weight Gain:	9.2% (6.7-12.4)
Excessive Weight Gain:	17.6% (15.4-20.1)

Adequate, Insufficient and Excessive Weight Gain is categorized based off of the mother's BMI before pregnancy and how much weight was gained during the pregnancy.

Single vs Multiple Pregnancy

Out of the mothers that were having twins, **31.0%** reported having HBP during pregnancy compared to 13.3% of mothers experiencing a single birth.

Single Child:	13.3% (11.9-14.8)
Twins:	31.0% (21.8-41.9)
**More than Twins:	52.2% (17.6-84.9)

** Indicates to Interpret with Caution because the sample size number is less than 20. Because of the interpret with Caution, the significant finding is not highlighted.

Potential Complications associated with High Blood Pressure During Pregnancy

One of the most well known complications associated with HBP during pregnancy is preeclampsia. Preeclampsia is pregnancy-induced HBP with the addition of proteinuria (protein in urine).⁴ Preeclampsia can lead to serious complications if it goes untreated. Wyoming PRAMS does not currently collect data on preeclampsia in Wyoming. However, the Centers for Disease Control and Prevention (CDC) reported that HBP occurs in approximately 1 in every 12 to 17 pregnant women and preeclampsia occurs in approximately 1 in every 25 pregnant women.²

Symptoms of Preeclampsia^{2,3}

- Headaches
- Changes in vision (blurriness, seeing spots, temporary blindness, light sensitivity)
- Pain in upper stomach
- Nausea or vomiting
- Sudden weight gain
- Trouble breathing
- Swollen face, hands, feet, ankles and legs
- Blood in urine

If these symptoms occur it is important to consult with healthcare team. Additionally, not all women with preeclampsia will show symptoms, highlighting the importance of regular check-ups with a health care team during pregnancy.²

Other potential complications associated with HBP during pregnancy include the following: premature delivery, low birth weight (LBW), increased risk of cesarean delivery, eclampsia, stroke, heart disease, diabetes, high cholesterol, placental abruption, and fetal or infant death.²

Prevalence of Potential Interventions and Complications associated with High Blood Pressure During Pregnancy (WY PRAMS 2016-2021)



Induction

Out of the mothers who had an induction, **19.7%** reported having HBP during pregnancy compared to 8.0% of those who were not induced.

Induced: **19.7% (17.3-22.3)**
Not Induced: 8.0% (6.6-9.7)

Cesarean Delivery

Out of the mothers who had a cesarean delivery, **19.2%** reported having HBP during pregnancy compared to 11.5% of those who delivered vaginally.

Vaginal Delivery: 11.5% (10.0-13.2)
Cesarean Delivery: **19.2% (16.3-22.5)**

Premature Delivery

Out of the mothers who had a premature delivery (<37 weeks), **28.6%** reported having HBP during pregnancy compared to 12.3% of those who delivered at 37 weeks or more.

<37 weeks: **28.6% (24.2-33.5)**
37+ weeks: 12.3% (12.2-15.1)

Low Birth Weight

Out of the mothers who gave birth to a baby that was of low birth weight, **26.0%** reported having HBP during pregnancy compared to 12.5% of those who gave birth to a baby of normal birth weight.

Normal Birth Weight: 12.5% (11.0-14.1)
Low Birth Weight: 26.0% (23.7-28.4)

Summary Statement

There are many risk factors that are associated with high blood pressure during pregnancy that can be managed and some that cannot. It is important to see a healthcare team regularly during pregnancy and inform them any symptoms that may indicate HBP or preeclampsia. Unmanaged HBP during pregnancy or preeclampsia during pregnancy can lead to further, and sometimes fatal, complications.

References:

- 1: American Heart Association. May, 30, 2023. *Understanding Blood Pressure Readings*. [accessed 2024, February 23]
- 2: Center for Disease Control and Prevention. June 19, 2023. *High Blood Pressure During Pregnancy*. [accessed 2024, February 23]
- 3: Yale Medicine.(n.d.). *Hypertension (High Blood Pressure) During Pregnancy*. [accessed 2024, February 23]
4. Duley L. *Pre-eclampsia, eclampsia, and hypertension*. *BMJ Clin Evid*. 2008 Aug 14;2008:1402. PMID: 19445808; PMCID: PMC2907952.

Helpful Resources:

High Blood Pressure During Pregnancy: <https://www.cdc.gov/bloodpressure/pregnancy.htm>

Preeclampsia Signs and Symptoms: <https://www.marchofdimes.org/find-support/topics/pregnancy/preeclampsia>

Pregnancy and Postpartum Resources: <https://www.cdc.gov/earher/index.html>

Wyoming Maternal and Child Health Unit Website: <https://health.wyo.gov/publichealth/mch/>

Wyoming Chronic Disease Prevention Program: <https://health.wyo.gov/publichealth/cancer-and-chronic-disease-prevention-unit/chronicdisease/>

Wyoming Maternal and Child Health Epidemiology Unit Website: <https://health.wyo.gov/publichealth/chronic-disease-and-maternal-child-health-epidemiology-unit/mch-epi/>

Wyoming PRAMS Website: <https://health.wyo.gov/publichealth/chronic-disease-and-maternal-child-health-epidemiology-unit/mch-epi/pregnancy-risk-assessment-monitoring-system-prams/>

Wyoming PRAMS estimates are computed using sampling weights. Statistical significance between weighted estimates was established utilizing chi square tests with a 0.05 significance level. 95% confidence intervals are displayed after the estimates in parentheses.