

# BMI & LABOUR

**?** How does obesity in pregnancy affect intrapartum outcomes for pregnant patients?

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## Obesity & Overweight

World Health Organization, n.d.

"Abnormal/excessive fat accumulation that presents a risk to health"

## BMI

Government of Canada, 2006

- Ratio of weight-to-height
- Indicator of health risks associated with being over or under weight
- Measured in kg/m<sup>2</sup>



## Background

Prepregnancy BMI and Gestational Weight Gain Recommendations

Government of Canada, 2016

Table 1: Gestational weight gain (GWG) recommendations

BMI (kg/m <sup>2</sup> )	Recommended GWG (kg)
Underweight: BMI<18.5	12.5-18.0
Normal weight: 18.5<BMI<24.9	11.5-16.0
Overweight: 25<BMI<30	7.0-11.5
Obese: BMI>30	5.0-9.0

Figure 1: Distribution of prepregnancy BMI

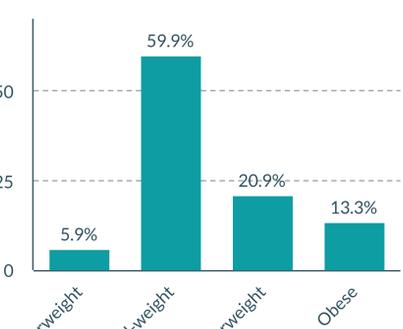


Figure 2: Distribution of GWG



## Why does this matter?



"Statistics Canada reports that **2 out of every 3** adults in Canada are overweight or obese" Government of Canada, 2006

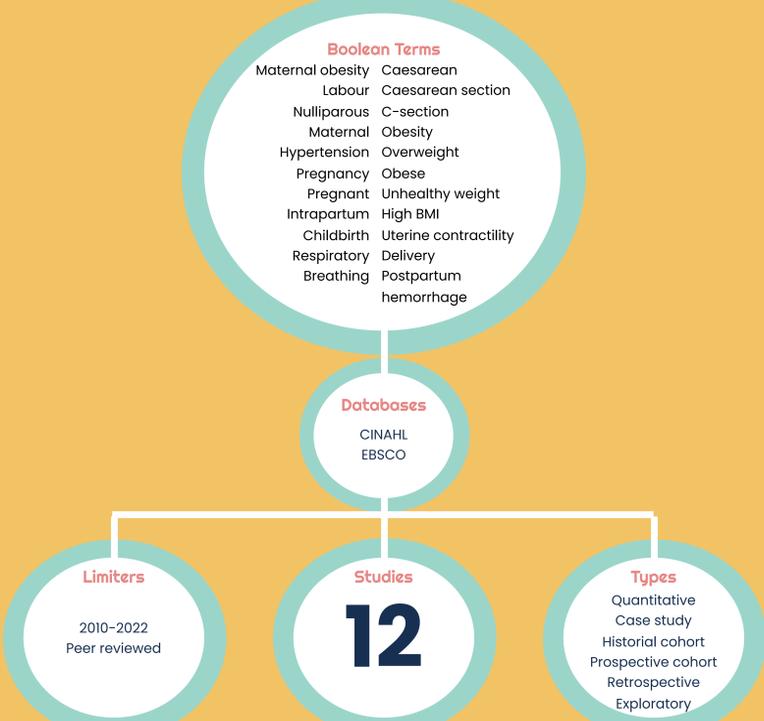
There is **minimal easily obtainable information** about the impact obesity has during labor and delivery.



There is a **gap in accessible knowledge** for the pregnant patient on the impact a high BMI has when in active labor.

## Methods

After identifying main concepts and narrowing the topic, group members used a combination of Boolean terms, limiters, and databases to target specific studies that pertained to our key findings.



## Key Findings

**↑ BMI =**

### ↑ RISK OF

- Hypertension & pre-eclampsia (Melchor et al., 2019)
- 1st and 2nd degree perineal lacerations (Lindholm & Altman, 2013)
- Hemorrhage
- Hypoventilation causing respiratory acidosis (Togioka et al., 2021)
- C-sections
- Group B Streptococcus colonization (Melchor et al., 2019)

### Preterm Birth



**BMI + GDM = ↑13.41%**

High BMI patients with gestational diabetes mellitus increases preterm birth rate by 13.41% (Liu et al., 2022).

**BMI + PEC = ↑36.66%**

High BMI patients with preeclampsia increases preterm birth rate by 36.66% (Liu et al., 2022).

**HTN = ↑50.4%**

50.4% of those diagnosed with hypertension deliver prematurely. (Kilpatrick et al., 2016)

### C-Section



**↓ UTERINE CONTRACTIONS**

High BMI resulting in decreased uterine contractions leads to increased doses of oxytocin and early use of analgesia, which further increase changes of caesarean delivery. (Ashraf, Maxwell, & D'Souza, 2022)

**↑30.5% C-SECTION**

Obesity is associated with an increased risk of caesarean delivery by 30.5% (FYFE et al., 2012).

**↑10.5% HEMORRHAGE**

Risk of hemorrhage in c-sections increased by 10.5% compared to people with normal BMI (FYFE et al., 2012).

### Intrapartum Hypertension



**>160/105 HTN**

Intrapartum hypertension can cause complications such as pulmonary edema, acute respiratory distress syndrome, transfusion, and ventilation (Kilpatrick et al., 2016)

### Hypoventilation Syndrome



**↑ RESPIRATORY ACIDOSIS**

High BMI, hypertension and history of obstructive sleep apnea increase CO<sub>2</sub> production and retention during labour, resulting in respiratory acidosis. (Togioka et al., 2021)

High BMI



Increased risk of **high placental mass**

Wallace et al., 2012



Increased risk of **macrosomic baby**



Increased risk of **c-section and perineal tears**

Lindholm & Altman, 2013

## Conclusion

How does obesity in pregnancy affect labour outcomes for the pregnant patient?

- Maternal morbidities during intrapartum (eg. pulmonary edema, ventilator use)
- Placental weight, meaning increased potential pregnancy complications
- Premature delivery
- Caesarean delivery
- 1st and 2nd degree perineal tears
- Postpartum hemorrhage
- Obstructive sleep apnea, which increases the chances of obesity hypoventilation syndrome which causes respiratory acidosis
- Lower vaginal delivery success rate

## Recommendations

- Pregnant women who are obese should be considered a high risk pregnancy (Melchor, 2019).
- BMI is not an accurate indicator of obesity as it does not consider the body composition of fat and muscle. (Chandrasekaran, 2018).
- Other tools should be used to determine obesity, such as body fat percentage and identifying fat distribution.
- Further research should include larger sample sizes and broader inclusion characteristics.
- Address the question: how does gestational weight gain affect the outcomes of these studies?

**RISK OF:**

