

Low Birth Weight of Newborns due to Living at High Altitudes



Jessica Ghali WCSN, Anett Cherkassky WCSN, Katie Downes WCSN
Evelyn L. Spiro School of Nursing, Wagner College

Introduction

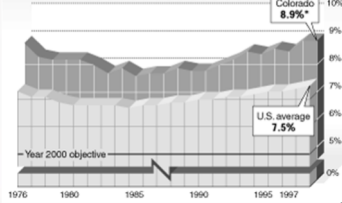
- According to "National Jewish Health," Denver Colorado has a high altitude of 5,280 feet above sea level. (1)
- Women who are pregnant in places such as Denver, must be aware that they are at higher risk for complications such as preeclampsia and other negative issues. (1)
- The most common issue mothers face are low birth weight or premature birth due to these alarmingly high altitudes. (2)
- Premature or preterm birth occurs before the 37th week of pregnancy as opposed to a full term of 40 weeks. (2)

Community Assessment & Analysis

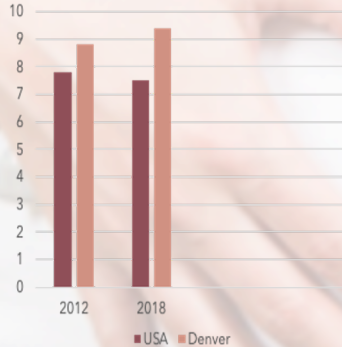
- According to Healthy People 2020, the national goal for babies born at a low birthweight is aimed to be less than 7.8%. (4)
- However, in 2012, 8.8% of Colorado babies were born at a low birth weight. This goes to show that a big majority of low birthweight in babies stems from Denver. (4)
- Colorado has exceptionally exceeded the overall mean of low birthweight babies compared to the whole U.S.
- In 2018, 9.4% of infants born in Colorado weighed less than 5.5 pounds, compared to 8.3% of the U.S. (3)
- The nationwide goal is to reduce the low-birth-weight rate to 7.2% by 2020. (3)

Low birth weight rates

Colorado's low birth weight rate – the percentage of children born weighing under 5 pounds, 8 ounces – has remained above the national average over the past quarter century.



LBW in the USA in Comparison to Denver, CO



Problem in the community

•Colorado's relatively high altitudes have been correlated to lower birth weight. High altitudes contribute to low birth weight because of the effects of oxygen delivery during pregnancy. At one mile above sea level, there is a 10 percent drop in your body's ability to transport oxygen and 20 percent drop in time to exhaustion. (4)

•This drastic decrease in oxygen levels can have a dramatic somatic effect on the human body. Let alone a pregnant individual. It is noted that for every 1,000 feet of elevation gain, a person loses 2% of the available oxygen for the body to use. This can negatively affect anyone, especially those who are pregnant. Studies showed that infants born at high altitude weighed 118g less and were more often low birth weight. (2)

•High altitude reduced birth weight by 101g and increased the risk of low birth weight by 27%.

•Researchers conducted a study where data was collected on low birth rates all over the U.S. In their analysis they found low birthweight clusters located in regions of 4,000 feet of elevation or more. (3)

Proposed Solution/ Program

IN WOMEN WE TRUST is a program that offers monthly seminars which include nutritional education required to curb low infant birth weight and premature birth. As well as prenatal screenings every 2 weeks for those who may be at risk for any gestational complications. The program will also provide at home visits to ensure proper use of portable oxygen delivery devices for those who are eligible and suffer from altitude sickness.

Learning objectives:

O Participants will be able to identify possible complications by the end of the first trimester via screening events.

O Participants will thoroughly document and track nutrition intake from the start of the program/pregnancy until the end as well as keep a weekly log of their weight.

O Eligible mothers will learn how to properly use at home oxygen delivery devices by the end of the first at-home visit.

OUR GOAL: We hope to decrease low birth weights in infants born in Denver, while educating and providing additional resources for expecting mothers.

References

1. NJH. (2021). *Climate & high altitude*. National Jewish Health. Retrieved November 28, 2021, from <https://www.nationaljewish.org/about/foreign-national-program/living-in-denver/climate-high-altitude>. (Level VII)
2. Kozuki, N., Katz, J., Clermont, A., & Walker, N. (n.d.). *New Option in the Lives Saved Tool (LiST) Allows for the Conversion of Prevalence of Small-for-Gestational-Age and Preterm Births to Prevalence of Low Birth Weight*. <https://doi.org/10.3945/jn.117.24776>. (Level IV)
3. Jason, C. J. (1986). *Eprox-PRD.BODLEIAN.OX.AC.UK:4228*. Retrieved November 28, 2021, from <https://ezproxy-prd.bodleian.ox.ac.uk:4228/stable/pdf/27541942.pdf?refreqid=excelsior%3A0f9ce9d4441541c057dd2a78a7aca6b4>. (Level II)
4. *Low birth weight*. Department of Public Health & Environment. (n.d.). Retrieved April 16, 2022, from <https://cdphe.colorado.gov/prevention-and-wellness/maternal-and-child-health/mch-data/low-birth-weight>. (Level VII)