

Exploring the Effects of a Food Supplement Given to Pregnant Vietnamese Women on Birth Outcomes

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February 27, 2021

Introduction

A nutrient-rich diet is important for a healthy and safe pregnancy and a healthy newborn since babies receive most of their nutrients from their mothers' diet (Nga, 2020). Low birth weight and premature babies have been linked to poor maternal nutrition. In many low-income countries, it is difficult for mothers to obtain a nutrient-rich diet during pregnancy. In high-income countries, like the United States, health care providers will often recommend certain nutritious foods and special supplements to promote a baby's growth and development. This situation is not the case for low-income countries as many mothers do not have access to healthy foods and practically no access to supplements. In this study, we are interested in investigating the effect of a nutrient supplement on birth outcomes. Our two research questions of interest:

- Is there a difference between birth weight of infants born to mothers who received routine prenatal care and those who received a supplement?
 - Between those who received a supplement, does the duration of supplement intake (full term or half term) affect the birth weight of infants?
- Is there a difference between maternal gestational weight gain (defined as the amount of weight gained from conception to the birth of the infant) in mothers who received routine prenatal care and those who received a supplement?

About the Data

Our dataset comes from a randomized, controlled trial published in PLoS ONE and funded by the Nestle Research Foundation. The trial was interested in determining if a food supplement from local animal-sourced foods and vegetables given during pregnancy would improve birth outcomes. 460 rural Vietnamese women between the ages of 18 to 30 were enrolled in the study and assigned to 3 different groups: receiving supplement from pre-conception to birth, receiving the supplement from mid-gestation to birth, and no supplement/routine prenatal care. Only 317 of the original 460 women completed the study as the others either moved from the area or did not give birth during the data collection period. Data was collected on the mother's demographic and biological characteristics before and during pregnancy, mother's vitamin intake during pregnancy, and the baby's biological and physical characteristics at birth. Based on the original study's findings, we hypothesize that a nutrient supplement will not have an effect on birth weight or on maternal gestational weight gain. The study did not analyze the difference in infant birth weights between mothers who received the different treatments, but we hypothesize that there will be no difference.

Exploratory Data Analysis

The two response variables we are interested in examining are the birth weight of infants in grams and the mother's gestational weight gain in kilograms. The overall average birth weight was 3006.3 g. Among mothers who received the supplement full term, the average birth weight was 2991.8 g. Among mothers who received the supplement half term and mothers in the placebo group (receiving routine maternal care), average birth weight was 2983.168 g and 3043.3 g respectively.

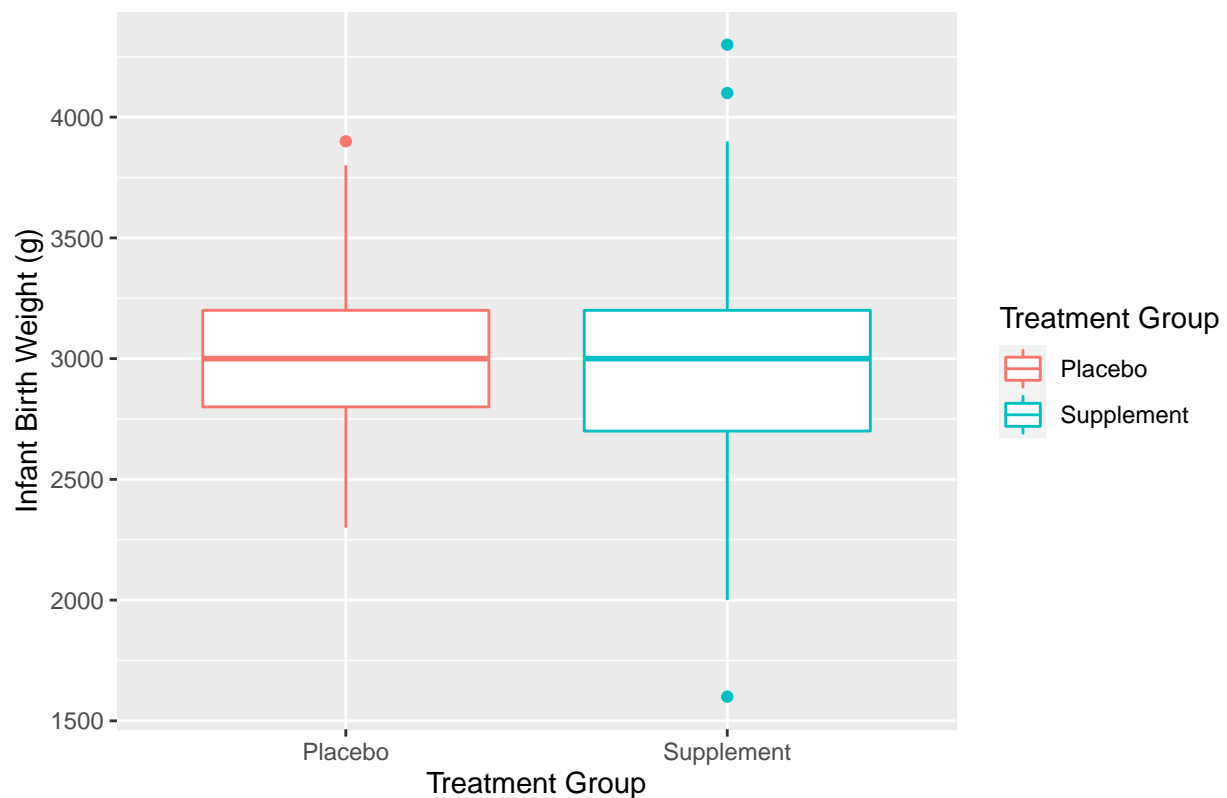
```
## # A tibble: 3 x 2
## # Groups:   group [3]
##   group          n
##   <chr>        <int>
## 1 "Placebo"      106
## 2 "Supplement: Full Pregnancy " 110
## 3 "Supplement: Mid Pregnancy to Birth" 101

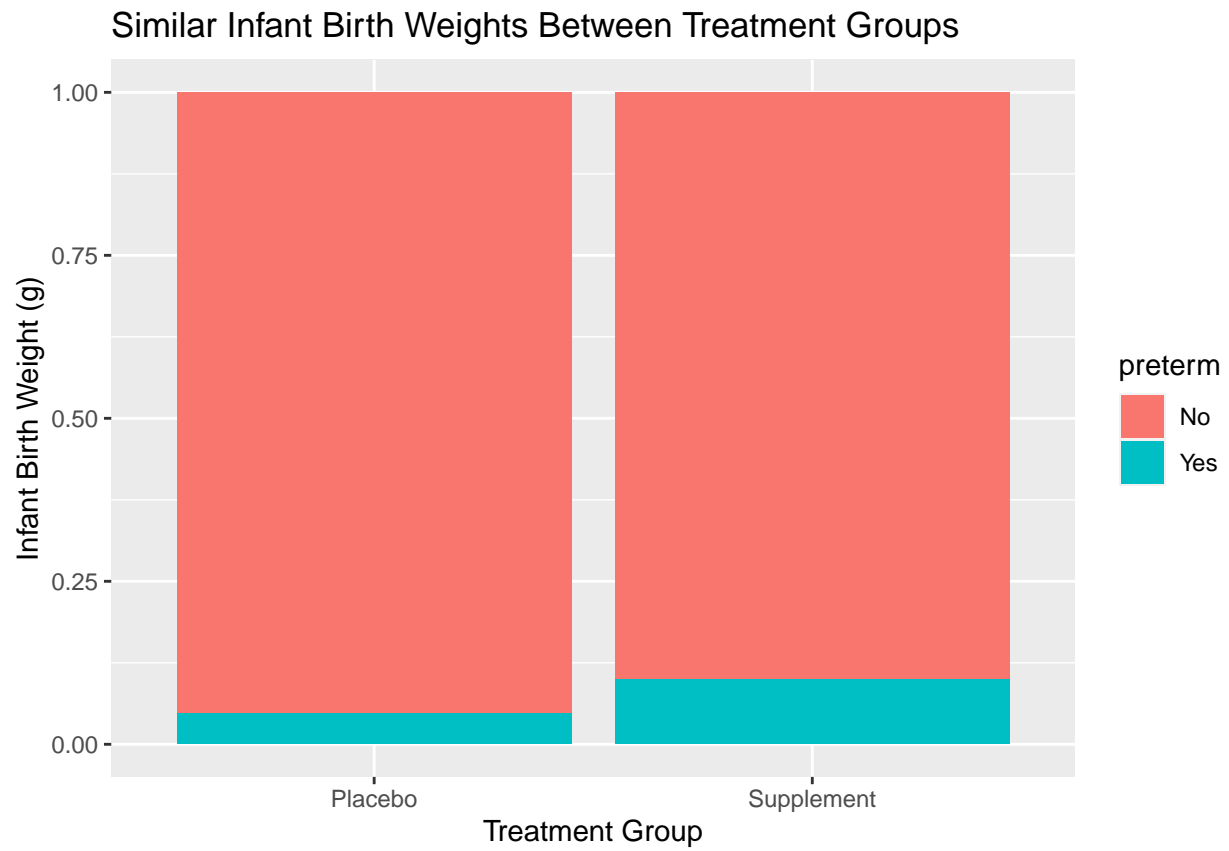
## # A tibble: 6 x 3
## # Groups:   group [3]
##   group          sga_wgt    n
##   <chr>        <chr> <int>
## 1 "Placebo"      No      94
## 2 "Placebo"      Yes      12
## 3 "Supplement: Full Pregnancy " No      93
## 4 "Supplement: Full Pregnancy " Yes     17
## 5 "Supplement: Mid Pregnancy to Birth" No      91
## 6 "Supplement: Mid Pregnancy to Birth" Yes     10

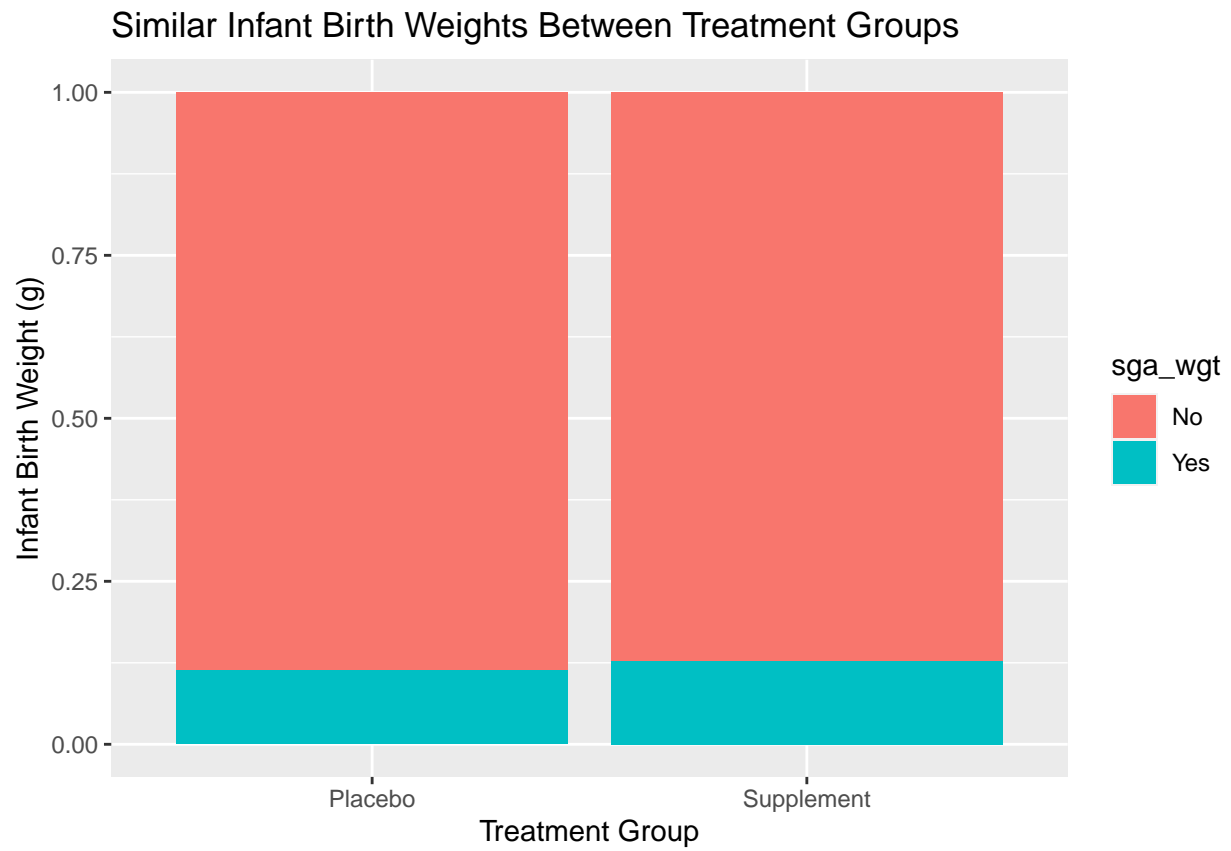
## [1] NA

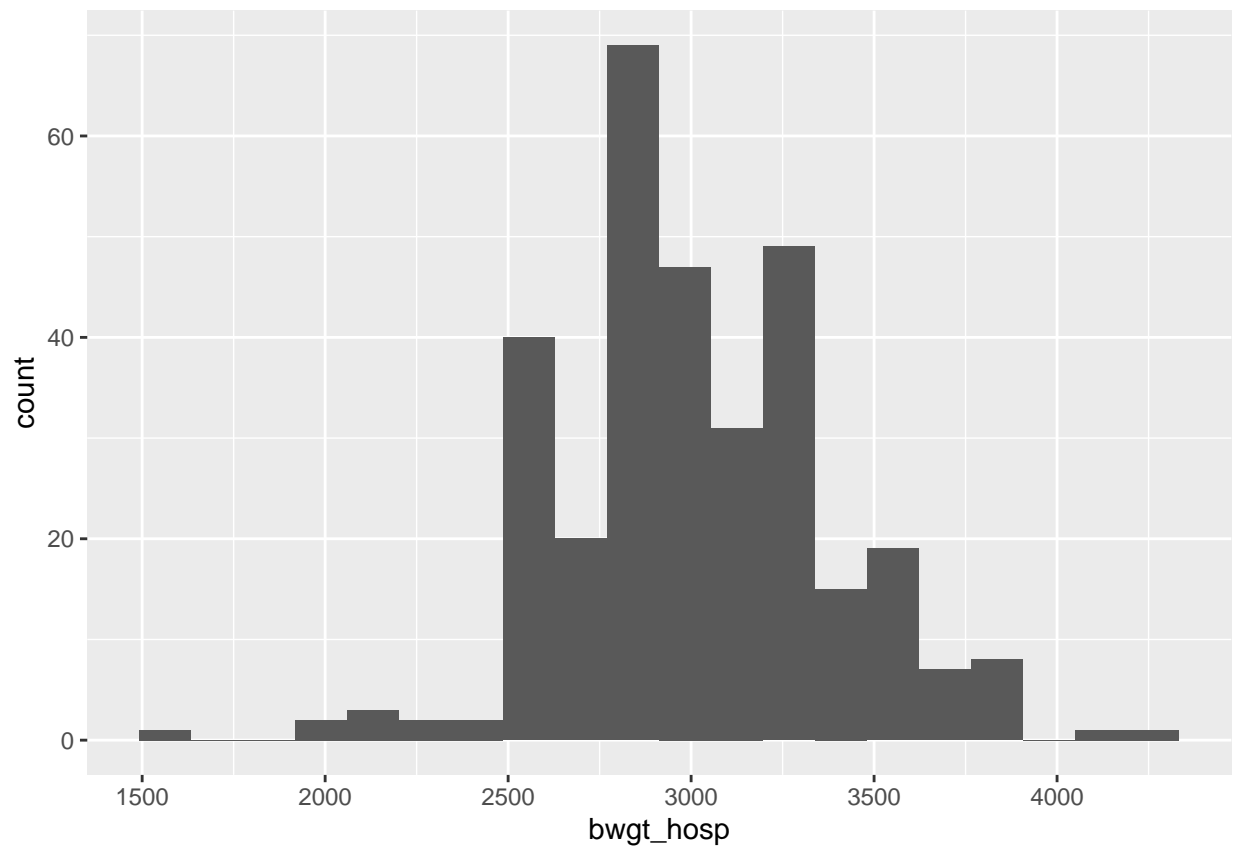
##           Group.1 bwgt_hosp
## 1           Placebo 3043.269
## 2 Supplement: Full Pregnancy 2991.818
## 3 Supplement: Mid Pregnancy to Birth 2983.168
```

Similar Infant Birth Weights Between Treatment Groups

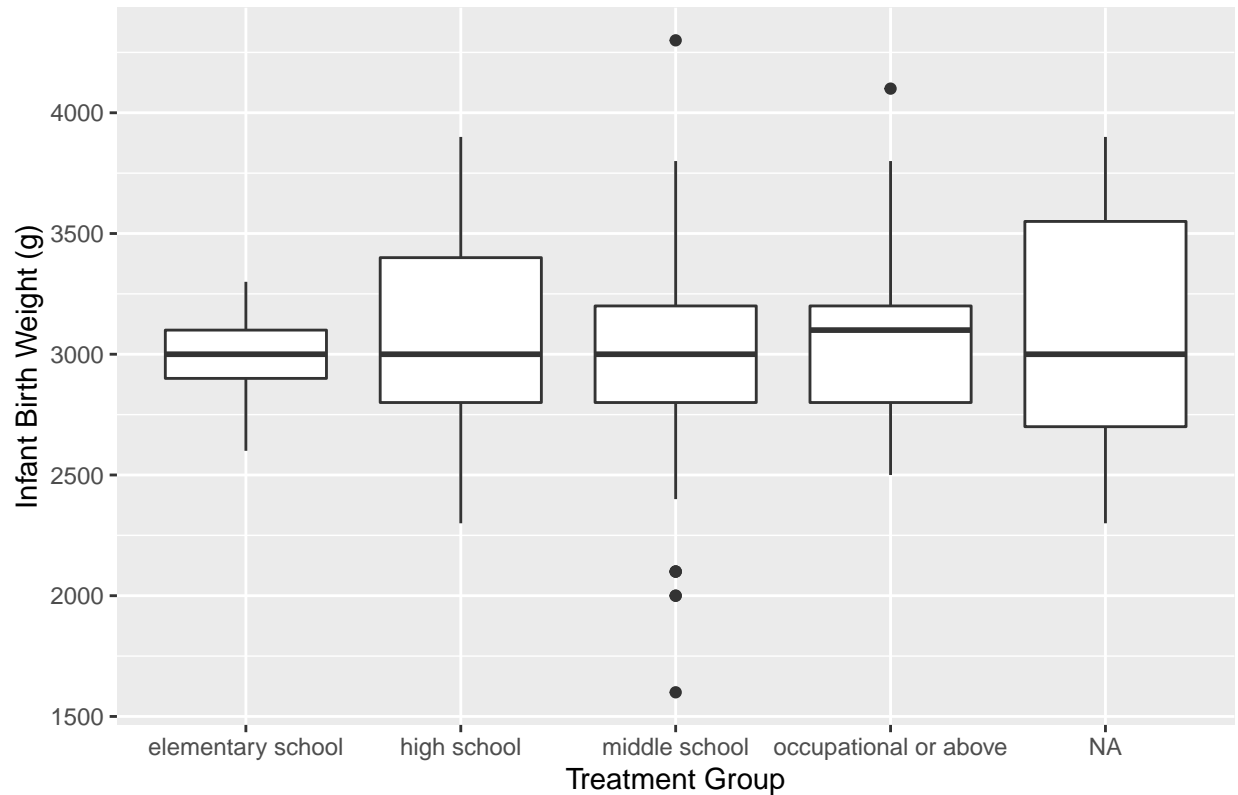








Similar Infant Birth Weights Between Treatment Groups



Appendix

Description of Variables Used

- **Variables of Interest**
- **bwgt_hosp**: birth weight of infants in grams References: Nga, Hoang T., et al. "Effect of a Nutrient-Rich, Food-Based Supplement given to Rural Vietnamese Mothers Prior to and/or during Pregnancy on Birth Outcomes: A Randomized Controlled Trial." PLOS ONE, vol. 15, no. 5, Public Library of Science, May 2020, p. e0232197. PLoS Journals, doi:10.1371/journal.pone.0232197.
- **Explanatory Variables**