



Correlation of Molar Incisal Hypomineralization and Early Life Medical History

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INTRODUCTION

- MIH is defined as a developmental qualitative enamel defect that affects at least one permanent molar and is typically seen in conjunction with permanent incisors.
- It is estimated to affect 1 in 6 children worldwide.
- The causative mechanism of MIH is still unclear. Multiple causes have been cited in literature including prenatal infections, antibiotic use, type of birth delivery, and respiratory illness.
- Patients are predisposed to higher rates of caries, require costly dental treatment and have increased rates of morbidity.



Fig 1.0 Clinical presentation of a MIH affected first permanent molar

RESULTS

FEVER DURING PREGNANCY

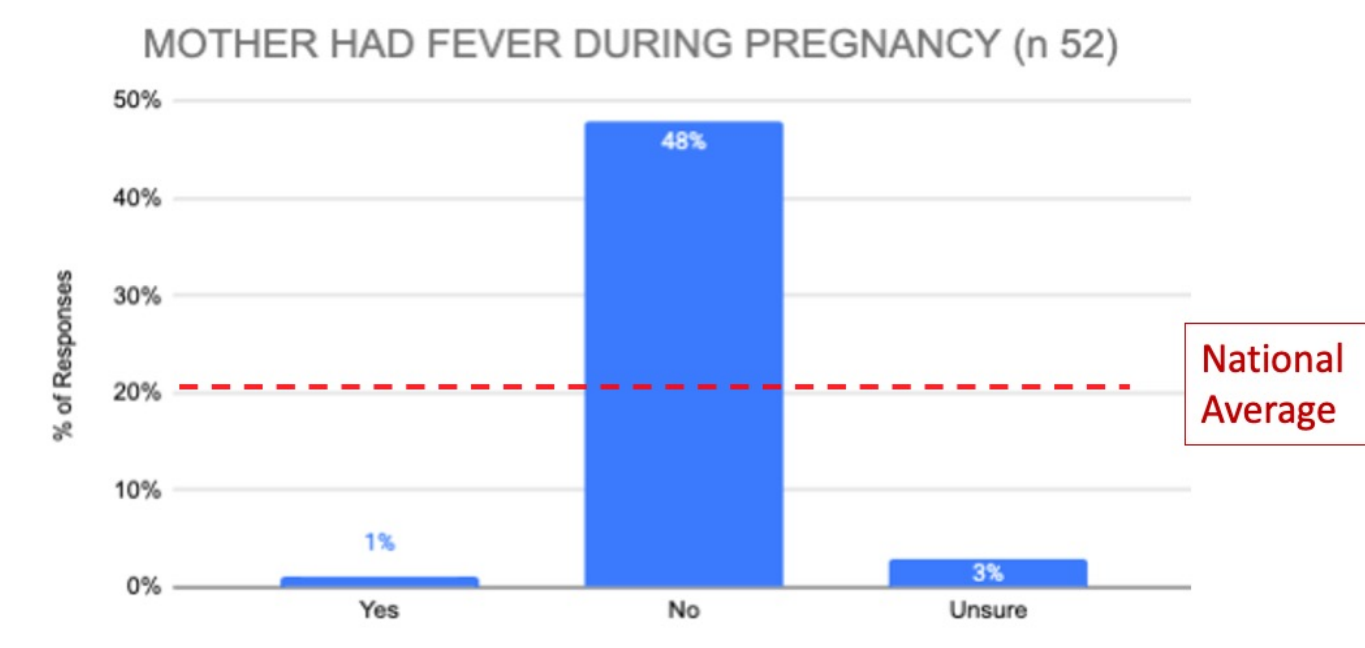


Fig 1.1 A study from 2019 showed 20% of pregnant women in the U.S. have a fever at least once during their pregnancy, and the vast majority of them have healthy babies.

PREGNANCY TERM

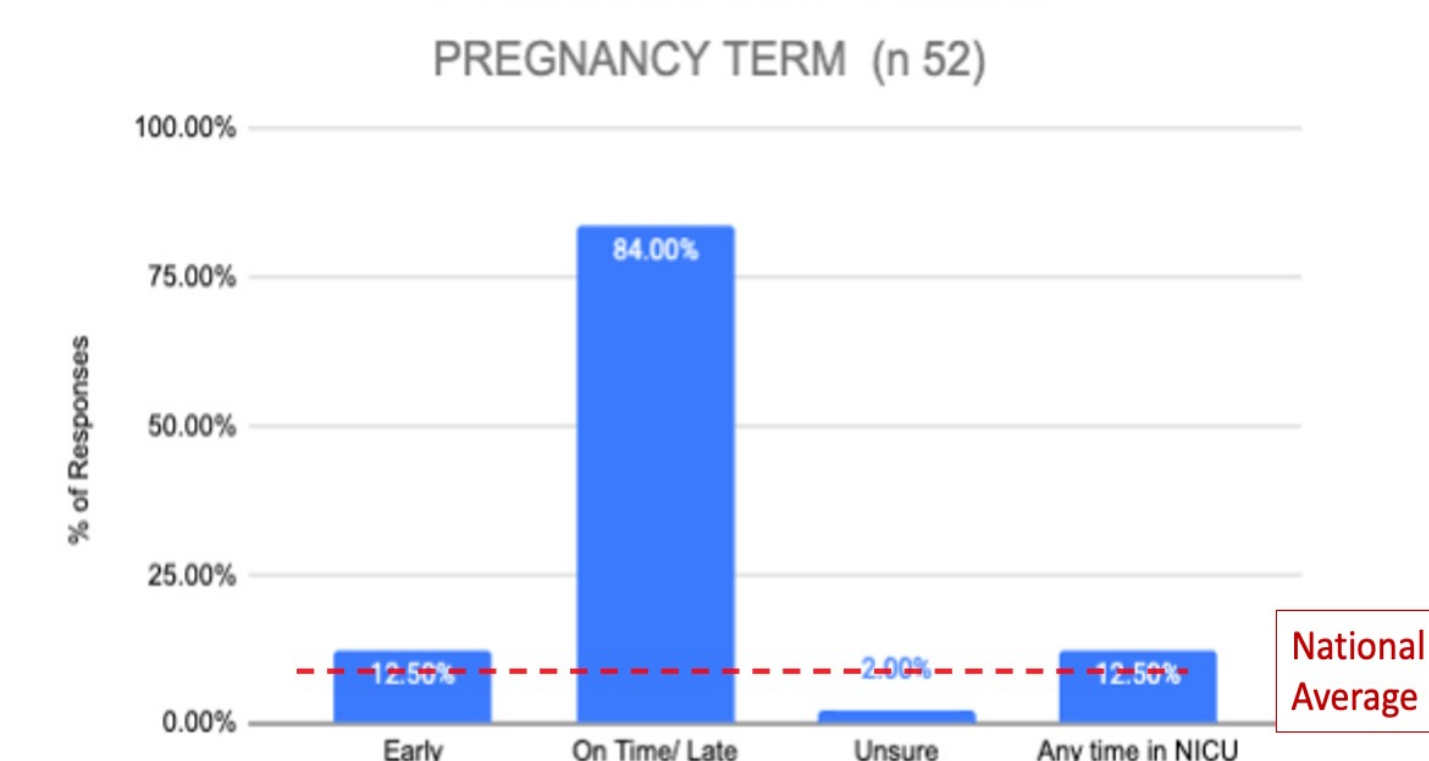


Fig 1.2 Most babies were born on time or late. The CDC stated in a 2020 report that 10.1% of births were preterm.

INFANT NUTRITION SOURCE

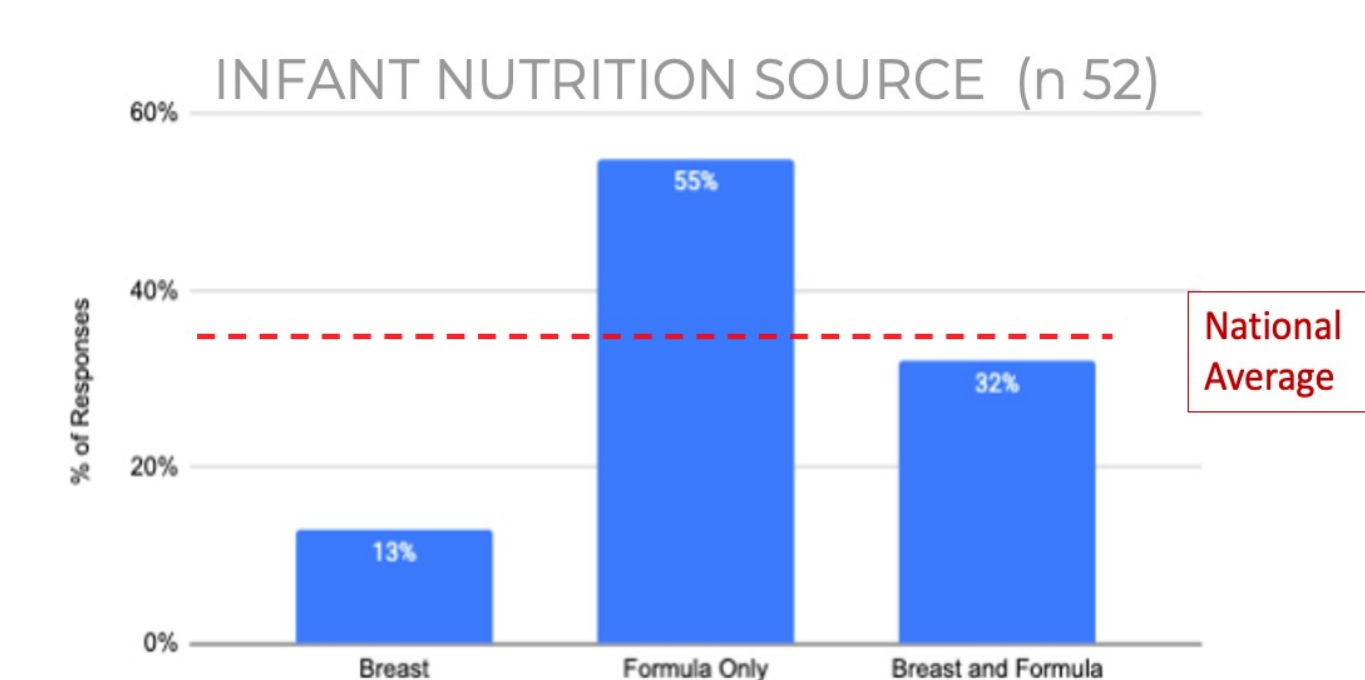


Fig 1.3 A large portion of MIH+ patients were exclusively formula fed. A CDC Report stated that 35.9% of mothers were exclusively breastfeeding at 12 months.

DELIVERY TYPE

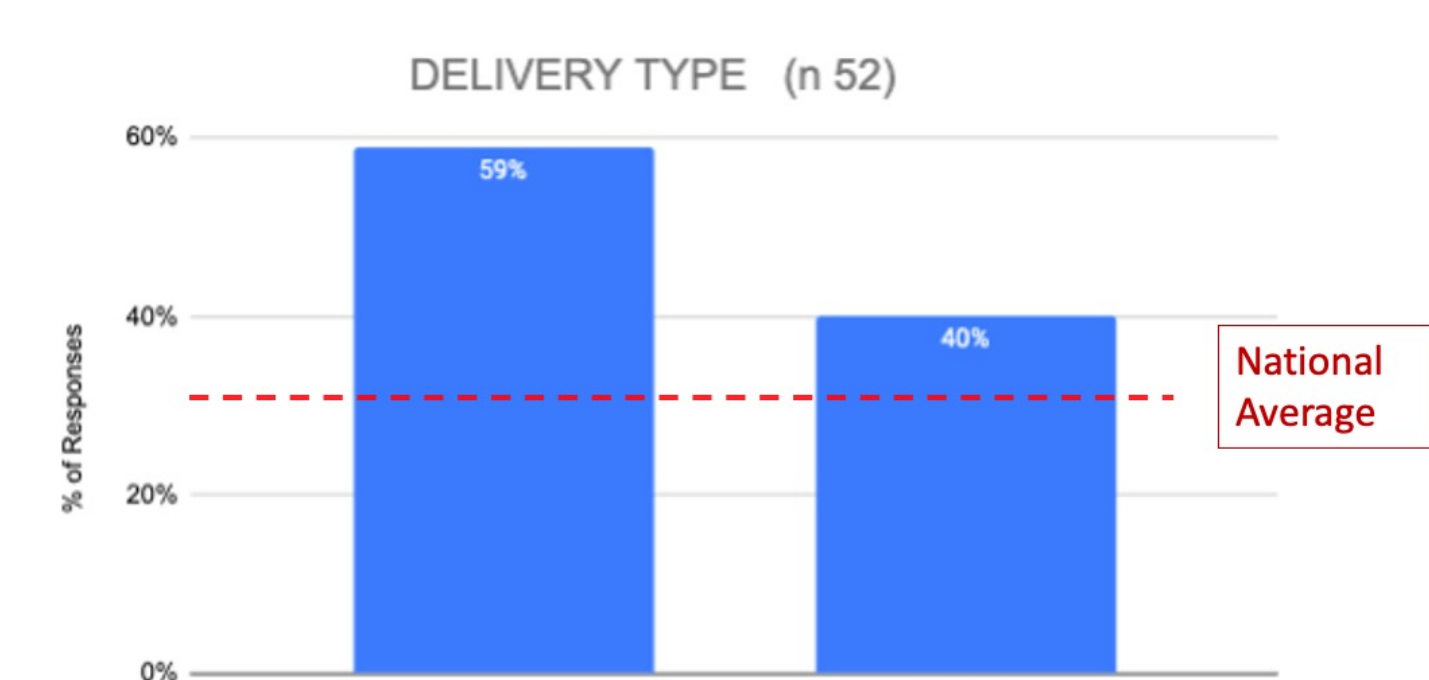


Fig 1.4 A large portion of babies who are born cesarean section were MIH +. The CDC reported that 31.7% percent of all births in the US were cesarean sections.

FOOD ALLERGIES

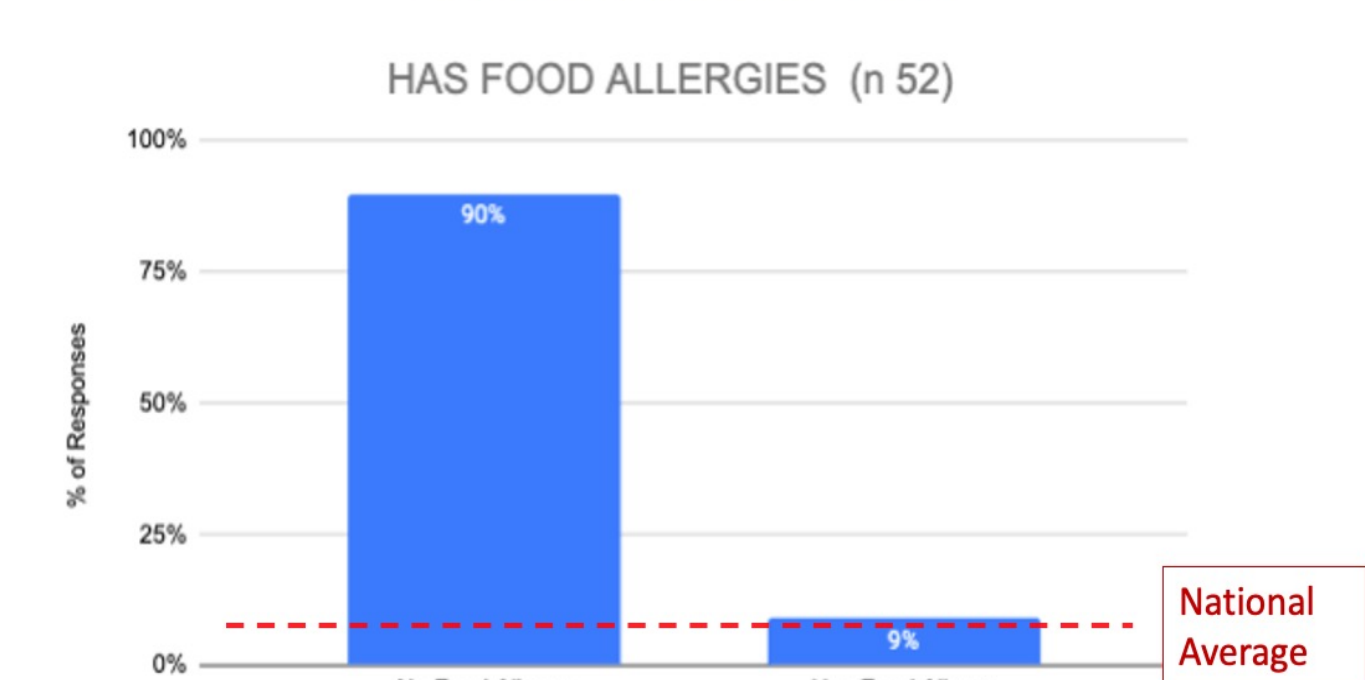


Fig 1.5 Most children do not have food allergies. The CDC estimates that 8% of children in the US have a food allergy.

ANTIBIOTIC USE BEFORE THE AGE 12 MONTHS

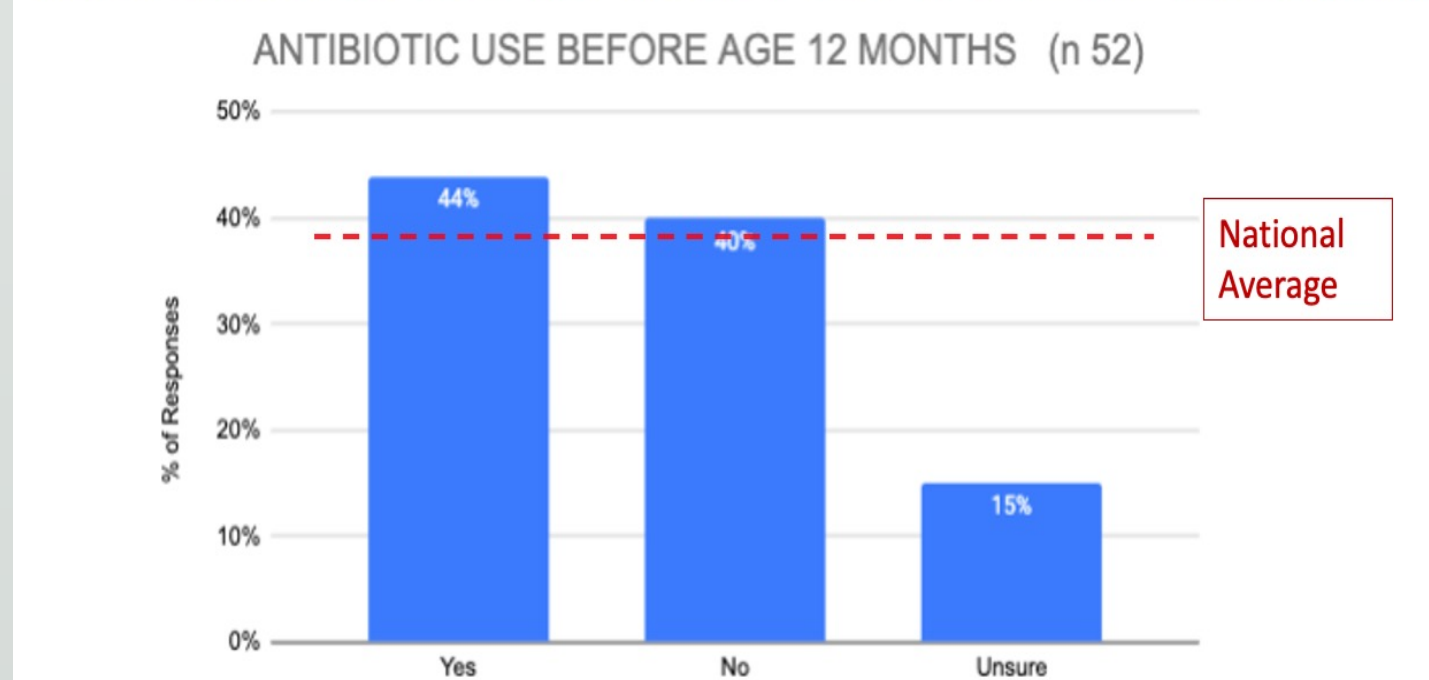


Fig 1.6 A large portion of our MIH + patients took antibiotics. One US study stated that 39.4% of infants received antibiotics in their first year.

PERCENTAGE OF SURVEYS POSITIVE RESPONSE FOR LISTED VARIABLES

% of Surveys Having Positive Response for below Variables

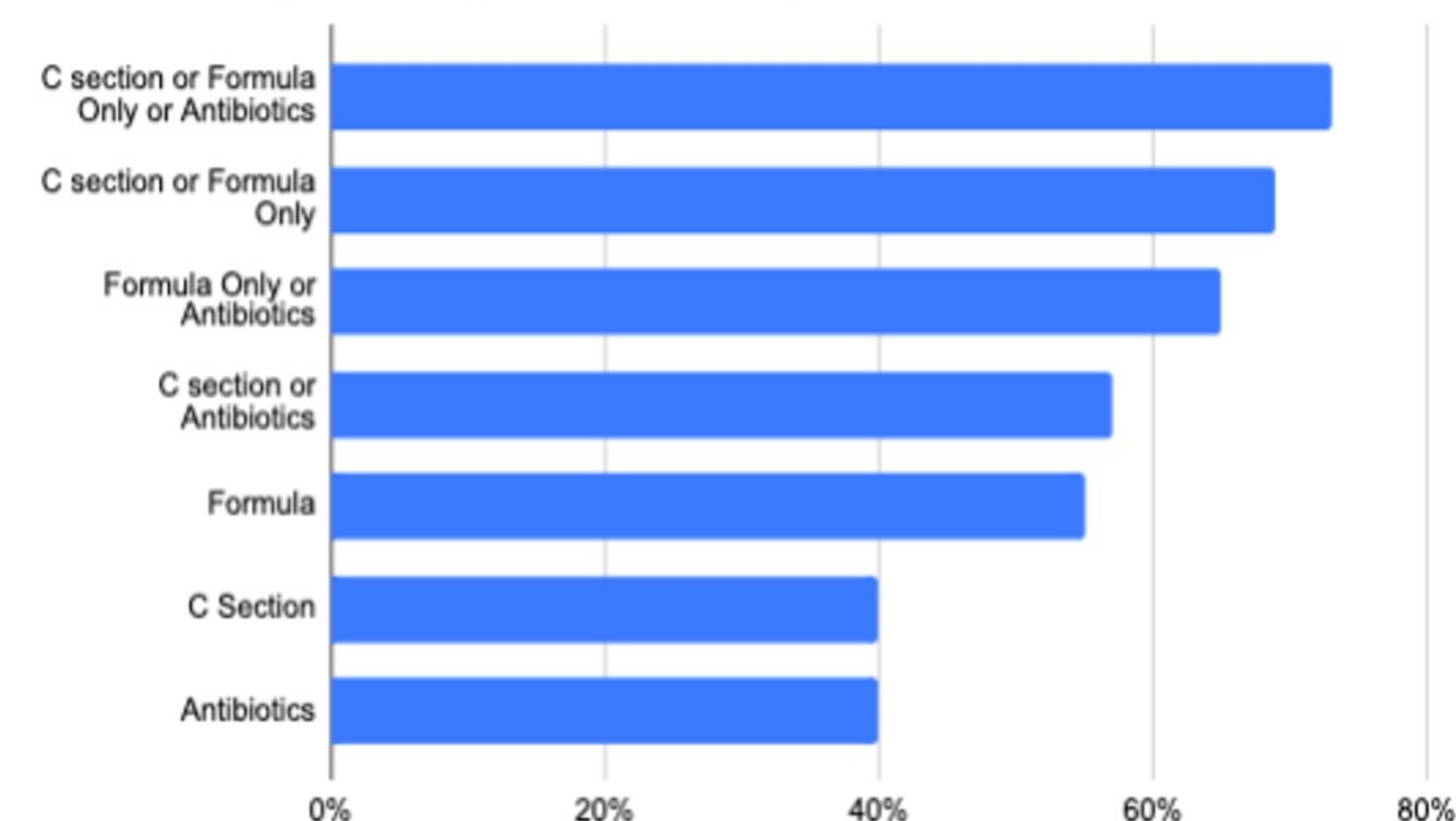


Fig. 2.1 This graph shows that our highly correlated variables alone are less correlated than when grouping these variables together

DISCUSSION

Our correlation study showed that of our **MIH+ patients, 55% were formula fed only**. A CDC study from 2018 showed that the **national average for exclusive breastfeeding was 46% at 3 months**. A Public Health report from 2006 concluded that **low socioeconomic families were less likely to breastfeed**.

The CDC reports that **31% of all US births are via Cesarean Section**. Our MIH+ patient population was born via Cesarean Section **59% of the time**. C-sections are often necessary due to maternal illness (preeclampsia, diabetes, other chronic illness).

Our co-relation study showed that **44% of our MIH patients had antibiotics in the first year of life**. A study from the CDC found that 39.4% of infants received antibiotics in their first year.

This suggests that frequent co-morbidities in early life is more common in patients with MIH.

PERCENTAGE OF SURVEYS HAVING NUMBER OF CORRELATED VARIABLES

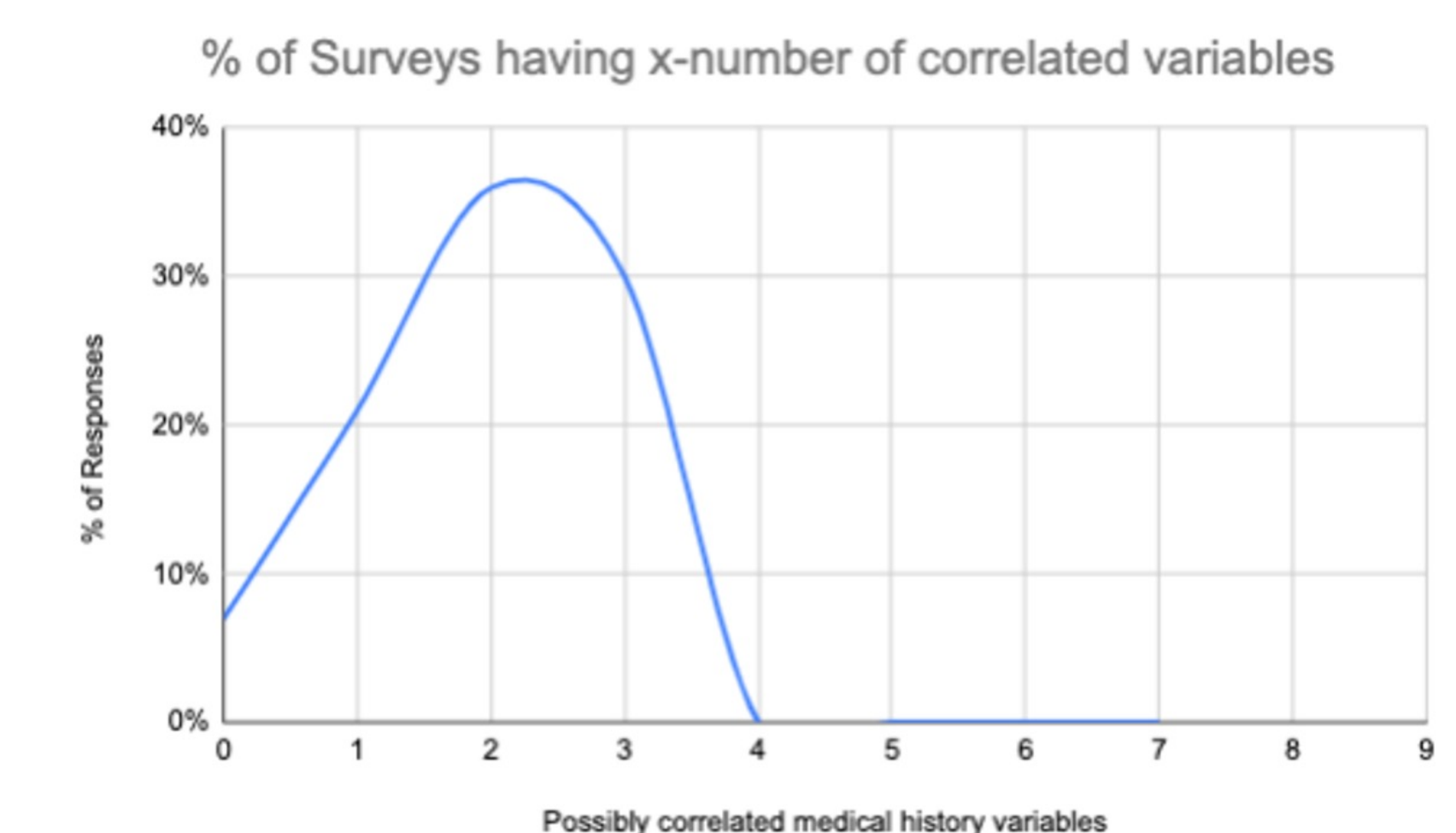


Fig. 2.2 This graph compares the relationship between the number of MIH factors and the incidence of MIH.

CONCLUSIONS

- We found that **Formula use only (55%), Cesarean Section (59%), and to a lesser extent Antibiotic (44%) use had the highest correlation with MIH**.
- Most surveys resulted in multiple “Yes” answers. This leads us to speculate that **MIH is multifactorial** and is not due to a single cause.

REFERENCES

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OBJECTIVES

- Purpose:**
 - To determine the correlation of a specific patient population that has been diagnosed with molar-incisal hypomineralization with: fever, mother's gestational health, gestation length, history of illness, and antibiotic use.

METHODS

- 52 patients were diagnosed with MIH. Legal guardians were consented for study investigating MIH.
- Inclusion criteria: Patient needed be with within the ages of six to ten and present with hypomineralization on multiple permanent first molars or at least one permanent first molar and one incisor.

Study Questions:

- Did the mother have **fever during pregnancy**?
- Was the child **born premature**?
- Did the child need to **stay in the NICU**?
- Was the child **breast fed, formula fed, or both**?
- Does the child have a **food allergy**?
- Did the child use **antibiotics before age 12 months**?