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## Nutrition and Attendance for Primary School Students in Ethiopia and Zambia

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# Nutrition and Attendance for Primary School Students in Ethiopia and Zambia

Lillie Tronnes



Figure 12: <https://www.nationsonline.org/oneworld/map/africa-political-map.htm>

## ABSTRACT

**Introduction:** Nutrition impacts attendance for primary school students in Southern Ethiopia and Zambia. Food insecurity causes school-age children to be undernourished, malnourished, and stunted. These health concerns greatly impact ability to attend and perform in school.

**Methods:** Between May and June of 2019 6<sup>th</sup> and 7<sup>th</sup> grade students were surveyed within 4 schools in Ethiopia and 5 schools in Zambia. Anthropometric data, health history, and nutritional habits were surveyed.

**Results:** 8% of Ethiopian students were stunted while 10% of Zambian students were stunted. Ethiopian students indicated school lunch was an incentive while Zambian students did not. Most Ethiopian students ate before school while Zambian students did not. Overall, undernutrition of Zambian students implies greater struggle academically.

**Conclusion:** Continued research on the impacts of poor nutrition for students must be conducted. School-age children are not often the center of food insecurity research and are included as a statistic rather than a source of information.

## INTRODUCTION

- The significance of nutrition (and stunting) as it effects primary school student attendance was explored. In comparison to the United States, schooling and nutrition in Ethiopia and Zambia were studied.
- According to the Global Nutrition Report, 35.6% of boys and 21.9 of girls aged 5-19 are underweight in Ethiopia. Malnutrition and stunting are also major concerns which directly impact child education (Zenebe, 2018). According to a study on school feeding programs in Ethiopia, “[factors] affecting class attendance and student drop-out include illness, work for money/food, domestic work, school hour hunger and long distance to school” (Dheressa, 2011).
- Studies on nutrition in Zambia are like those in Ethiopia. Nutrition education in low-income countries is often overshadowed by school feeding programs and other health treatments (Sherman, 2007). Without proper knowledge and consumption of key nutrients, children in Zambia are at risk for developmental delays (Caswell, 2018).



Figure 1: Primary School in Ethiopia



Figure 2: Market in Ethiopia



Figure 3: Teaching in Zambia



Figure 4: Teaching in Ethiopia

## METHODS

### Subject

- 6<sup>th</sup> and 7<sup>th</sup> grade students (ranging from ages 10 to 18)

### Environment

- 4 schools in Ethiopia’s Sidama Region within a 1-hour radius of Hawassa Town
- 5 schools in Zambia’s Southern Province within a 1-hour radius of Livingstone

### Experimental Design

- Data collected in May and June of 2019
- Sample size includes 181 students from Ethiopia and 365 students from Zambia for a total of 546 students
- Anthropometric data, including height, weight, and calculated body mass index (Figure 8)
- Interviews conducted to establish dietary intake and understand how school lunch programs impact student attendance (Figures 9 & 10)
- Observations made of overall school environment including but not limited to curriculum, school schedule, student placement, and classroom/school appearance (Figure 11)
- Research conducted under IRB 20150515251EP
- School and parental permission for participation provided and students could opt out at any time

### Statistical Analysis

- Data hand-written, entered in an *Excel* spreadsheet, and uploaded to *Statistica* to conduct descriptive and correlational analyses



Figure 5: Measuring Arm Length



Figure 6: Administering Survey



Figure 7: Measuring Height

## RESULTS

### Anthropometrics (Figure 8)

- In Ethiopia, the average body mass index is approximately 19%.
- In Zambia, the average body mass index is approximately 17.6%.

### Interviews (Figures 9 & 10)

- Almost all Ethiopian students eat before going to school and only a handful do not (Figure 9).
- More Zambian students eat before going to school but nearly half do not (Figure 9).

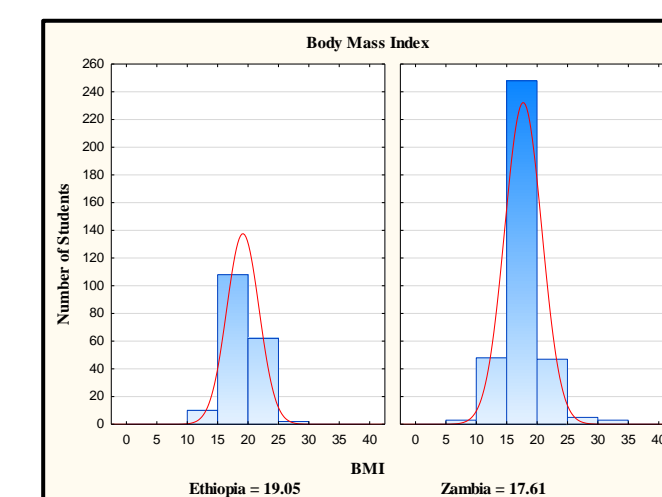


Figure 8: BMI

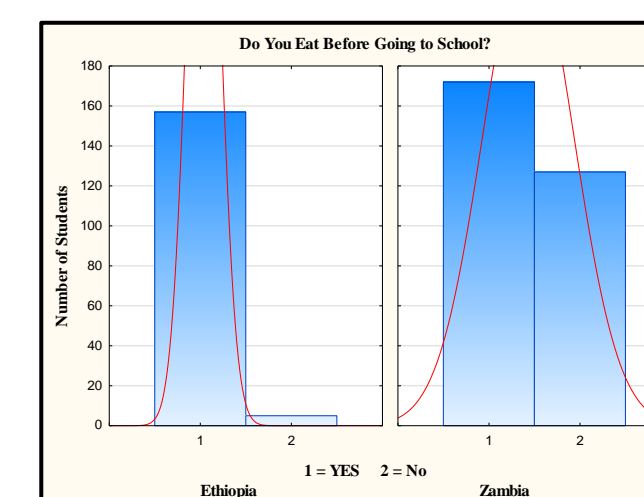


Figure 9: Eating Before School

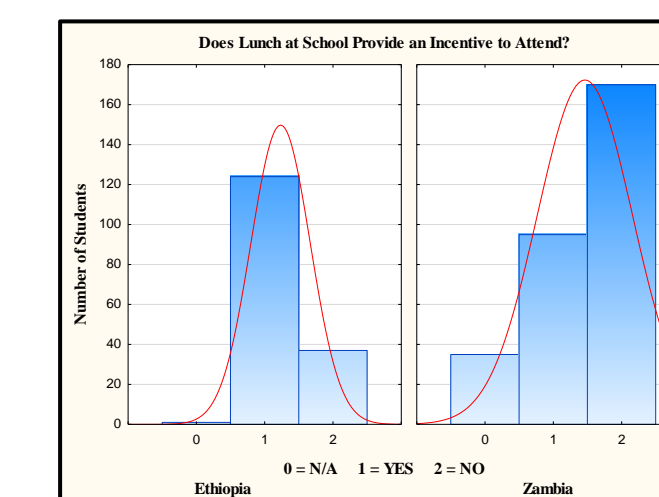


Figure 10: Lunch as Incentive

Category	Description	Ethiopia	Zambia	United States
Student Placement	Students placed in classrooms based on amount of schooling received	✓	✓	
Resources	Classrooms have limited amount of resources for all to share	✓	✓	
Student/Staff Ratio	Large class sizes (>30 students)	✓	✓	
School Lunches	Schools prepare meals as option for purchase			✓
Absences	Students not required to inform school of absences	✓		
Building Appearance	Building artwork utilized as educational materials (e.g., shapes, letters, diagrams)	✓	✓	
Classroom Appearance	Classrooms decorated with a variety of creative informational posters	✓	✓	✓
Uniforms	Public school students required to wear uniforms		✓	
Support Staff	School staff includes additional roles, e.g., nurses, counsellors, specialists			✓

Figure 11: Education Observations in Ethiopia, Zambia, and the United States

## DISCUSSION

### Anthropometrics

- Students in Zambia have significantly lower BMI rates than students in Ethiopia. This means more students in Zambia are underweight and shorter in comparison to students in Ethiopia. As previously noted, in Zambia “undernutrition and micronutrient deficiencies continue to impede the growth of children when they reach school” (Sherman, 2007).

### Interviews

- Almost all students eat before going to school in Ethiopia but in Zambia nearly half of students do not. This statistic relates to the lower BMI of Zambian students as there may be greater food insecurity. According to a nutrition study in Zambia, a heavily plant-based diet puts students at risk for impaired cognitive development and reduced bone growth due to nutrient deficiencies (Caswell 2018).

### Observations

- Zambia’s school system is more like the United States in comparison to Ethiopia’s. Zambia, unlike Ethiopia, was colonized by the British in the late 1800’s which influences several of their schooling practices.

### Limitations

- Language barriers were a tough challenge during the research process
- Survey questions were written in English, translated to the local language, and translated back into English for analysis
- Not only was this a complicated process, but ensuring the message remained the same presented a complication
- Multiple researchers conducted interviews therefore questions were posed in a variety of ways
- Student participation was affected by factors such as absence due to illness, lack of food, and inability to travel due to weather conditions

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