

Food Insecurity, Nutritional Deficiencies and Academic Challenges: Evaluation among Undergraduates at The University of Peradeniya, Sri Lanka

L.M.F.SAFNA BSc (Hons)

Department of Food Science & Technology, Faculty of Agriculture, University of Peradeniya, Sri Lanka

STUDY CONTEXT

- **Food security:** All people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs according to their preferences for an active and healthy life” (World Food Summit, 1996)

Food Insecurity Vs Nutritional Deficiencies: Evidence based Insights (Northern Sri Lanka)

Nutritional Deficiency	Food Insecure Households	Food secure households
Iron Deficiency	44.7%	35.5%
Protein Deficiency	30.6%	26.8%

OBJECTIVES

- Association between Food Insecurity and the Nutritional Deficiencies among undergraduate students of Faculty of Agriculture, university of Peradeniya using multidisciplinary approach.(Quantitative method)
 - ❖ Protein deficiency
 - ❖ Iron deficiency
- To understand the Academic Challenges of undergraduates related to Food Insecurity using qualitative method.
 - ❖ Depth through photo elicitation interview (PEI)
 - ❖ Emotional and Contextual Engagement

METHOD & ANALYSIS

Quantitative Method (n = 100)

Inclusion Criteria



- Undergraduate students
- Willing to provide personal information
- Teetotalers

Exclusion Criteria



- Pregnant women
- Recent illnesses, medication,
- Blood clotting issues
- Recent blood donor

Data Collection



- Interviewer-Guided questionnaire
- Global Food Insecurity Experience Scale
- Clinical testings: Serum ferritin and serum albumin tests

GLOBAL FOOD INSECURITY EXPERIENCE SCALE
Individually Referenced

**Now I would like to ask you some questions about food.
During the last 12 MONTHS, was there a time when:**

Q1. You were worried you would not have enough food to eat because of a lack of money or other resources?	0 No 1 Yes 98 Don't Know 99 Refused
Q2. Still thinking about the last 12 MONTHS, was there a time when you were unable to eat healthy and nutritious food because of a lack of money or other resources?	0 No 1 Yes 98 Don't Know 99 Refused
Q3. You ate only a few kinds of foods because of a lack of money or other resources?	0 No 1 Yes 98 Don't Know 99 Refused
Q4. You had to skip a meal because there was not enough money or other resources to get food?	0 No 1 Yes 98 Don't Know 99 Refused
Q5. Still thinking about the last 12 MONTHS, was there a time when you ate less than you thought you should because of a lack of money or other resources?	0 No 1 Yes 98 Don't Know 99 Refused
Q6. Your household ran out of food because of a lack of money or other resources?	0 No 1 Yes 98 Don't Know 99 Refused
Q7. You were hungry but did not eat because there was not enough money or other resources for food?	0 No 1 Yes 98 Don't Know 99 Refused
Q8. You went without eating for a whole day because of a lack of money or other resources?	0 No 1 Yes 98 Don't Know 99 Refused

Qualitative Method

❖ Photo Elicit Interviews:

- Random sample of 30 students with low or moderate food security levels.
- Each student captures 5 photos representing their experiences.
- Individual interviews to explore themes related to food access.

Data Analysis

❖ Quantitative Data: Analyse using SPSS

Correlation tests, mean comparison, linear regression

❖ Qualitative Data: Iterative content analysis with thematic coding of transcripts and photos

RESULTS

Quantitative analysis

Characteristics of the sample:

Age group 21-28 years

Mean age 24.33 (\pm
1.934)

Females (85%), most of
the students are from 1st
year (35%).

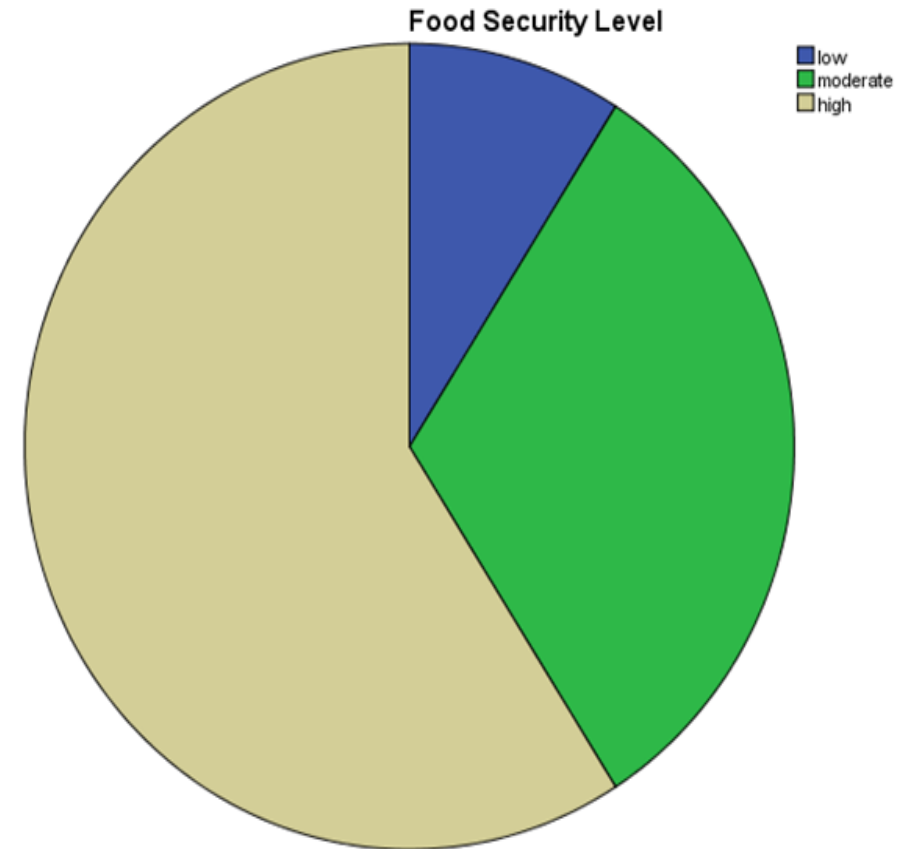
Sinhalese (83%)
Hostels (65%).

Monthly family income
Rs. 25,000-75,000
(57%), Monthly
expenditure on food 25-
50%-(49%)

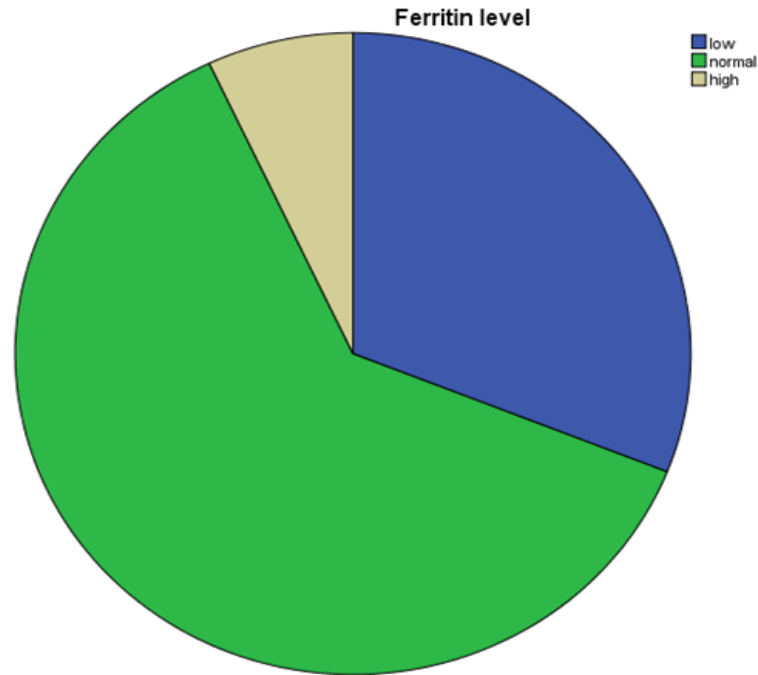
Regular consumption of
iron-rich food (53%) and
of regular consumption
of protein rich food 61%

Distribution of Food security Level across the Sample

- Mean total food security score = 2.98 (\pm 2.43)
 - ❖ Low food security: 9%
 - ❖ Moderate food security: 32%
 - ❖ High food security: 59%

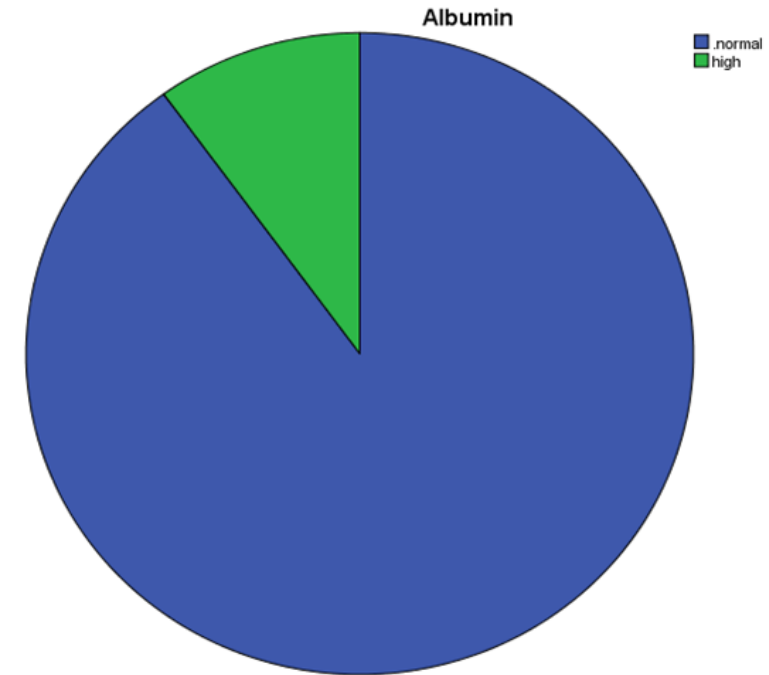


Distribution of serum ferritin level



- ❖ Low serum ferritin level (below 15 ng/ml): 31%
- ❖ Normal serum ferritin level (between 15-200 ng/ml): 62%
- ❖ High serum ferritin level (above 200ng/ml): 7%

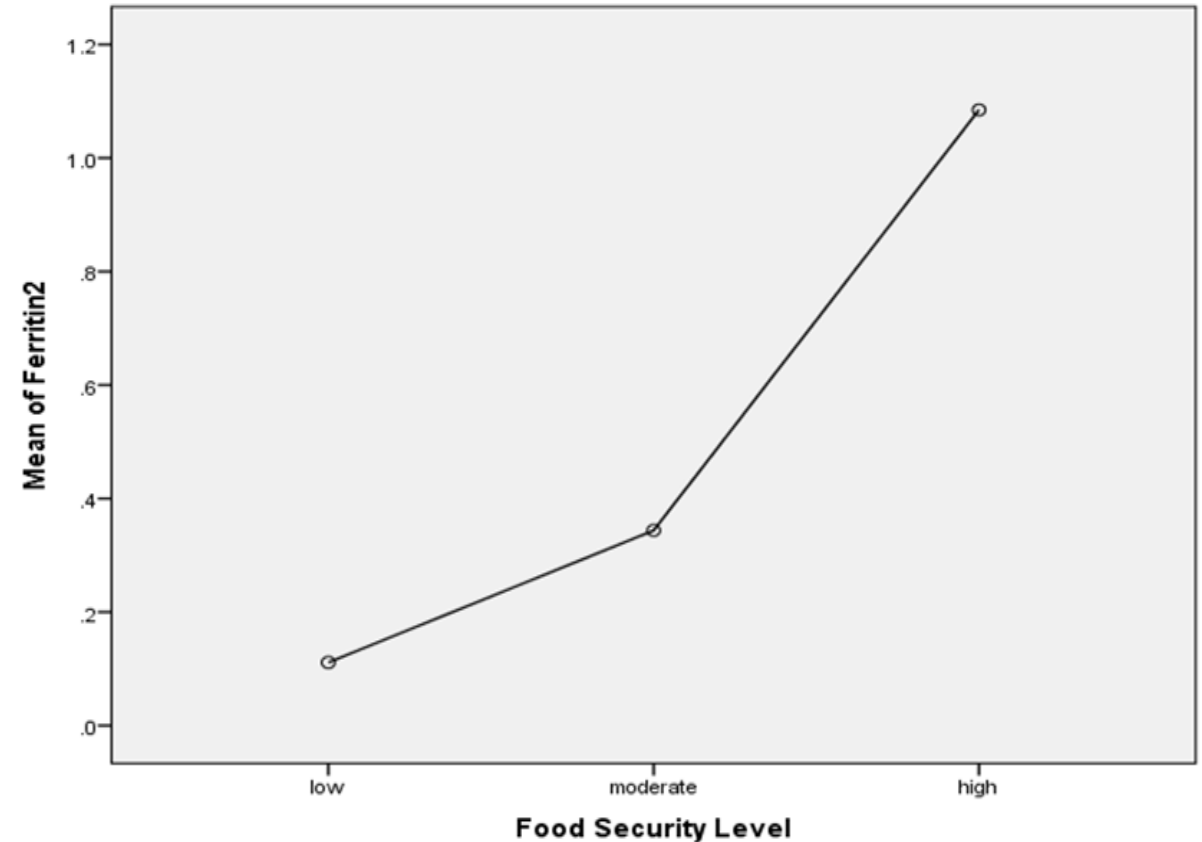
Distribution of Serum Albumin level



- ❖ Normal serum albumin level: 90%,
- ❖ High serum albumin level: 10%
- The recommended cut-off for serum albumin level is 3.4 -5 g/dl.

The association between food insecurity and serum ferritin level

- ❖ **Significant Negative Correlation**
 $r = -0.546$, $p < 0.01$
- ❖ Higher food insecurity = Lower serum ferritin
- ❖ Regression Analysis
p value is 0.01 (< 0.05)
- ❖ **Significant relationship between food insecurity and serum ferritin level**



❖ Additional variables

- **Age, Gender, Ethnicity, Monthly Family Income** show significant relationship with serum ferritin ($p < 0.05$)

❖ Multiple regression analysis

- **Food security & gender** are significant predictors of the serum ferritin level ($p < 0.05$).

Every one point increase in food insecurity level significantly reduce the serum ferritin level by -0.546.

Compared to men, women have a 0.572 lower serum ferritin level.

The association between food insecurity and serum albumin level

- ❖ **No significant correlation** ($p = 0.192$, $r = -0.132$)
- ❖ Additional variables: **Gender and family monthly income** show a significant relationship with serum albumin level ($p < 0.05$)
- ❖ Multiple regression analysis: only **gender** is the significant predictor of serum albumin level

Compared to men, women have a 0.231 lower serum albumin level.

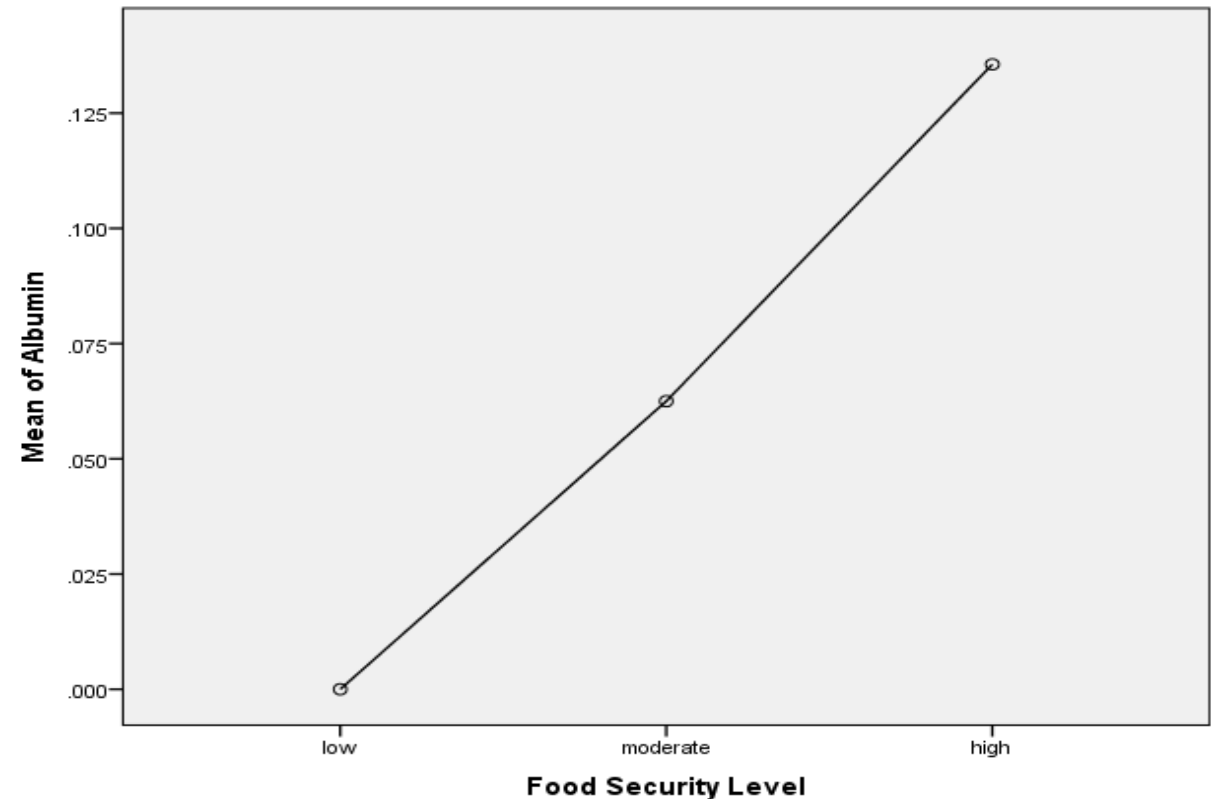


Photo elicit interview



“I have been experiencing gastritis and severe stomach aches since coming to the hostels. It might be due to the food I am consuming here. This condition severely effect my studies” (participant 12)

“When considering the hostel food, I mostly find that the same types of dishes are available, often complementing with rice.” (participant 7)

“Normally I tend to skip breakfast due to the potential for large crowds and long lines at the hostel canteen. The time it takes to wait in line is a concern, so I often find myself settling for just a cup of tea and sometimes biscuits in the morning “(participant 2)

CONCLUSION

- ❖ Prevalence of nutritional deficiency:
 - Iron deficiency - 31%

- ❖ Relationship with Food Insecurity:
 - Serum Ferritin: Significant negative relationship with food insecurity level.
Higher food insecurity is associated with lower serum ferritin levels.

 - Serum Albumin: No significant relationship with food insecurity level.

- ❖ Most of the students skip their meal and do not consume diversified food during their hostel life which could increase the risk of micronutrient deficiencies.
- ❖ food insecurity impact health and psychological outcomes, and have lower academic achievement when compared to the food secure counterparts.
- ❖ So maintaining optimal diet during campus life is especially important because it is related to academic achievement and degree attainment .

*Thank
you*

