D4N 2024
DELIVERING FOR NUTRITION IN SOUTH ASIA
CONNECTING THE DOTS ACROSS SYSTEMS
December 3, 2024 • Colombo, Sri Lanka

Influence of Disasters on the Urban Poor's Food Environments and Security

Evidence from Sri Lanka

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Rationale and Objectives

Rational

- **High undernutrition in Sri Lanka**.
  - 15% of children under 5 years of age are affected by wasting (Global Nutrition Report, 2022).
  - **Three forms of malnutrition**: under-nutrition, over-nutrition, and micro-nutrition deficits.

- **USS residents** are identified as one of the **most nutritionally vulnerable** populations.
- Food systems and environments are key drivers of unhealthy eating, malnutrition and obesity
- Urban poor, face disproportionate barriers to accessing healthy food.

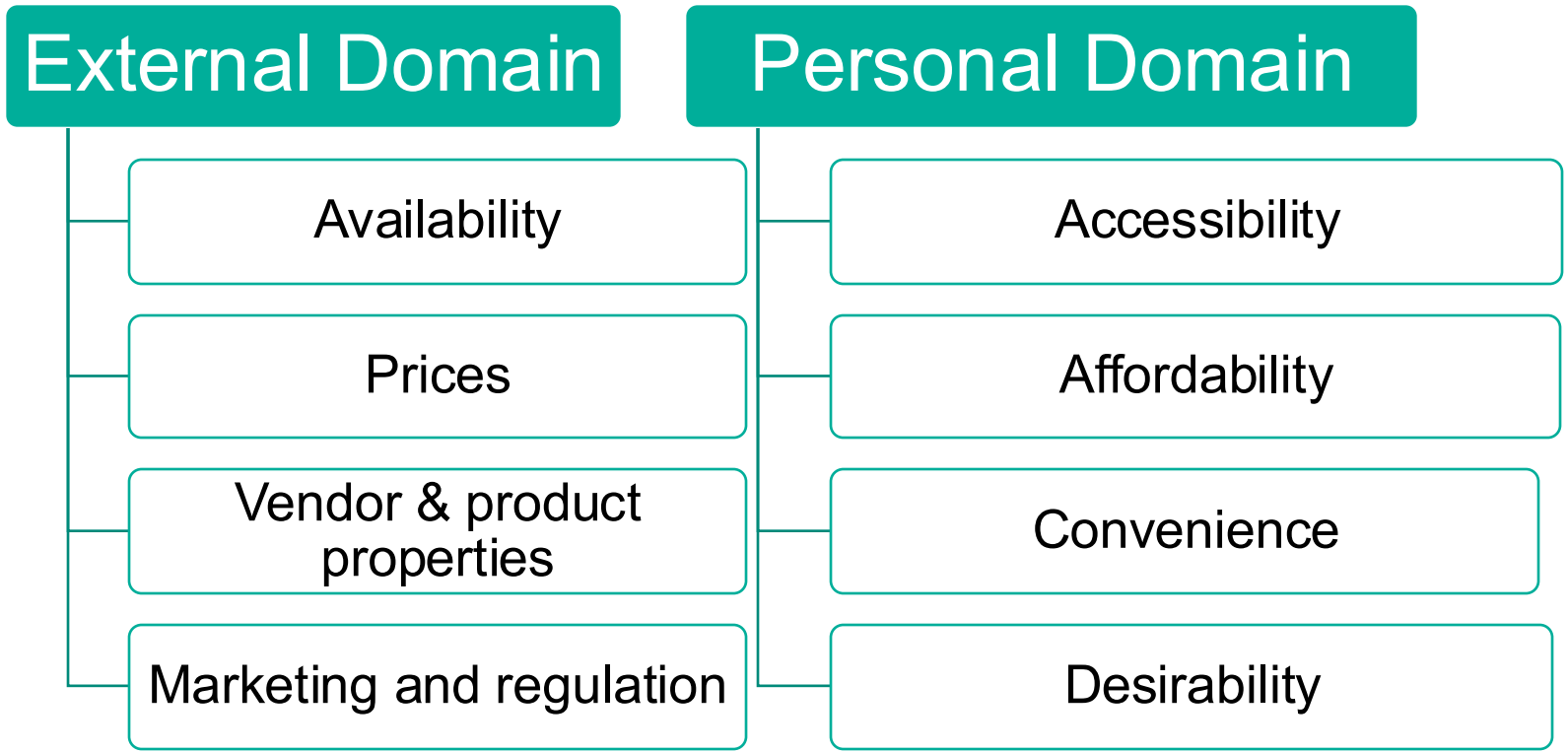
Objectives

- How have various crises in Sri Lanka influenced the retail food market, food security, and eating patterns of urban underserved settlements (USS) populations?

Methods/analysis

Conceptual Framework - Food Environments

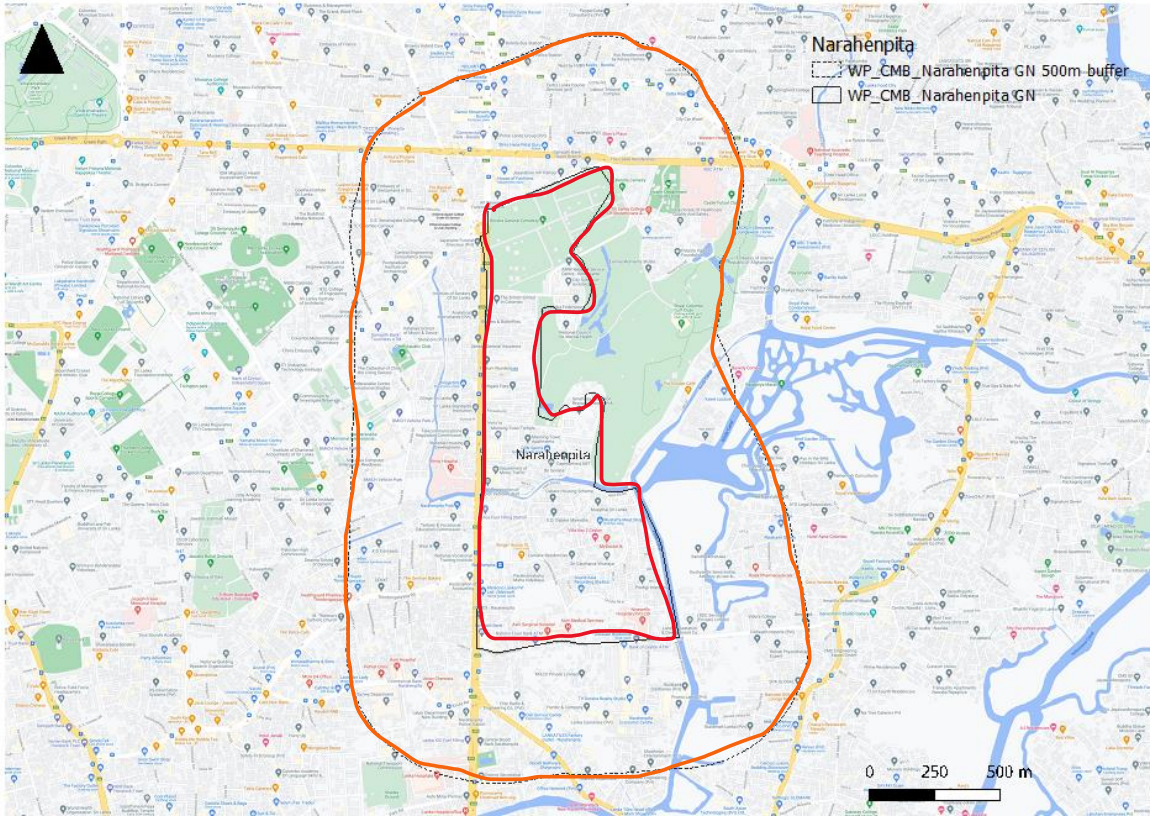
"**Healthy retail food environments** encourage healthy diets by supporting relatively greater availability, affordability, and promotion of healthier compared to less healthy alternatives (Cameron, et al., 2020)



Source: Adapted from Turner, et al. (2018).

Study Design

- **The study period**:
  - December 2021 (end of Covid-19) and February 2022 (onset of Economic Crisis)
- **Study locations** - three randomly selected under-served settlements plus a 500m buffer in the Colombo district:
  - Orugodawatta, Narahenpita, Wilawala



Methods

- Food outlets (grocers, supermarkets shops and eateries) in and around the three GNs.
  - 383 restaurants & eateries
  - 209 retail outlets
  - A purposively selected 18 households

  Methods
  - Key informant interviews; 24-hour dietary recall ; Shopping baskets
  - Purchase patterns about food availability, prices, vendor/product properties, marketing & regulation
  - Scoring system for food outlets to assess the availability, affordability, and promotion of health/ unhealth food

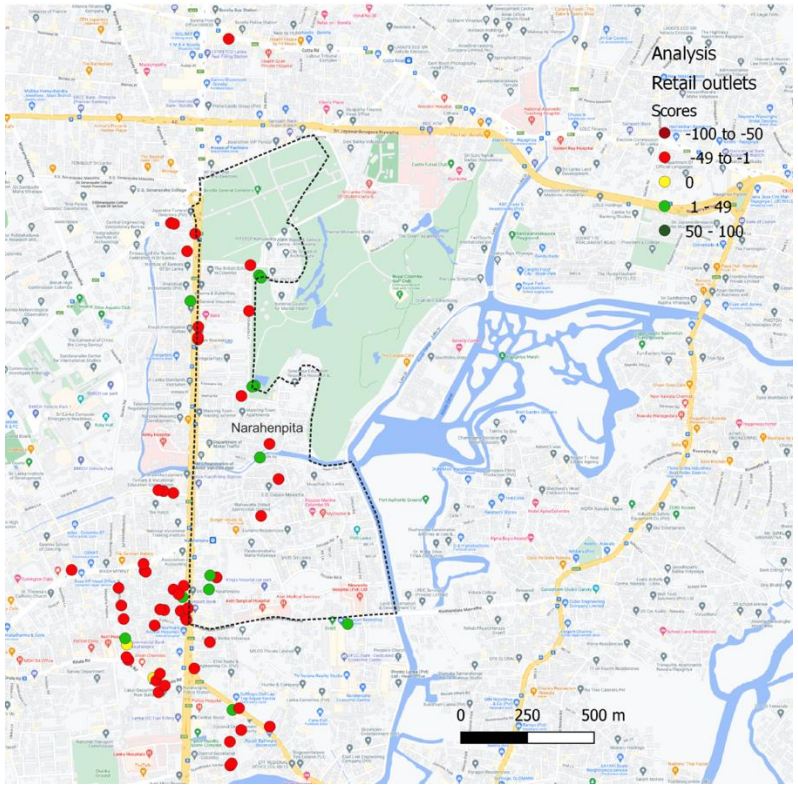
  Analysis
  - Descriptive analysis
  - Deductive approach

Results/findings

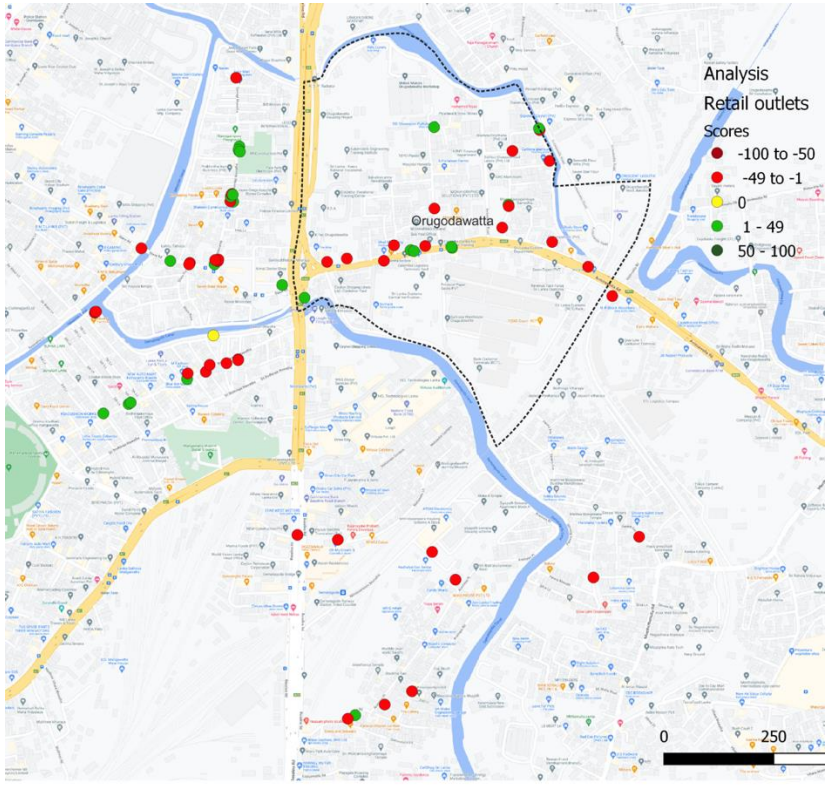
Characteristics of the Study Sample

- 45% - Daily Wage Earners
- 85% - Experienced income losses during the pandemic
- Over half of the sampled households were poor or near poor
- 53% of the income was spent on food, on average

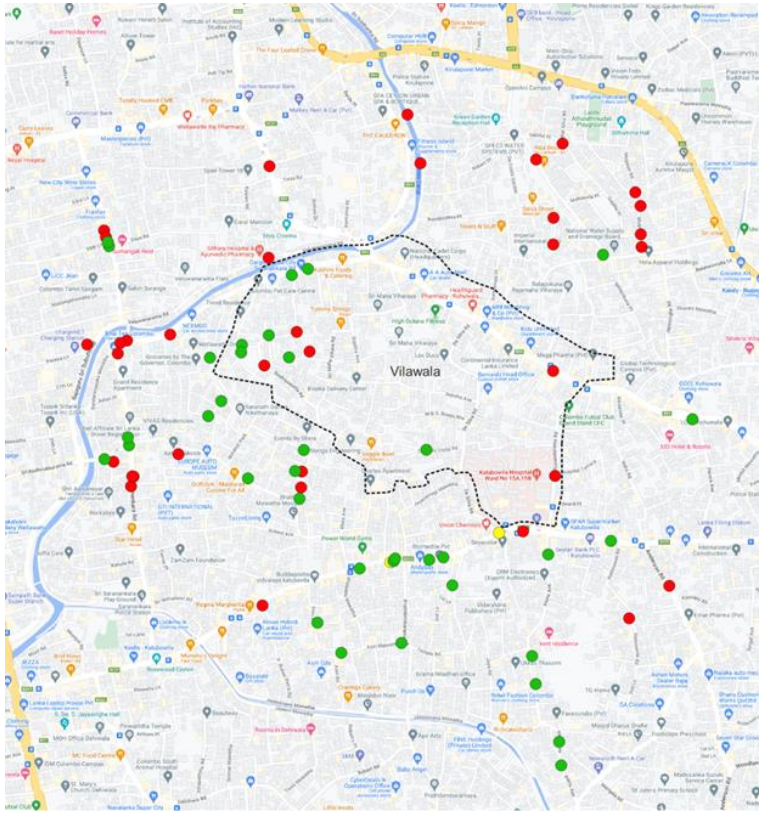
External Domain Findings



Narahenpita



Orugodawatte



Wilawala

Personal Domain Findings

Accessibility	• **Purchasing at big markets is costly due to high transport and daily purchases** • (Pandemic) accessibility to fruits and veg. increased due to mobile vendors • Shortages of imported goods due to import restrictions
Affordability	• Lower due to the high prices • Affordability of fruits, and vegetables low (perishable) • Prices of processed food with longer shelf life are less affected • Purchase of smaller quantities of essentials
Convenience	• Pre-cooked food consumption declined (high cost, health concerns) • Cooking for several meals in one go (to save energy)
Desirability	• Children eat refined carbohydrates as they do not like pulses and grains • Frying popular due to desirability and low cost

Conclusions/Implications

Conclusions

- Food-security and nutrition security of USS affected during crises due to lower quantity and quality of food consumed
- USS hhs purchased food from nearby shops mostly due to daily purchases and transport costs. (which lowered variety and increased prices)
- The food choices of USS were mainly dependent on affordability and not on nutrition value or healthiness.
- Desire for refined carbohydrates lowered consumption of healthy food (children)
- Consumption of unhealthy cooked foods declined due to high cost and safety
- Accessibility to fruits and vegetables increased due to mobile vendors (pandemic)

Implications

- More widespread distribution of fresh produce so that families can purchase perishable items in locations within their neighborhoods.
- Nurturing healthy dietary habits among children is necessary
- Introduce low-cost, healthy food options
- Reform the current approach to promoting nutrition security (see below) to be inclusive of USS
  - promoting the cultivation of healthy food;
  - promoting home gardening and animal husbandry;
  - reducing food wastage; and
  - promotion of quality food production, including food fortification

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Understanding the impact of disasters and climate displacement on food and water security in Pakistan

A case study of Rahim Yar Khan, Punjab

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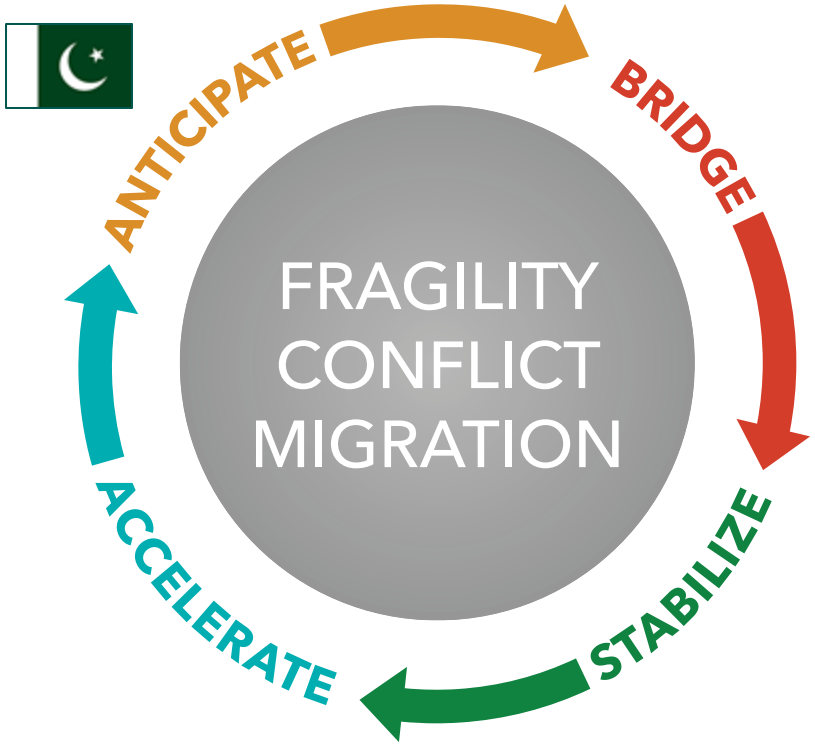
IWMI International Water Management Institute
CGIAR INITIATIVE ON Fragility, Conflict, and Migration

Study Context

- Context/Challenge: Fragile and conflict-affected settings (FCASs) often struggle to sustain resilient food, land, and water systems (FLWSs) in the face of the climate crisis.
- FCM Objectives
  - Enhance the resilience of FLWS and conflict-affected settings, where migration-related challenges are prevalent;
  - Understand the root causes of disasters, risks, drivers, and dynamic pressures.
  - **Generate evidence on effective policies and programming before, during, and after shocks and crises**.

CGIAR | INITIATIVE ON Fragility, Conflict, and Migration



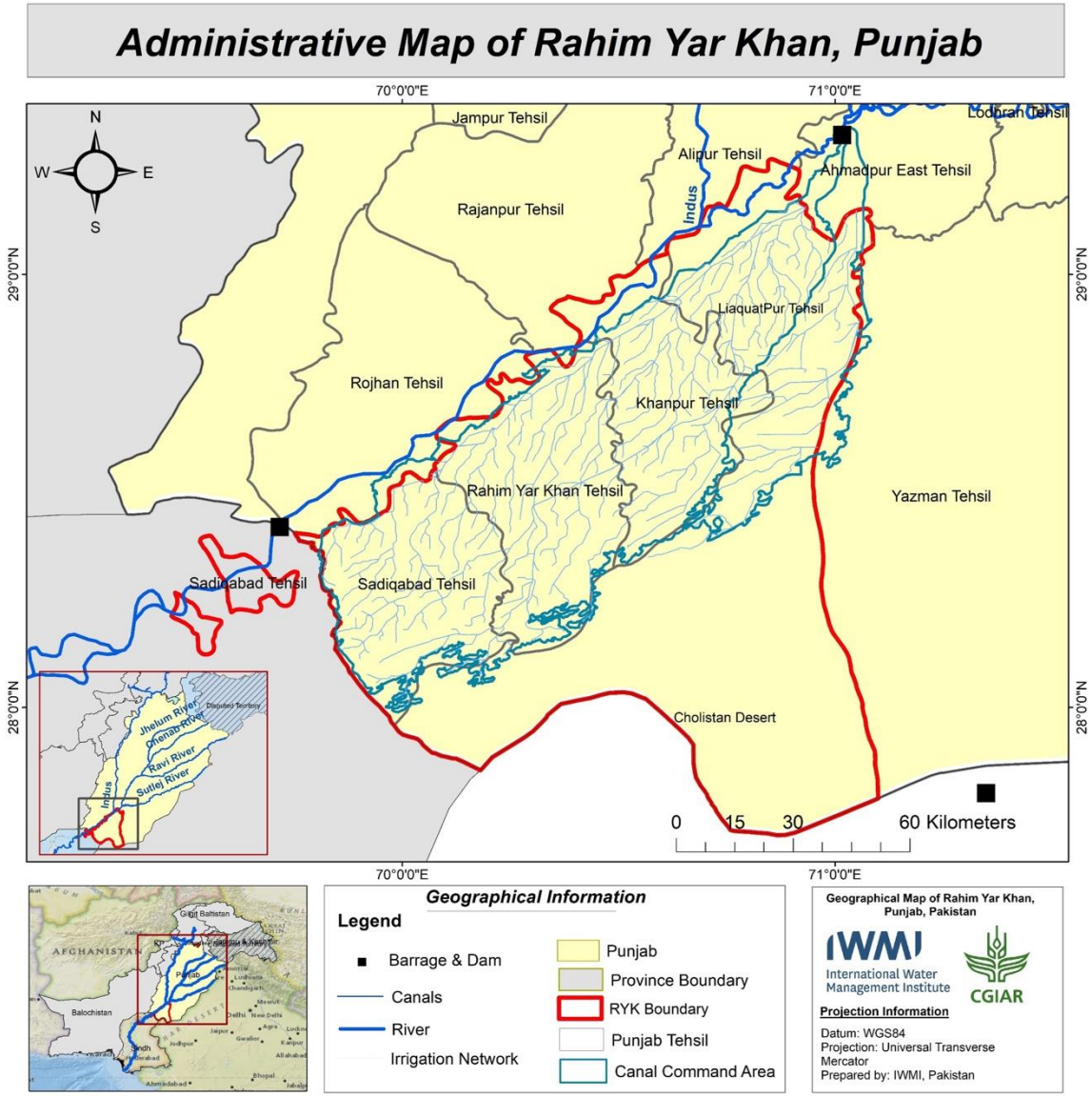
Pakistan Case Study

- Pakistan highly vulnerable to climate change, disasters and water and food insecurity (Top 10 countries)
  - 173 climate extreme events between 2000-2019
  - Predicted to reach water scarcity by 2025
- Under FCM, assess vulnerabilities of migrant/IDP communities and climate-induced migration challenges to improve disaster response mechanisms
- Floods caused 1.2 million displacements in South Asia in 2023, with Pakistan accounting for 647,000 displacements, more than half (IDMC 2024).
  - As of 2023, Pakistan has around 1.2 million IDPs from disasters (second largest in the South Asia region)
- First study of its kind capturing challenges of climate-inducted migrant communities' vulnerabilities

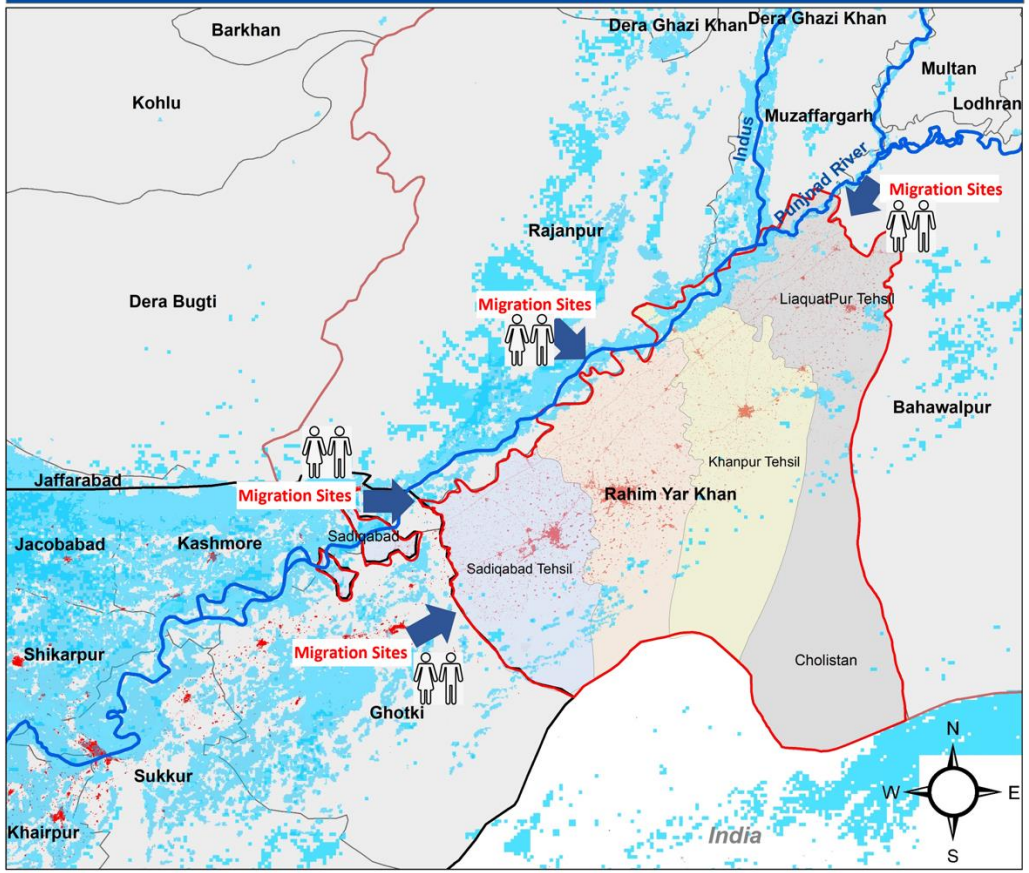
Damages	2022 Flood
Area Hit	33 percent
People Affected	33 million
Deaths	1,700
Houses Lost/Damaged	1.7 million
Crops Damaged	8.3 million acres
Livestock Lost	1.1 million
Monetary Damages	Over USD 15 billion in damages; USD 15 billion in losses and USD 16 billion needs estimate

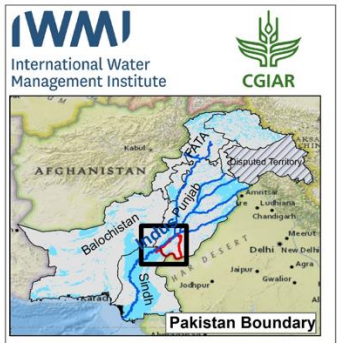
Case Study Location

- District Rahim Yar Khan (comprised of 4 tehsils/administrative divisions and Cholistan Desert)
  - Located in South Punjab, neighboring Sindh Province
- Located in South Punjab, neighboring Sindh province and other Punjab districts
  - RYK susceptible to floods, drought, locust attacks and resulting health impacts (water-borne illnesses, malnutrition)
    - Serves as both disaster affected community and host community for neighboring areas (unique case study)



Flood Mapping - 2022 in Rahim Yar Khan (RYK) Pakistan





Legend

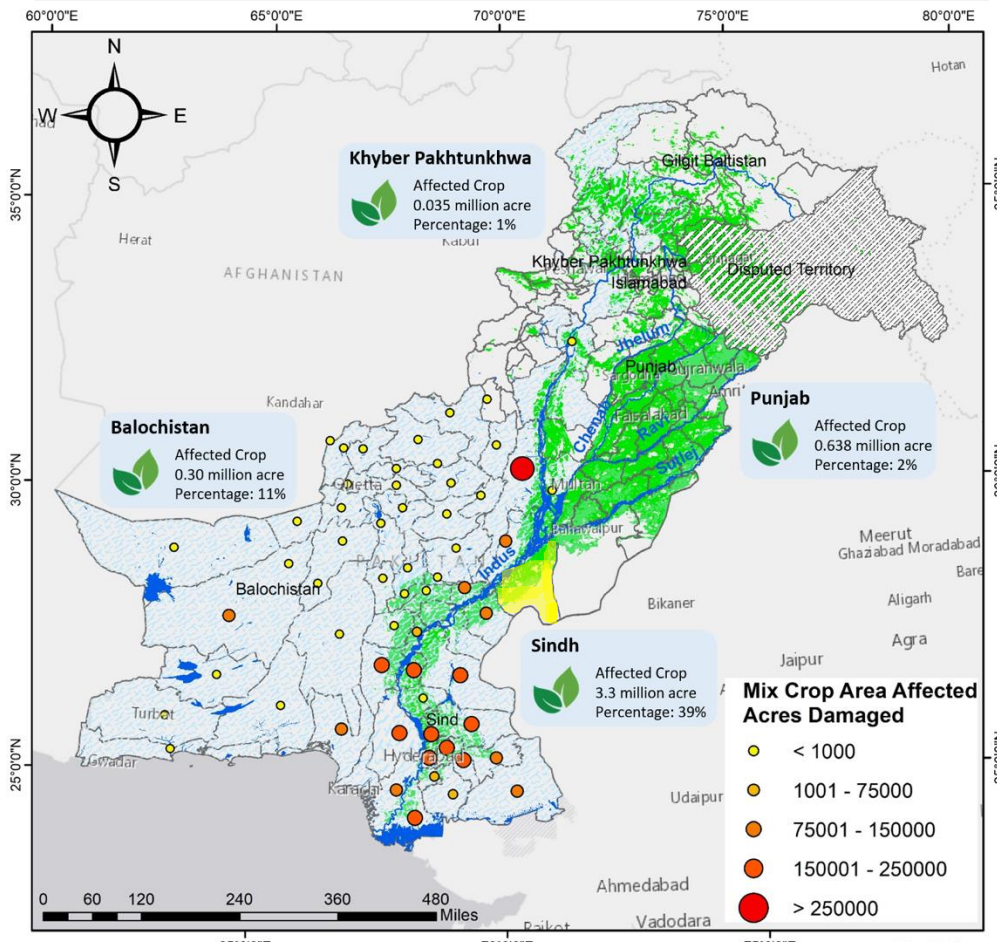
- River
- Rahim Yar Khan
- Sindh
- Punjab
- Flood Extent
- Sadiqabad Tehsil
- RahimyarKhan Tehsil
- LiaquatPur Tehsil
- Khanpur Tehsil
- Settlements
- Districts

Data Source

Satellite Images: Sentinel 1; August 2022
Description:
This map shows the detected flood area in Sindh and Punjab including Rahim Yar Khan.
This product is developed by IWMI

0 12.5 25 50 Kilometers

Flood in Pakistan 2022, District Wise Crops Affected Area



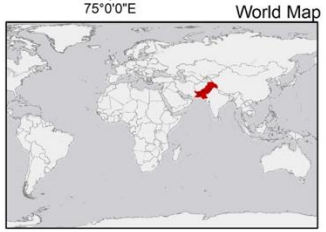
IWMI International Water Management Institute CGIAR

Projection Information

Datum: WGS84
Projection: Universal Transverse Mercator
Prepared by: IWMI, Pakistan
Data Source: Food and Agriculture Organization of United Nations

- Water Areas
- Flood Calamity Affected District
- District Boundary
- Disputed Territory
- Irrigated & Rainfed Crops

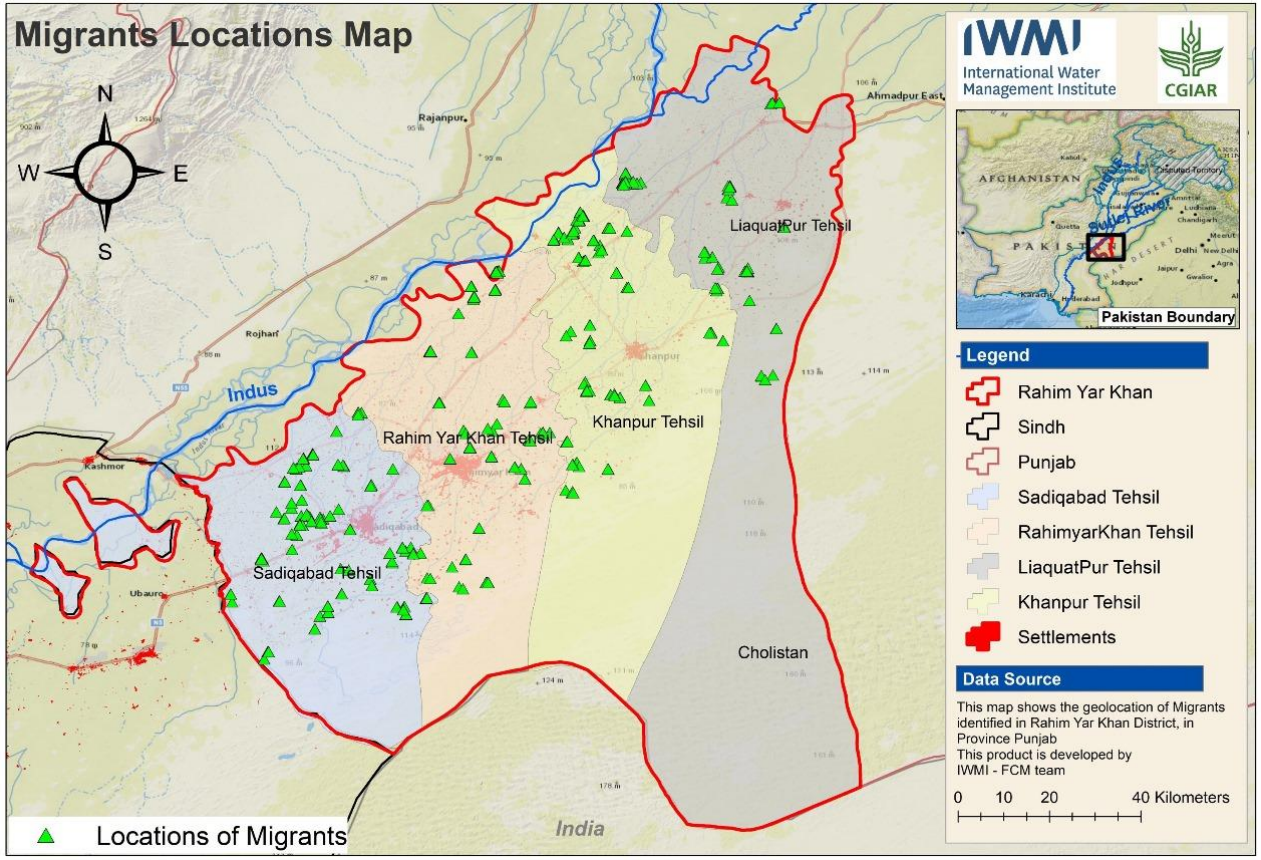
World Map



Methods

- Scoping of district of identify climate migrant communities
  - Multi-stage random sampling guided by the Sampling Guide for Displacement Situations Manual (JIPS 2020), and the Compilers' Manual on Forced Displacement Statistics (EGRISS 2023)
  - UNICEF's (2024) Multiple Indicator Cluster Survey (MICS) sampling (**n=826; 322 women, 504 men**)
- District survey complemented with KIIs and FGDs
  - 12 FGDs (7 women's and 5 men's)
  - 43 KIIs across district, province and federal level

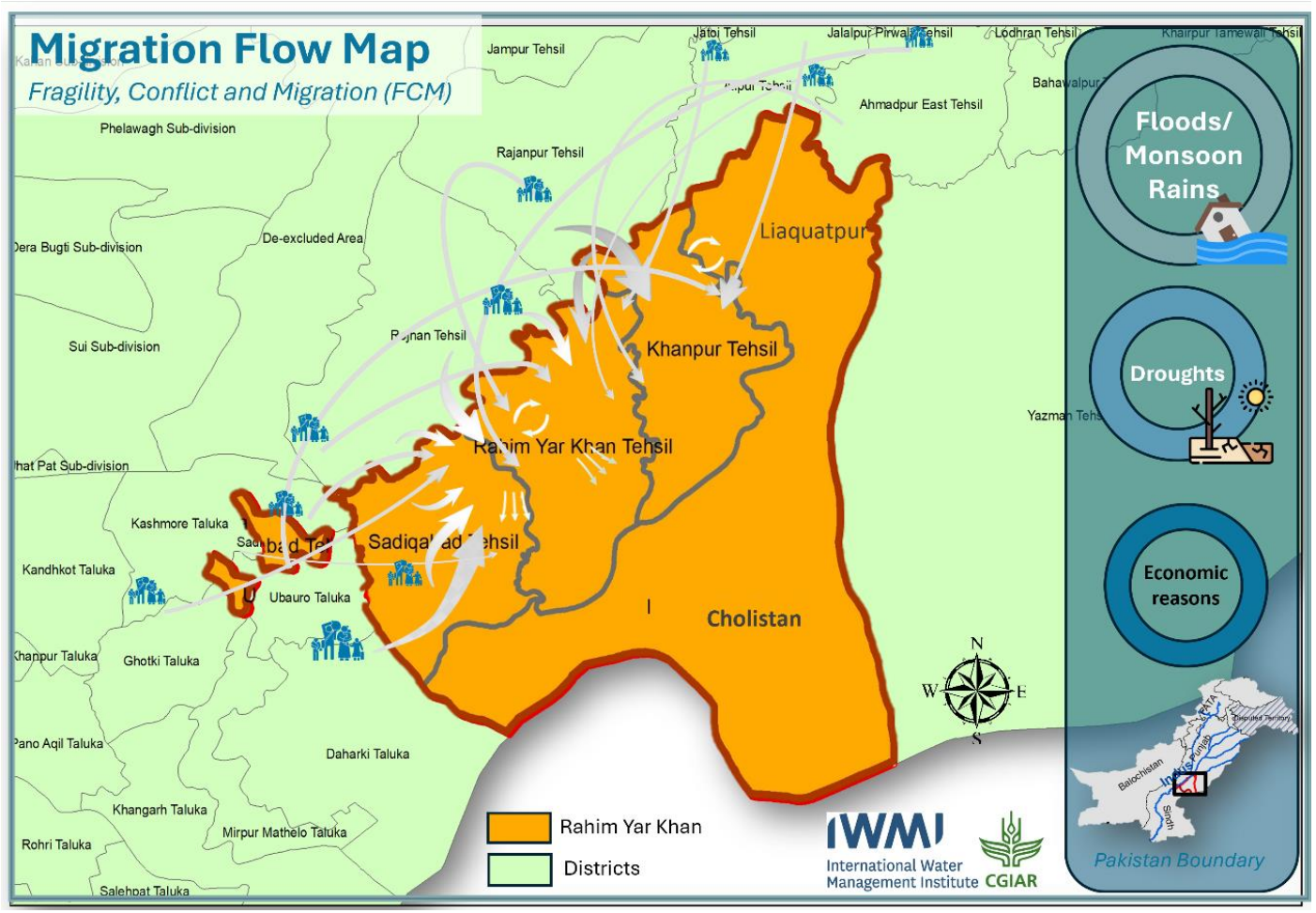
Findings



Socio-demographic characteristic	% Men (n=504)	% Women (n=322)	% Total (n=826)
Marital status			
Single	0.4	0	0.2
Married	99	91	96
Divorced	0.2	1	1
Widowed	0.4	7	3
Household (HH) head			
Self	**84**	**10**	**55**
Spouse	0	32	12
Self and spouse equally	13	41	24
Male relative	2	16	7
Female relative	1	1	1
Education			
Never attended school	**77**	**93**	**83**
Up to grade 5 completed	12	4	9
Grade 6 to 10 completed	7	1	5
FA/F.Sc (grade 11 and 12)	1	0	0.5
Madrasah (religious education)	3	2	2
Bachelors and above	0.6	0.6	0.6
Occupation			
Contributing family worker	0	13	5
Employed with daily wages	**76**	**27**	**57**
Employed with monthly salary	9	1	6
Homemaker	0	54	21
Self-employed/own business	11	3	8
Unemployed	21	2	23

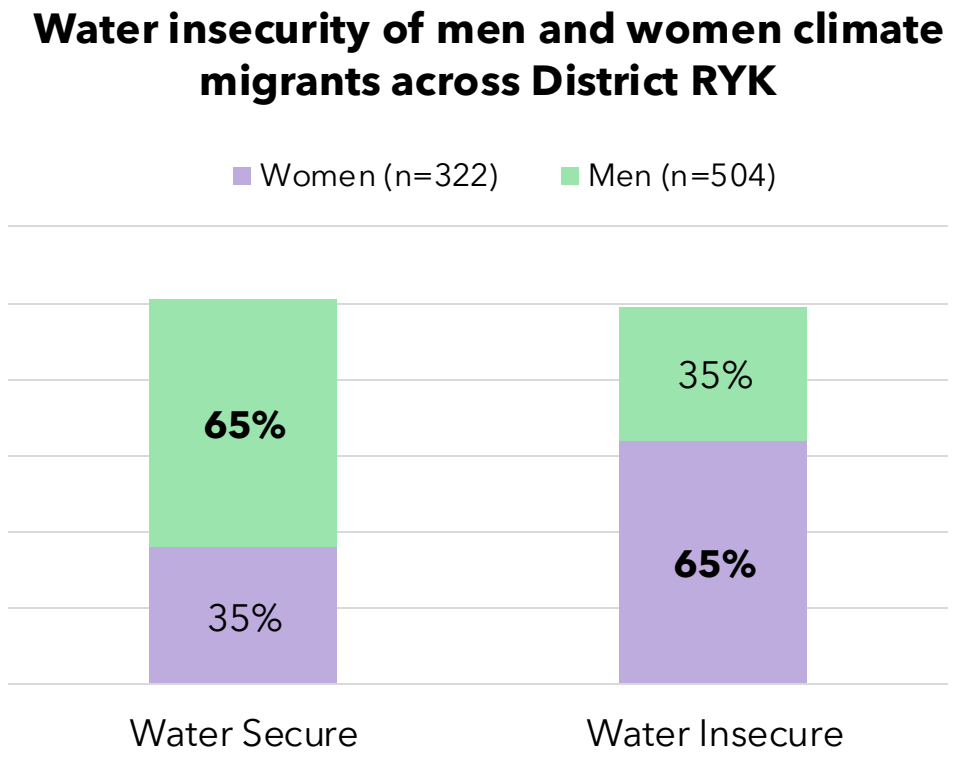
Findings

- Primary driver of migration or displacement was floods (98%) (minority reported droughts or economic factors (2%)
- Majority migrated or were displaced from other districts in Punjab province (41%), within RYK (40%) or from Sindh province (18%) and minority from KP or Balochistan (0.5%)



Water Insecurity (IWISE Scale)

- **IWISE Tool** (Young et al. 2021) used in survey to assess water insecurity levels
  - 12-item validated tool to measure personal experiences of water insecurity scored on a range of 0-36
    - Score of 12 or above indicates water security
- Overall, **54% respondents are water secure while 46% are water insecure**.
- Sex-disaggregated analysis indicates that women are more water insecure than men across the district



Food Insecurity (FIES)

- FIES 8-item Tool (FAO) to measure severity of food insecurity
- None of the climate migrant respondents were categorized as food secure or mildly food insecure

During the flood, we survived on the relief food provided. Children were often fed with soaked bread, and they were frequently hungry. There was a shortage of food, and people struggled to find affordable items. The rates of commodities doubled after the flood. Now, with PKR 6,000 (USD 21.58), you can only buy what used to cost PKR 2,000 (USD 7.19). (Women's FGD, Cholistan, Liaquatpur)

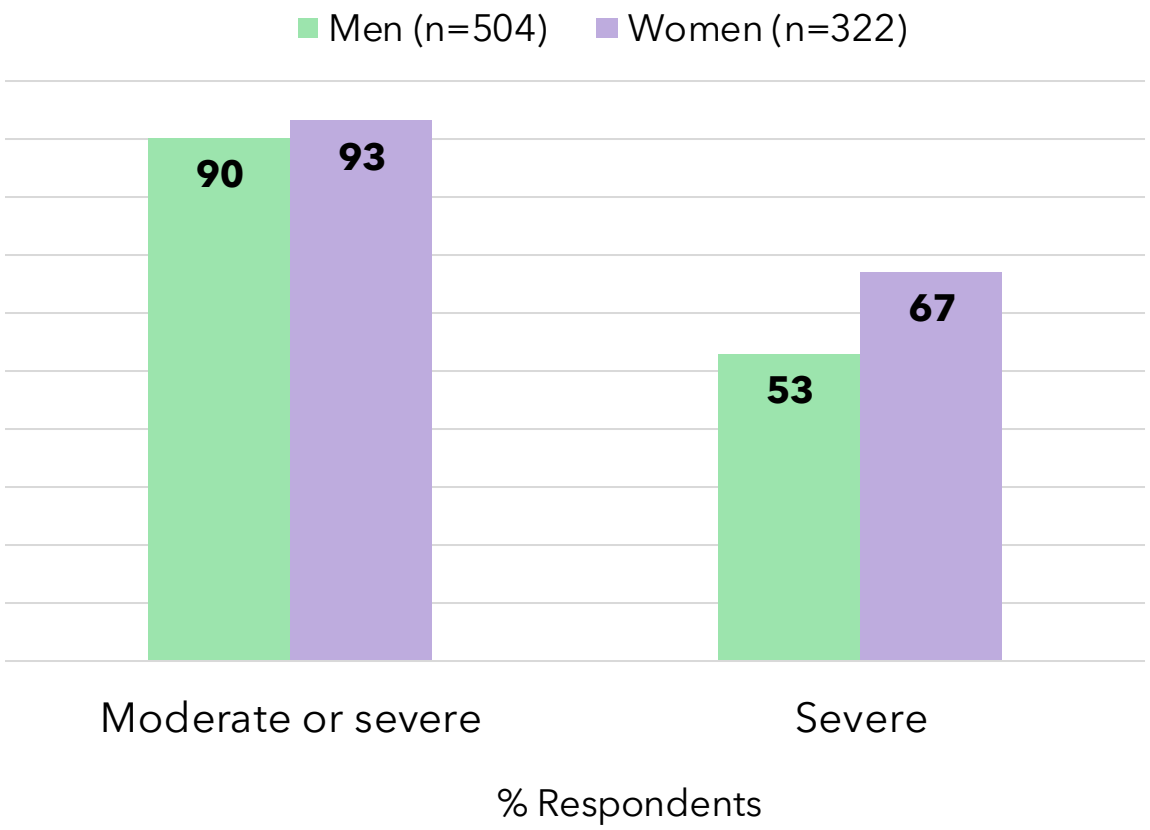
Food Insecurity Prevalence Across Tehils (% households)

	Moderate or severe (%)	Severe (%)
Combined district (n=826)	90.87	60.19
Khanpur (n=175)	91.96	59.09
Liaquatpur (n=167)	87.25	52.86
Rahim Yar Khan (n=244)	87.19	56.63
Sadiqabad (n=193)	88.23	55.58
Cholistan Desert (n=47)	86.32	51.68

Food Insecurity (FIES)

- Women are more food insecure than men, experiencing higher prevalence of moderate or severe and severe food insecurity

Food Insecurity prevalence of men and women across District RYK



Water quality and health

- RYK faces issues of poor water quality (high arsenic, TDS, nitrate and fluoride levels)
- Floods exacerbated poor water quality and prevalence of water-borne diseases exacerbated
- **High prevalence of diarrhea (80%), gastroenteritis (60%), typhoid (54%), skin irritation/rashes (51%) and cholera (45%) among migrant and displaced communities**
- **Women had higher reported prevalence** of diarrhea, Hepatitis A, typhoid, malaria, gastroenteritis, cholera and skin irritations/rashes as compared to men and young boys and girls
- Issues with Menstrual Hygiene Management (MHM), including lack of water, infections and privacy issues

*The flood had shocking effects on health. The contaminated water caused various illnesses, and **people suffered from infections, fevers, hepatitis and itching**. Some even had complications during pregnancy due to the lack of proper nutrition. The water in the rivers, which used to be a source of drinking water, became polluted during the flood. (Men's FGD, Sadiqabad)*

Implications

- Links between climate change and migration are missing from policies/plans in Pakistan
- **Gender plays a significant role** in affecting water and food insecurity and should be considered in policy and planning (and women are more vulnerable to disasters)
- Communities most vulnerable to climate change and the impacts of disasters were likely already experiencing water and food insecurity before the floods struck.
  - These populations, already facing significant socio-economic challenges, were predisposed to water and food insecurity, and the floods intensified the severity (with women feeling harsher impacts)
- Before migration/displacement, majority of men and women were already in the poor and poorest wealth quintiles – **this became worse after the floods**
- Results point to pronounced worsening of economic conditions following migration or displacement, highlighting the need to address not only immediate humanitarian needs but also **long-term economic resilience and adaptation strategies** for climate-displaced populations.

Implications

- **Key issues in Pakistan's disaster response context**: infrastructure deficiency, inadequate access to health and sanitation, economic vulnerability, poor planning and coordination in disaster response efforts, high prevalence of water and food insecurity
- **Key recommendations:**
  1) Improve accessibility to essential services
  2) Support climate-resilience agriculture and water management (Disaster Management Authorities need collaboration with Irrigation Departments (On Farm Water Management))
  3) Map climate-induced migration patterns and water and food insecurity trends for targeted support to vulnerable populations (including developing migration/displacement database)
  4) Integration of climate migration challenges into national policies and frameworks (e.g., National Water Policy, National Adaptation Plan, National Climate Change Policy, and relevant disaster management policies)

Thank you!

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

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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 (± 1.934)

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

Sinhalese (83%)

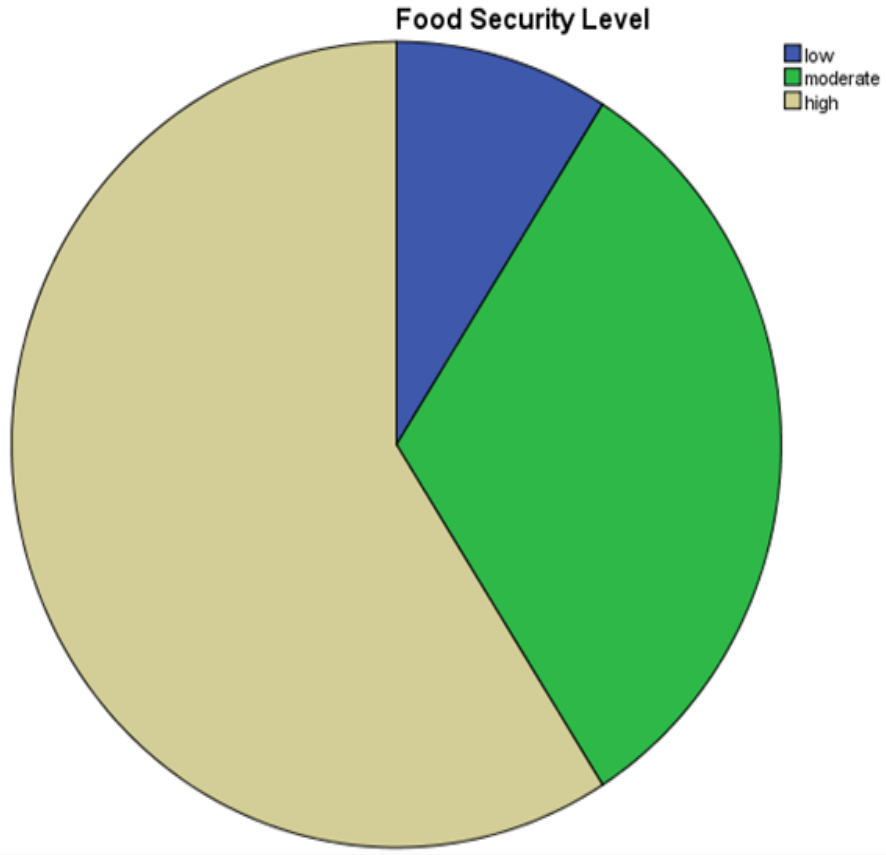
Hostels (65%).

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

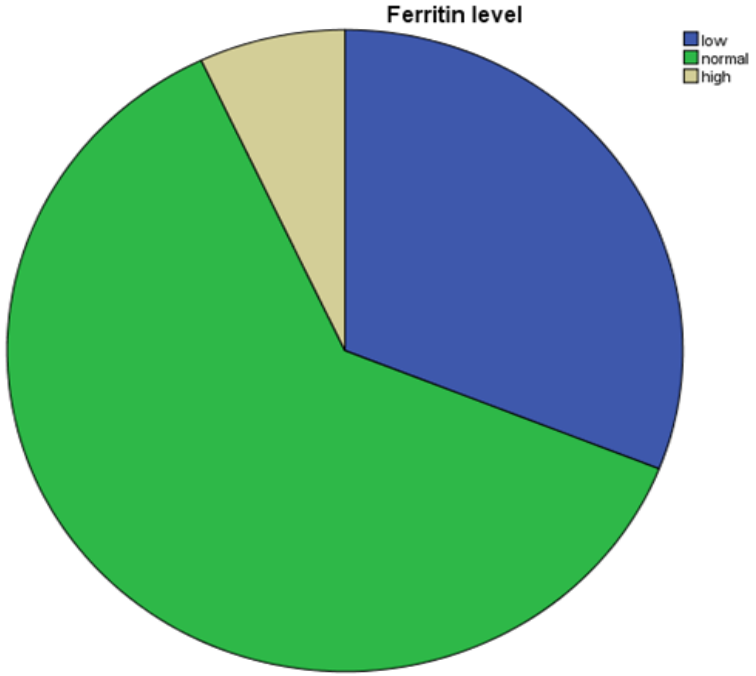
Regular consumption of iron-rich food (53%) and of regular consumption of protein rich food 61%

Distribution of Food security Level across the Sample

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

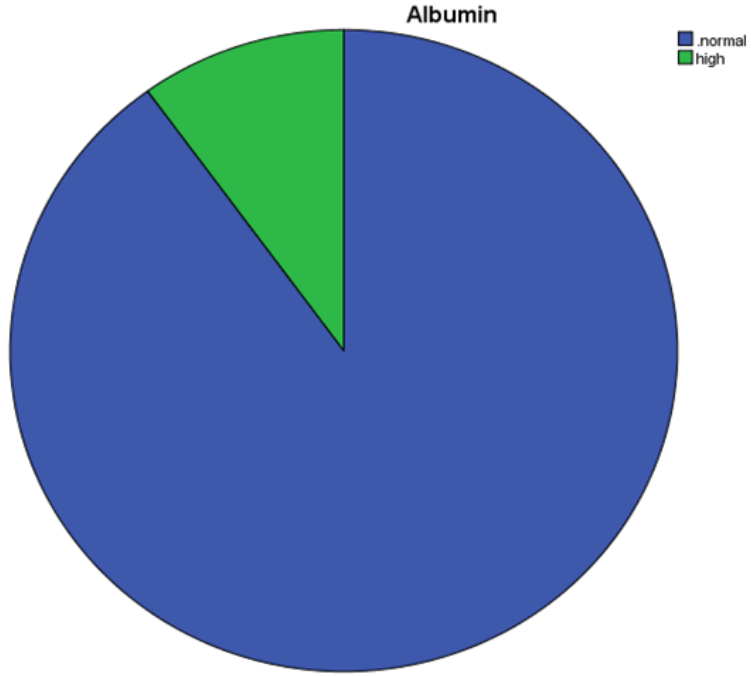


Distribution of serum ferritin level



- 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

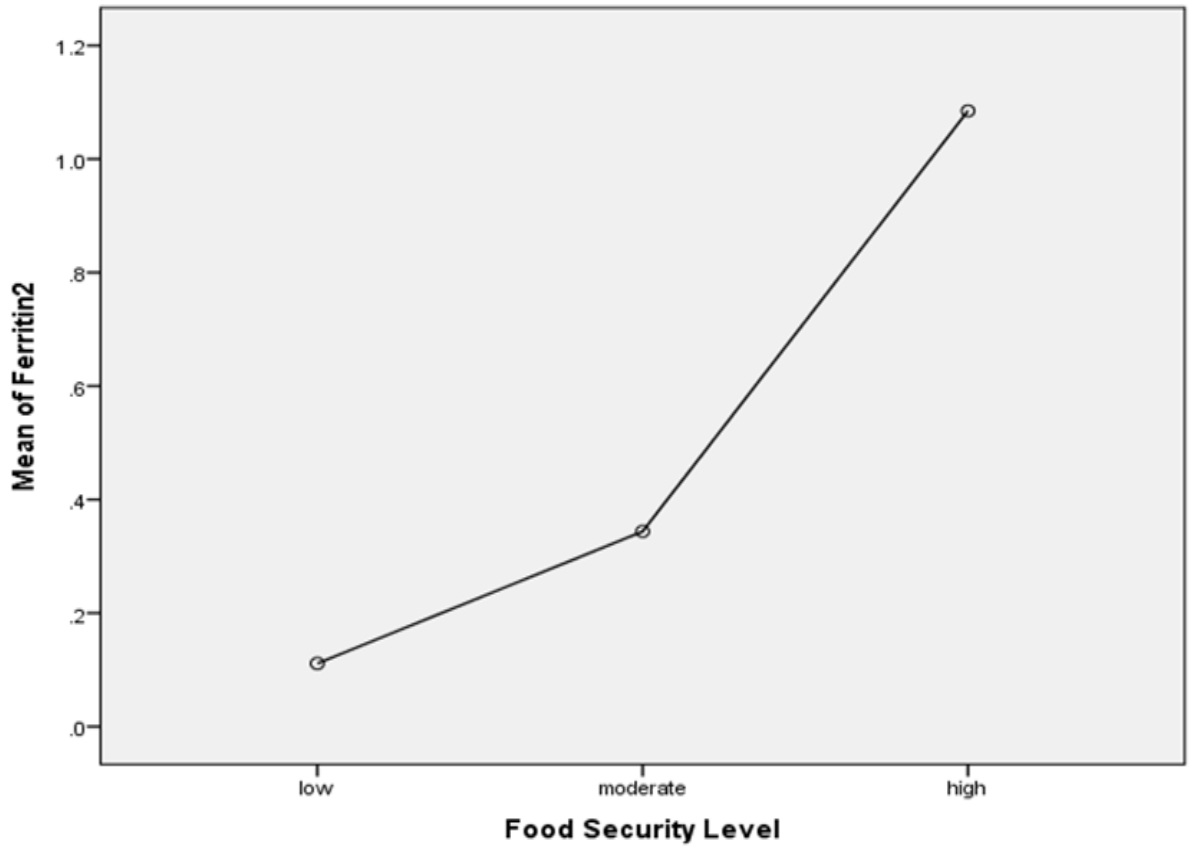
- **Significant Negative Correlation**
  r=−0.546, p<0.01

- 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.

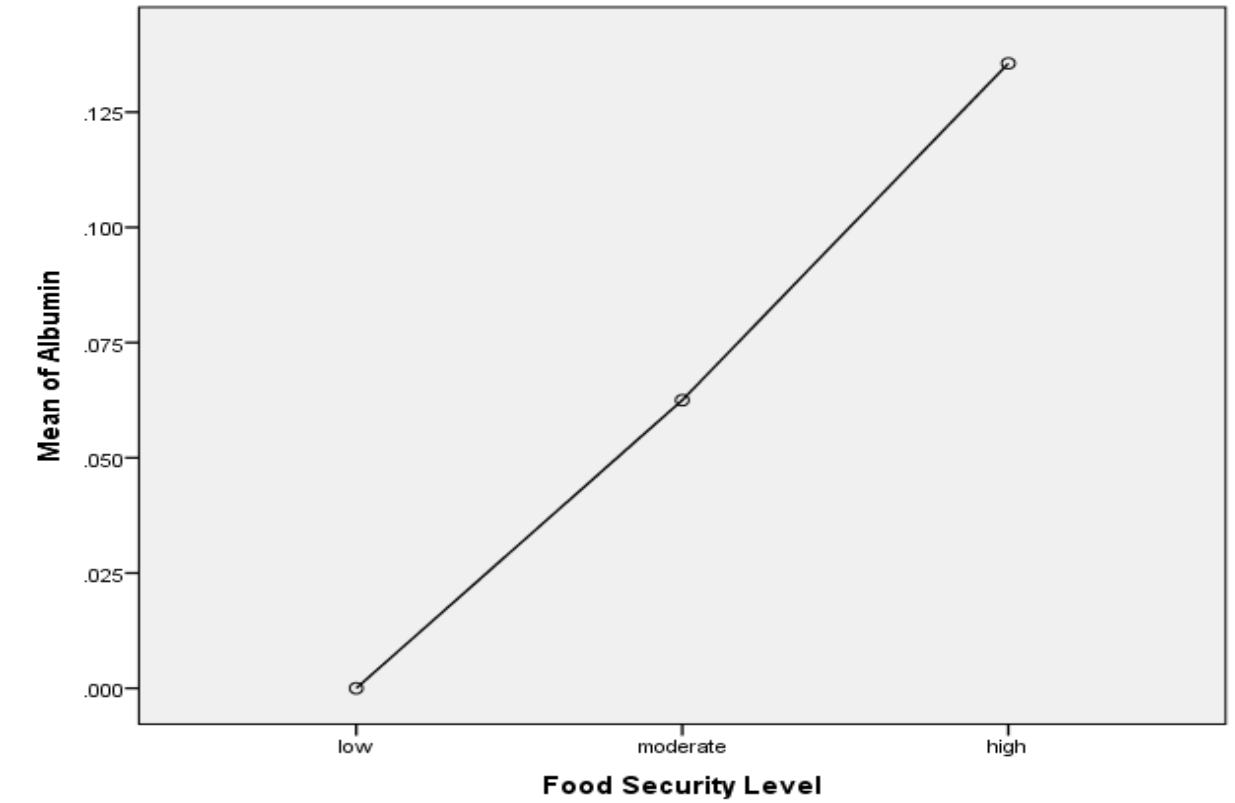


Photo elicit interview






"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 severly 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

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Predictors of changes in household food insecurity (HFI) in rural, non-slum urban, and slum areas of Bangladesh: Evidence from a longitudinal study

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Presentation outline

Introduction

Methods

Results

Implications

Introduction

Rationale and objectives

- Food insecurity remains a critical issue in Bangladesh, with significant variations across rural, non-slum urban, and slum areas.
- Understanding the predictors of changes in household food insecurity (HFI) is crucial for achieving nutritional and developmental goals.
- However, there is limited evidence from nationally representative longitudinal studies on these predictors.
- We aimed to identify predictors of changes in HFI between 2018-19 and 2023 in rural, non-slum urban, and slum areas.

Methods

Methods...(1)

Study design and areas: Longitudinal study-two rounds (2018-19 and 2023) of data collection in all eight administrative divisions of Bangladesh.

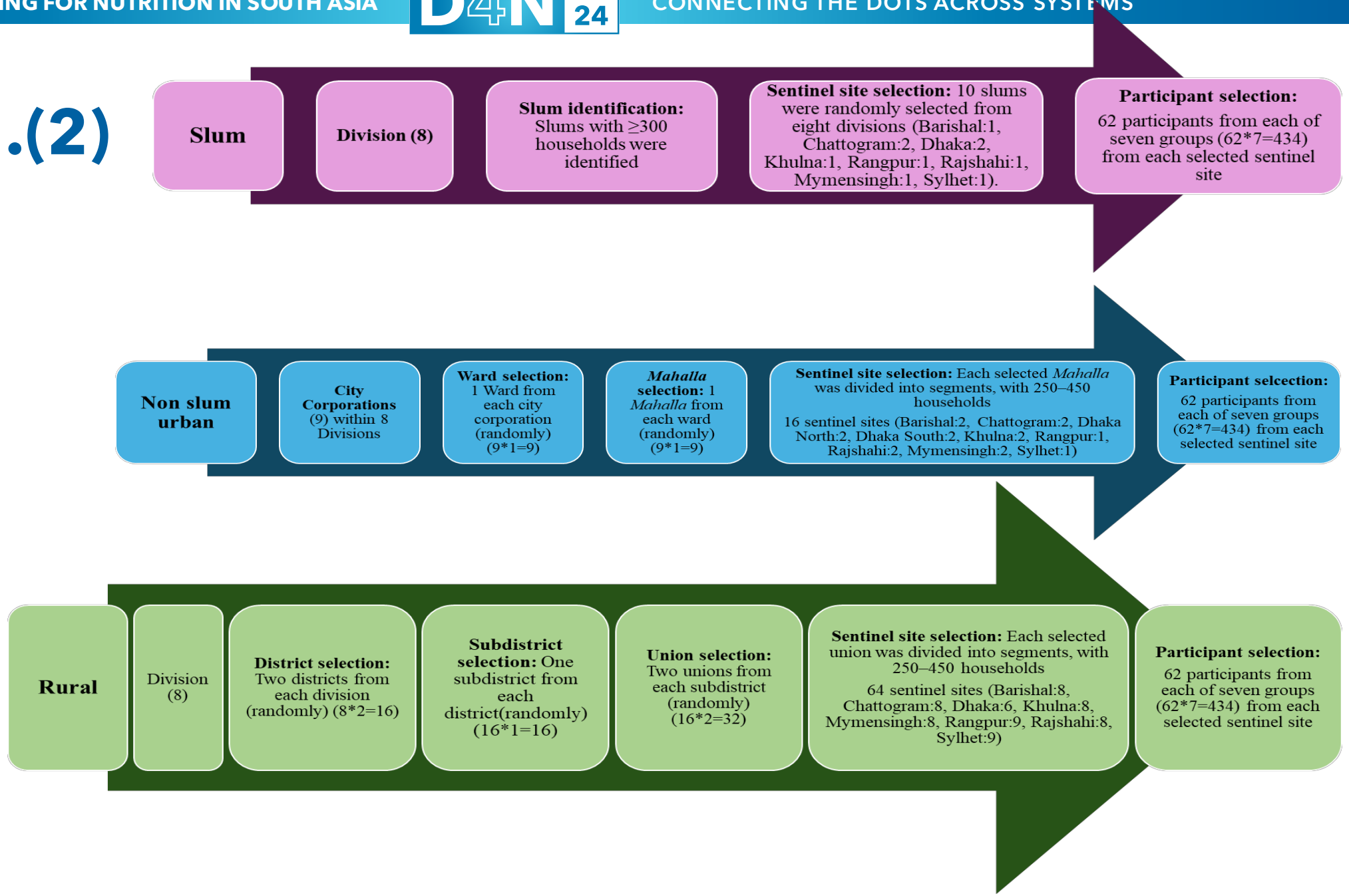
Sampling procedure: Multi-stage cluster sampling. Separate sampling procedure for rural, non-slum urban, and slum areas.

Sample size: 11,912 households (Rural: 9,187; non-slum urban: 1,422; and slums: 1,303) from 82 clusters during each round.

Data collection: Face to face interview using structured questionnaire in a tablet computer with customized KoboToolBox application.

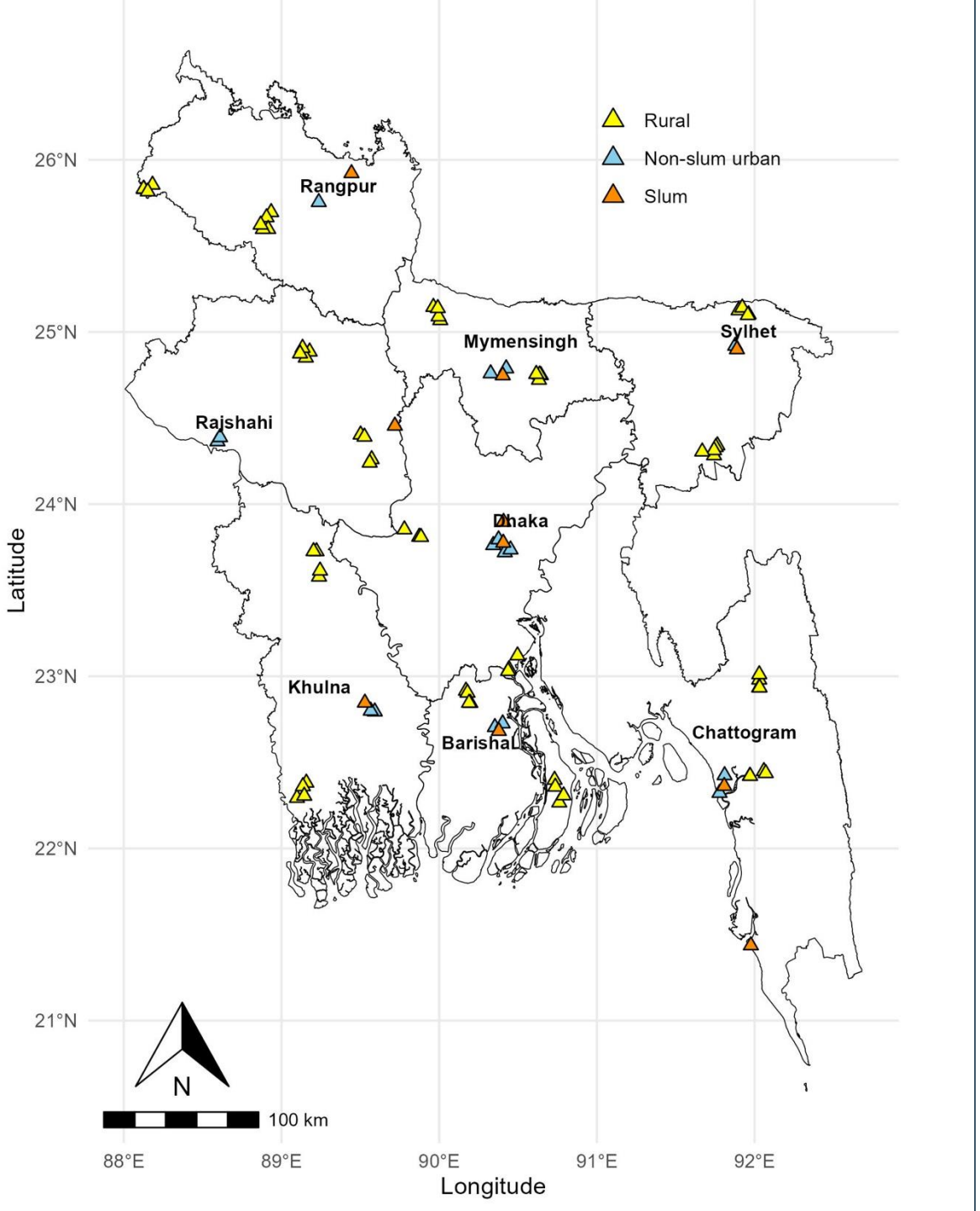
Methods...(2)

Sampling design of rural, non-slum urban, and slum areas



Methods...(3)

Map of the sentinel sites



Methods...(4)

Outcome variables: Household food insecurity (HFI) - Food secure, and food insecure (any mildly, moderately and severely) using the Household Food Insecurity Access Scale (HFIAS) (1).

Explanatory variables: A list of variables based on the literature review and data availability. The variables with a p value ≤0.2 in unadjusted analysis included in the adjusted analysis (2).

Data analysis: Stata (v17.0) software. Descriptive and generalized estimating equations analyses (GEE) separately for rural, non-slum urban, and slum settings.

Ethical consideration: a) Ethical approval from Institutional Review Board of BRAC JPGSPH, BRAC University, and b) written informed consent before starting the interview.

Reference: 1) Coates, J., Swindale, A., & Bilinsky, P. (2007). Household Food Insecurity Access Scale (HFIAS) for measurement of food access: Indicator guide: version 3
(2) Maldonado G, Greenland S. (1993). Simulation study of confounder selection strategies. Am J Epidemiol;138:923–36

Results

Household food insecurity (HFI) transition

Between 2018-19 and 2023, HFI status of 50% households in rural areas, 48% in non-slum urban areas and 63% in slum areas **remained unchanged.**

Food insecurity transitions in rural areas

Food insecurity status 2018-19	Total	Food insecurity status 2023	
		Food secure	Food insecure
Food secure	5253	3662 (69.7)	1591 (30.3)
Food insecure	3934	1983 (50.4)	1951 (49.6)

Food insecurity transitions in non-slum urban areas

Food insecurity status 2018-19	Total	Food insecurity status 2023	
		Food secure	Food insecure
Food secure	1051	772 (73.5)	279 (26.5)
Food insecure	371	194 (52.3)	177 (47.7)

Food insecurity transitions in slum areas

Food insecurity status 2018-19	Total	Food insecurity status 2023	
		Food secure	Food insecure
Food secure	561	317 (56.5)	244 (43.5)
Food insecure	742	277 (37.3)	465 (62.7)

Regression models for HFI with GEE...(1)

Indicators	Rural		Non-slum urban		Slum	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Survey years (ref: phase 2018-19)						
Phase 2023	**0.98 (0.96,0.99)**	**<0.001**	**1.60 (1.32,1.94)**	**<0.001**	1.09 (0.92,1.30)	0.309
Division (ref: Barishal)						
Chattogram	0.99 (0.96,1.02)	0.372	**2.66 (1.58,4.47)**	**<0.001**	0.96 (0.67,1.38)	0.834
Dhaka	0.99 (0.96,1.02)	0.523	**2.21 (1.29,3.78)**	**0.004**	1.41 (0.94,2.10)	0.094
Mymensingh	0.99 (0.96,1.02)	0.387	0.91 (0.52,1.61)	0.752	1.19 (0.80,1.75)	0.392
Khulna	1.03 (1.00,1.06)	0.086	1.73 (1.01,2.94)	0.045	0.84 (0.58,1.22)	0.365
Rajshahi	**0.90 (0.88,0.93)**	**<0.001**	0.81 (0.48,1.39)	0.450	**0.53 (0.37,0.76)**	**<0.001**
Rangpur	**1.08 (1.05,1.12)**	**<0.001**	1.06 (0.58,1.93)	0.851	**1.82 (1.24,2.68)**	**0.002**
Sylhet	**1.11 (1.07,1.15)**	**<0.001**	1.18 (0.65,2.11)	0.590	**0.59 (0.37,0.94)**	**0.027**
Access to sanitation (ref: improved)						
Not improved sanitation	**1.11 (1.09,1.13)**	**<0.001**	**2.37 (1.55,3.6)**	**<0.001**	**1.51 (1.21,1.87)**	**<0.001**
Wealth quintile (ref: poorest)						
Poorer	1.00 (0.98,1.02)	0.883	**0.56 (0.43,0.72)**	**<0.001**	**0.73 (0.55,0.96)**	**0.026**
Middle	1.00 (0.98,1.02)	0.828	**0.34 (0.25,0.46)**	**<0.001**	**0.54 (0.40,0.73)**	**<0.001**
Richer	**0.94 (0.92,0.96)**	**<0.001**	**0.34 (0.25,0.47)**	**<0.001**	**0.34 (0.25,0.47)**	**<0.001**
Richest	**0.84 (0.82,0.86)**	**<0.001**	**0.47 (0.35,0.62)**	**<0.001**	**0.41 (0.30,0.58)**	**<0.001**
Age in years (cont.)	**1.00 (1.00,1.00)**	**0.009**	0.99 (0.98,1.00)	0.127	1.00 (1.00,1.01)	0.513
Household headship (ref: male)						
Female	1.01 (1.00,1.03)	0.145	1.19 (0.96,1.47)	0.120	**1.27 (1.03,1.56)**	**0.023**
Education of household head (ref: grade:0-4)						
Grade 0-4	Ref		Ref		Ref	
Grade 5-9	**0.93 (0.92,0.95)**	**<0.001**	**0.58 (0.47,0.71)**	**<0.001**	**0.59 (0.48,0.71)**	**<0.001**
Grade 10 and above	**0.87 (0.85,0.89)**	**<0.001**	**0.26 (0.20,0.35)**	**<0.001**	**0.39 (0.27,0.58)**	**<0.001**

Regression models for HFI with GEE...(2)

Indicators	Rural		Non-slum urban		Slum	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Household with young children (0-9 years) (cont.)	**1.01 (1.00,1.02)**	**0.015**	0.93 (0.83,1.05)	0.248	1.07 (0.96,1.19)	0.249
Household with adolescents (10-19 years) secondary school-age children (cont.)	**1.01 (1.01,1.02)**	**0.002**	0.92 (0.83,1.03)	0.134	1.03 (0.94,1.14)	0.513
Household with male adults (20-59 years) (cont.)	**0.97 (0.96,0.98)**	**<0.001**	**0.85 (0.74,0.97)**	**0.014**	0.90 (0.80,1.01)	0.079
Household with female adults (20-59 years) (cont.)	**0.96 (0.95,0.97)**	**<0.001**	0.98 (0.85,1.13)	0.781	**0.83 (0.73,0.95)**	**0.006**
Household with elderly (60 and above years) (cont.)	1.00 (0.98,1.01)	0.482	0.91 (0.76,1.08)	0.281	0.97 (0.82,1.14)	0.675
Access to any social safety net program (ref: no)						
Yes	1.01 (0.99,1.02)	0.264	1.24 (0.96,1.58)	0.096	0.85 (0.69,1.05)	0.128
Religion (ref: Islam)						
Other than Islam	**0.97 (0.95,0.99)**	**0.002**	0.71 (0.50,1.01)	0.056	0.79 (0.48,1.29)	0.345
Cooking fuel (ref: clean)						
Unclean	**1.16 (1.12,1.20)**	**<0.001**	**1.95 (1.52,2.51)**	**<0.001**	**1.53 (1.24,1.89)**	**<0.001**
Remittance (ref: no)						
Yes	**0.95 (0.94,0.97)**	**<0.001**	0.84 (0.56,1.25)	0.393	0.88 (0.59,1.30)	0.519
Livestock ownership (Cow/buffalo) (ref: no)						
Yes	**0.97 (0.96,0.99)**	**<0.001**				
Ownership of agricultural land (decimal) (ref: 0)						
<50 decimal	**0.93 (0.91,0.94)**	**<0.001**				
>=50 decimal	**0.84 (0.83,0.86)**	**<0.001**				

Predictors of changes in HFI summary

In all three areas

- Poor sanitation ↑
- Unclean fuel use↑
- Higher education of HH head ↓
- Higher household wealth ↓

In rural areas only

- HH in Rangpur & Sylhet divisions ↑
- Older HH heads ↑
- Higher number of children/adolescents ↑
- HH in Rajshahi division ↓
- More adults (male/female) ↓
- Religion other than Islam ↓
- Remittance income ↓
- Livestock ownership ↓
- Agricultural land ownership ↓

In non-slum urban areas only

- HH in Chattogram, Dhaka, and Khulna divisions ↑
- More adult males ↓

In slum areas only

- HH in Rangpur division ↑
- HH with female heads ↑
- HH in Rajshahi and Sylhet divisions ↓
- Higher number of adult females ↓

Implications

Implications

- ✓Household food insecurity remains high in Bangladesh, particularly in slum areas.
- ✓Rural, non-slum urban and slums of Bangladesh have common and unique predictors of changed in HFI.
- ✓Following factors should be considered while developing and implementing programs to address food insecurity.
  - Targeted regional interventions to bridge disparities between divisions and household types
  - Focusing on improving education and economic resilience through asset ownership
  - Address the potential vulnerabilities of female-headed households in slums

Thank you !

Research Title:

An assessment of a food-based social protection program and its impact on food and nutrition security in the targeted households in Bangladesh

Presenter: Md. Mahbubur Rahman
Research Director
Department/Division: **Food Planning and Monitoring Unit (FPMU)**
Organization : **Ministry of Food, Bangladesh**

Introduction

Constitutional Obligations:

Article 15(A): It is a fundamental responsibility of the State to secure for its citizens through planned economic growth, the provision of basic necessities of life including food, clothing, shelter, education and medical care.

Article 15(D): The right to social security, that is to say, to public assistance in cases of undeserved want arising from unemployment, illness or disablement, or suffered by widows or orphans or in old age, or in other such cases.

Article 18(1): States that raising the level of nutrition and improvement of public health are among the primary duties of the State.

Ministry of Food is responsible to establish a dependable national food security system and stabilize the price of food-grains.

Accordingly, Ministry of Food has been implementing various food based social security/protection programmes including the Open Market Sale (OMS) Programme.

The OMS is policy instrument and effective tool for food grains market price stability as well as economical access to food for low income people since 1978.

Rationale

- The Government is distributing a **huge amount of rice & wheat** every year through OMS program
- It is important to understand what are the impact of the **Effectiveness of OMS Program on Food Security**

Objectives

- To identify the effect of OMS program on **purchasing power and access** to food
- To assess the effectiveness of the programme on **food intake and food diversification to ensure food and nutrition security.**
- To investigate the effectiveness of the programme on **market price stability.**
- To identify the **problems of OMS** program

Methods/Analysis

Study Area: 3 districts out of 64 districts of Bangladesh

Time period: February-June 2024

Sample Size for primary data collection: 1107

Beneficiaries of OMS : 500

Non-beneficiaries of OMS: 500

OMS dealers : 26

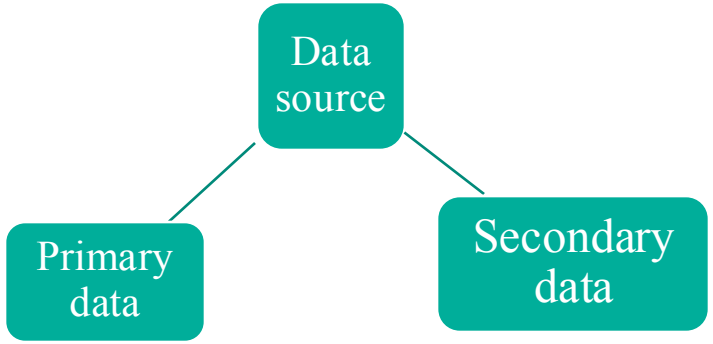
Traders (rice & wheat) : 81

Sampling technique : Stratified random sampling

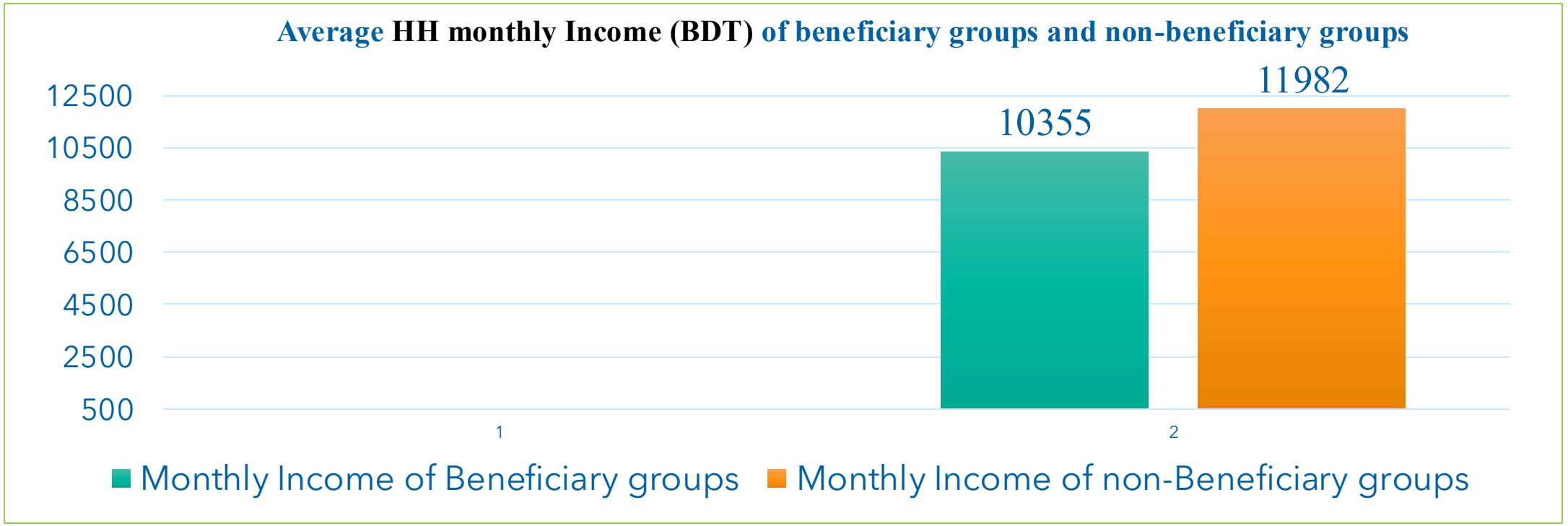
Data type: Primary and secondary

Primary data: Both qualitative and quantitative

Data collection procedure: in-person one-to-one interviews



Special consideration: **Similar income** was considered for both beneficiaries & non-beneficiaries



*__National__ Monthly Income (HH): BDT 32422 (HIES, 2022)

Questionnaire type: Semi-structured questionnaire

Secondary data: Government & non-government organizations (website & sending requesting letters)

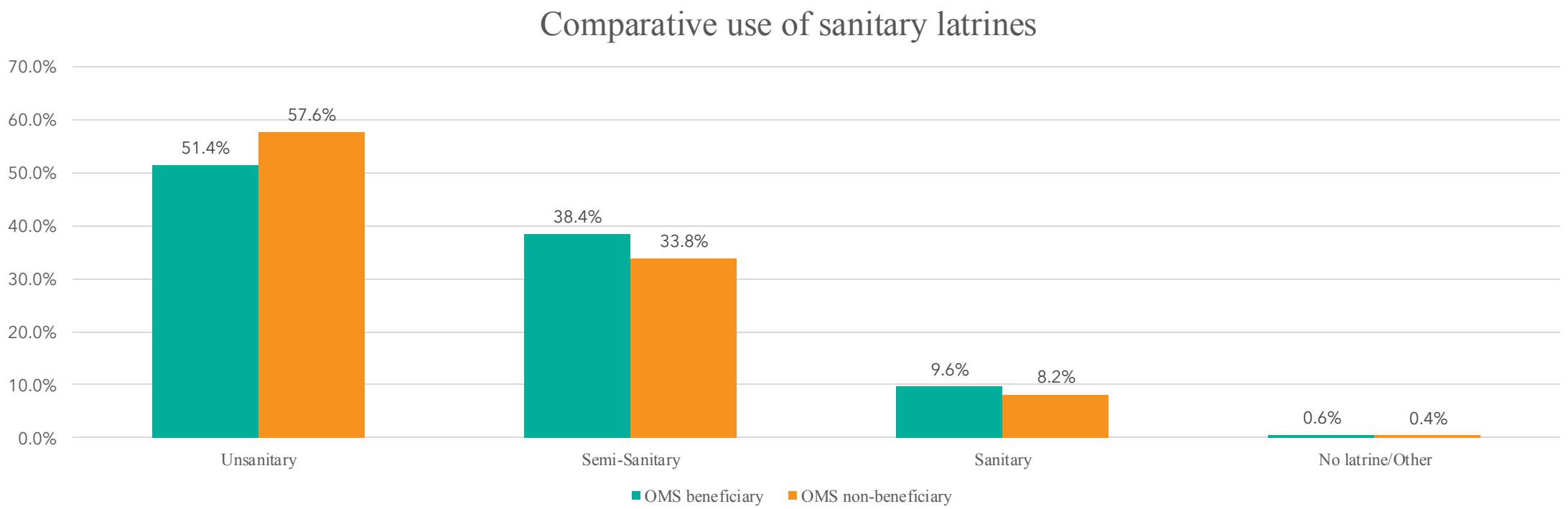
FGD: 180 relevant stakeholders (Four groups: OMS dealers, Civil society representatives, Beneficiaries, non-beneficiaries of OMS.

Results/Findings

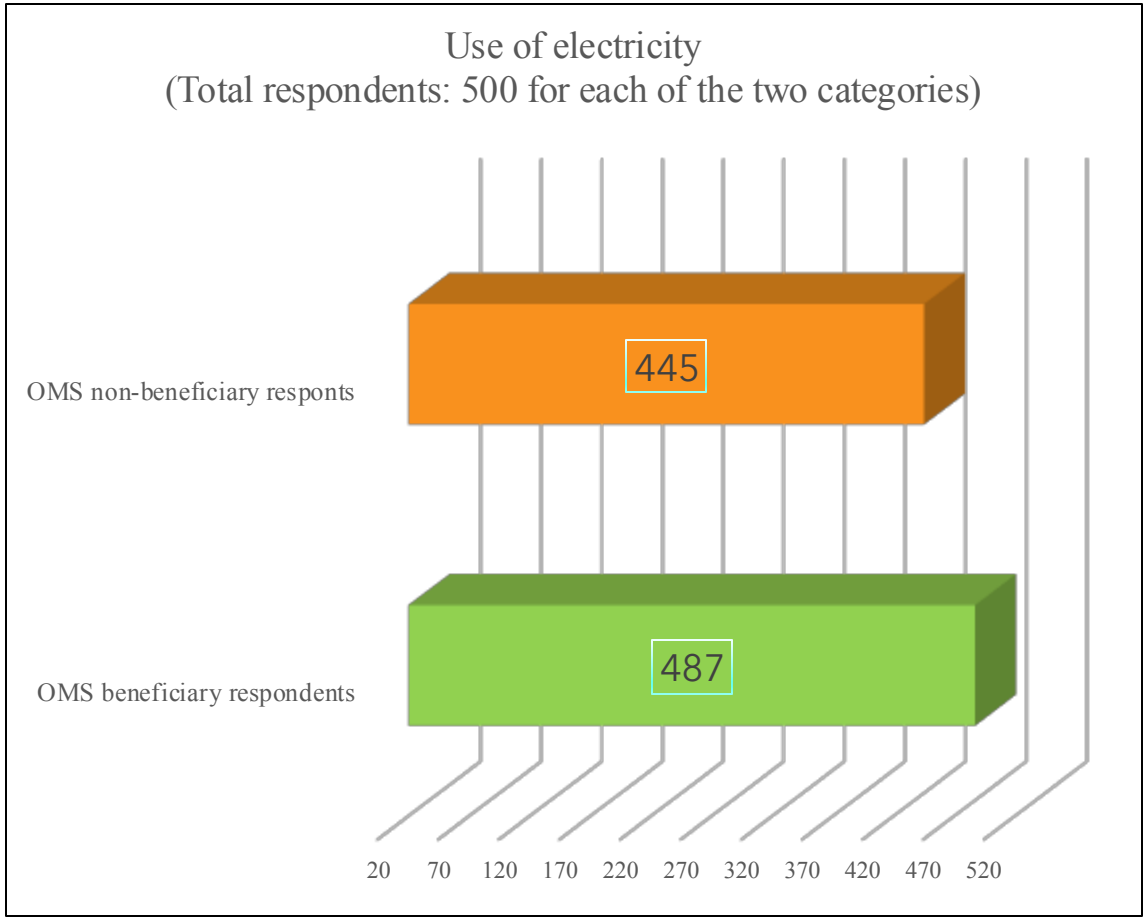
Difference between OMS and market price

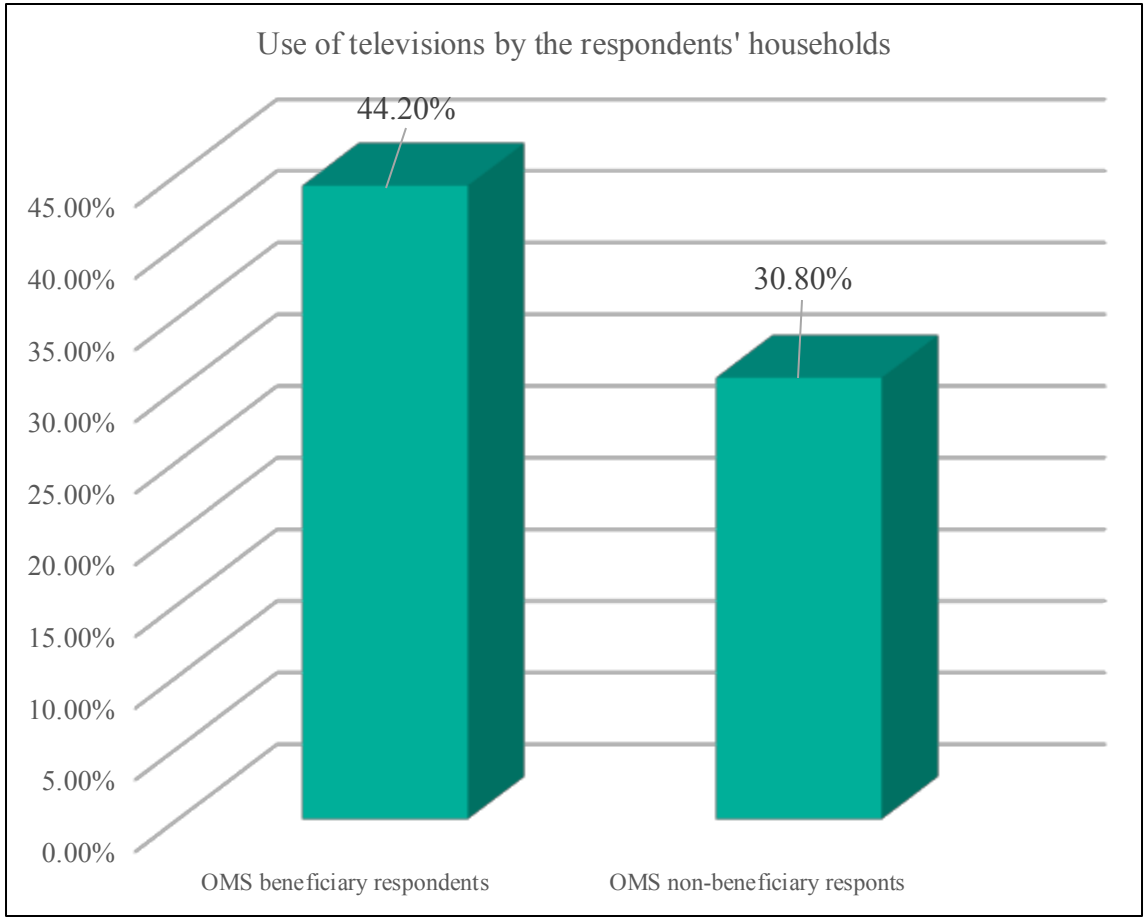
Commodity	OMS Price (Tk./kg)	Market Price (Tk./kg)	Difference (Tk/kg))
Rice Price (Tk./Kg)	30	46.24 (38-55)	16.24 (35% lower)
Atta Price (Tk./Kg)	24	43.33 (36-50)	19.66 (45% lower)

Comparative use of sanitary latrines by OMS beneficiaries & non-beneficiaries

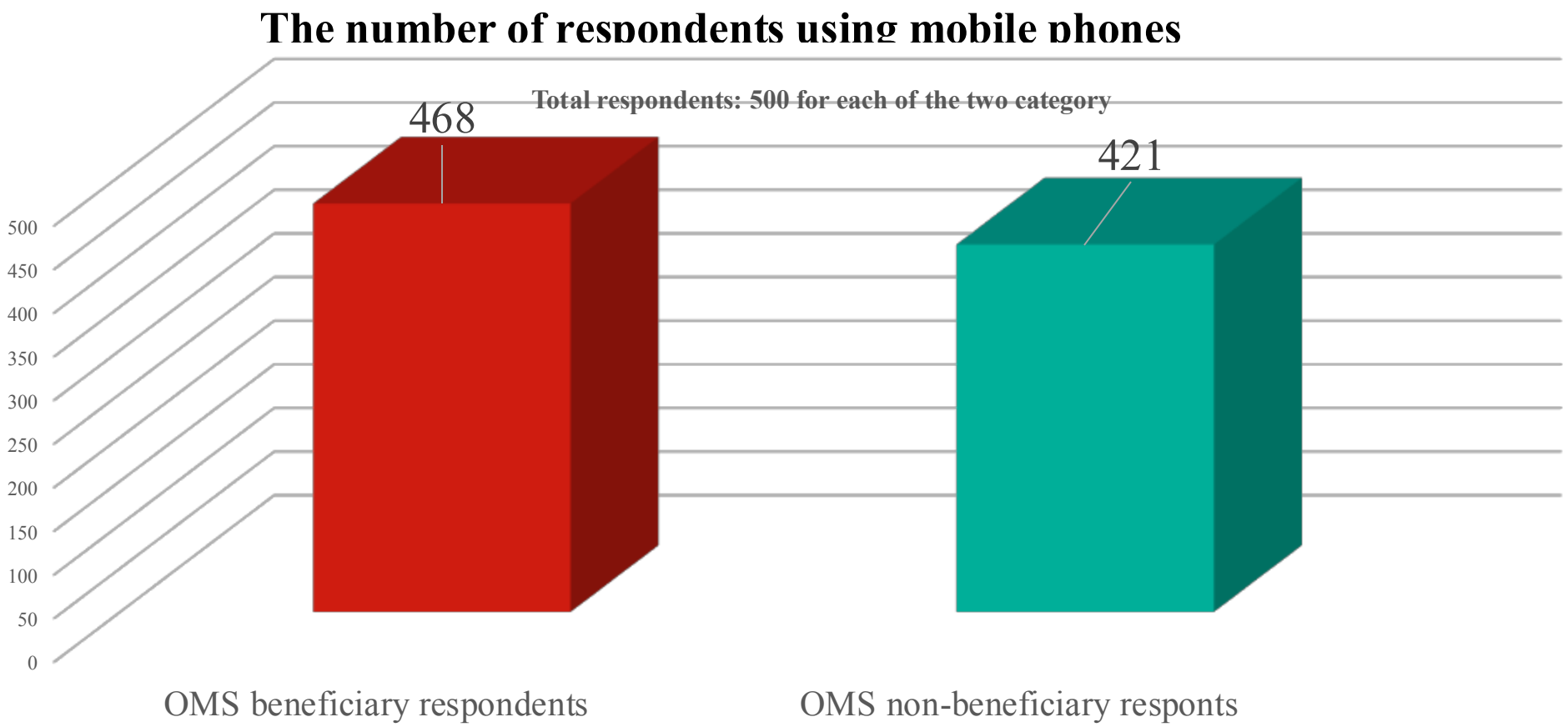


Comparative living standard and social services

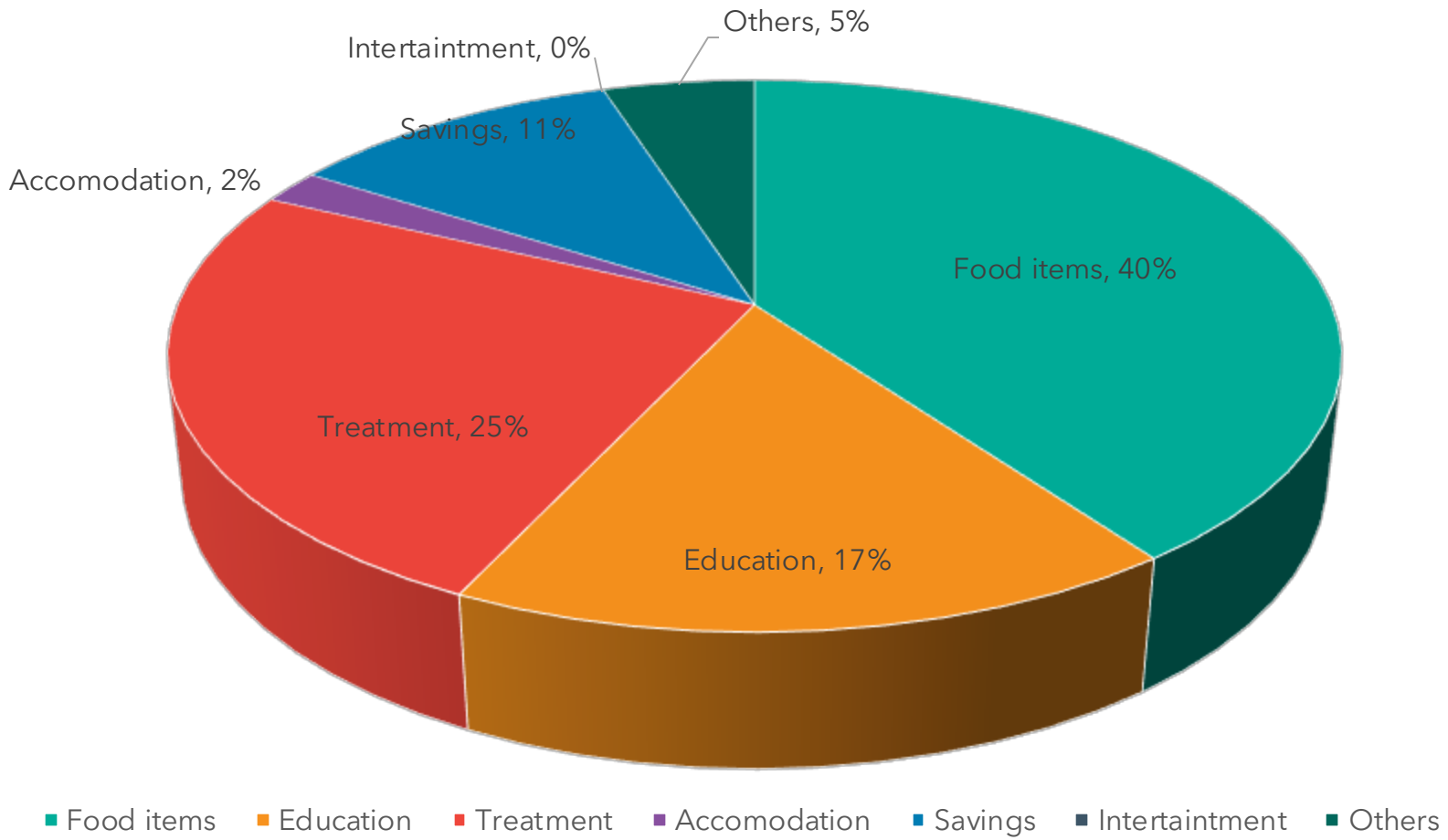




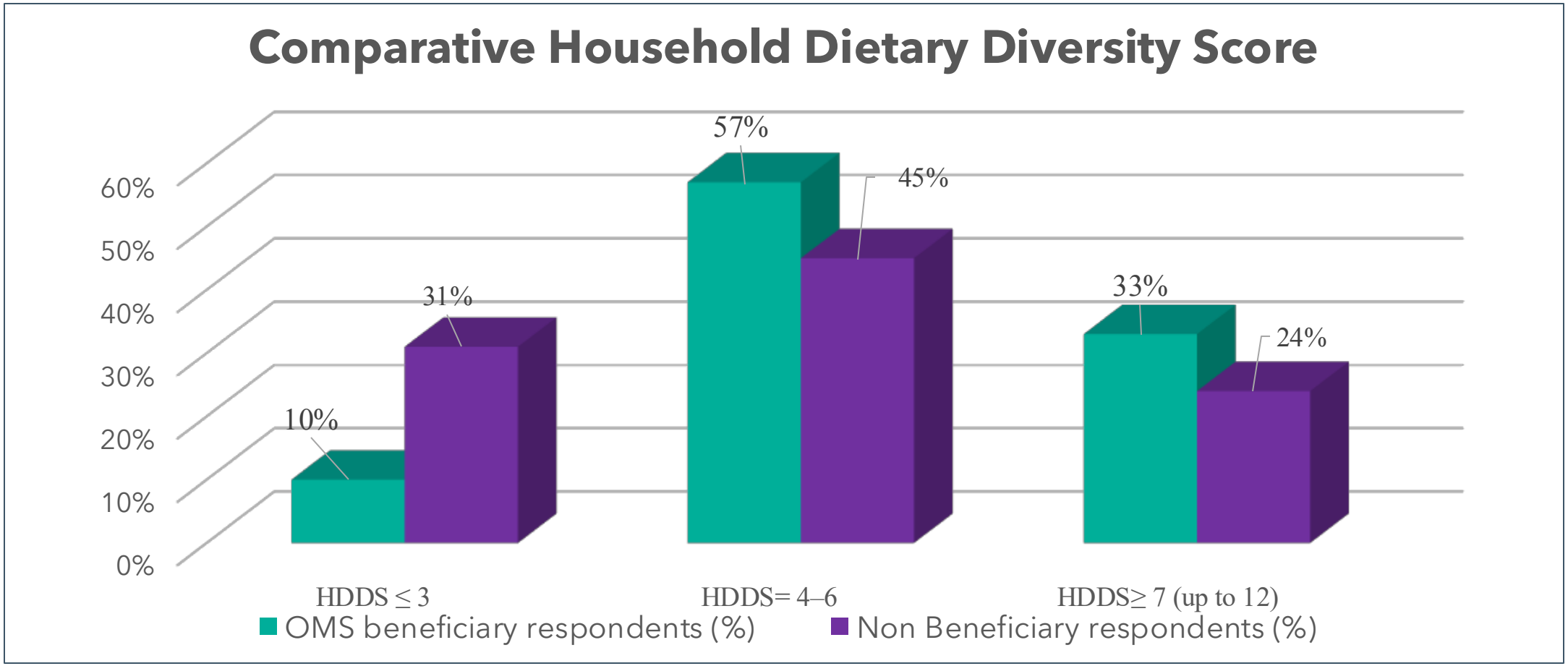
Comparative use of social services



Percentage of Beneficiaries spend savings from OMS



Food and nutrition situation in terms of HDDS



*HDDS ≤ 3 (Low dietary diversity score)
*HDDS= 4–6 (Medium dietary diversity)
*HDDS≥ 7 (up to 12) (High dietary diversity)

Food and nutrition situation in terms of FCS

Respondent type	FCS 0-28		FCS 28.5-42		42.5≤ FCS≤ 52		FCS≥52.5	
	Respondent	Share	Respondent	Share	Respondent	Share	Respondent	Share
OMS beneficiaries	72	14%	295	59.0%	128	25.6%	5	1.0%
OMS Non-beneficiaries	149	30%	235	47%	116	23.2%	0	0.0%

*FCS 0-28 (Did not consume staples and vegetables on a daily basis (poor))
*FCS 28.5-42 (Borderline)
*42.5≤ FCS≤ 52 (Acceptable low)
*FCS≥52.5 (Acceptable high)

Conclusion

The OMS beneficiaries receive foodgrain at the **incentive price**. It **increases their purchasing power** for accessing other nutritious foods. The **calculated Comparative** Food Consumption Score (**FCS**) and **HDDS** indicate that OMS beneficiaries are more **food and nutrition-secure** than the non-OMS beneficiaries.

Therefore, the **OMS program** supports improving the **food and nutrition security** of the OMS beneficiary households and thereby contributes to the **country's overall food security** situation.

Recommendation

- Fixed the **OMS distribution time after office time** or main working time of the laborer, for example, after 4.00 pm to 10.00 pm
- **Card systems** can be introducing to avoid long queue and wasting their time and to evade duplication
- **Biometric finger print** or smart system with receiver's face detecting to avoid duplication
- **Packaging** of food grains: Weight for loss & quality degrading
- **Monitoring systems** have to be strengthened. OMS points should be visited frequently by authorized officials
- The **Senior officer's presence** should be confirmed during foodgrain distribution times by sending live photos and short videos
- **Sending Atta** to the **OMS points directly** from the Mill through government management
- The **OMS points** should be given priority in the area where **more working people** are available
- **Pulses & cooking Oil** can be added in the OMS
- **Household size** can be considered for distribution

Implications of the study

- The findings offer valuable **insights for policymakers** involved in the sectors
- To **understand the impact** of OMS programs for researchers and policymakers
- Help the policymakers to make **efficient policy decisions** on FNS through social safety net programs
- Improving the program **by reducing the identified constraints**
- Help the personnel **associated with OMS operations** to **improve the services**
- Contribute to conduct further in-depth research on impact of the OMS programme.

Thank You

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Determinants of Household Dietary Diversity in Bangladesh

Role of Women's Empowerment in Agriculture

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Dhaka, Bangladesh

Women's empowerment and household diet diversity

- We use cross-sectional data from IFPRI's 2018-19 BIHS
  - Nationally representative rural sample includes total 5,604 households
    - For HDD analysis, the 24-hour recall household food consumption module is used
      - HDD score is calculated using Twelve (12) food groups
        - Women's Empowerment in Agriculture is the regressor, control variables include household expenditure, remittances, schooling

- Positive association between HDDS and women's empowerment in agriculture at 0.1 percent significant level
  - Positive association between HDDS and total years of schooling of household head & monthly total HH expenditure (as proxy of income) at 0.1 percent significant level
    - Foreign remittances are also positively associated (significant at 1 percent level)
      - Effect of domestic remittances and social safety net transfer amount are not statistically significant
        - This can be attributed to the negligible amount received from these sources

- Positive relationship between dietary diversity score & women's empowerment in agriculture, income, education & foreign remittances
  - Shows the importance of these factors to enhance household dietary diversity in rural settings
    - Further effort is needed to ensure women's empowerment, income and education from a policy perspective

Unequal Plates: Dietary Diversity and Nutritional Inequality among Population with Limited Resources

Punit Mishra
Lead-Research Partnerships
PopulationCouncil Consulting, New Delhi

Mizoram: India's border state with highest tribal population

- Distinct food habits, food preparation, and consumption
- Difficult sustenance: difficult terrain, climate, food insecurity, and poverty
- Study conducted in Mamit, an aspirational district (>95% Tribal Population)
  - 538 Children (aged 0-2 years & 2-6 years)
  - 268 Pregnant & Lactating women
  - 62 Anganwadi Centers

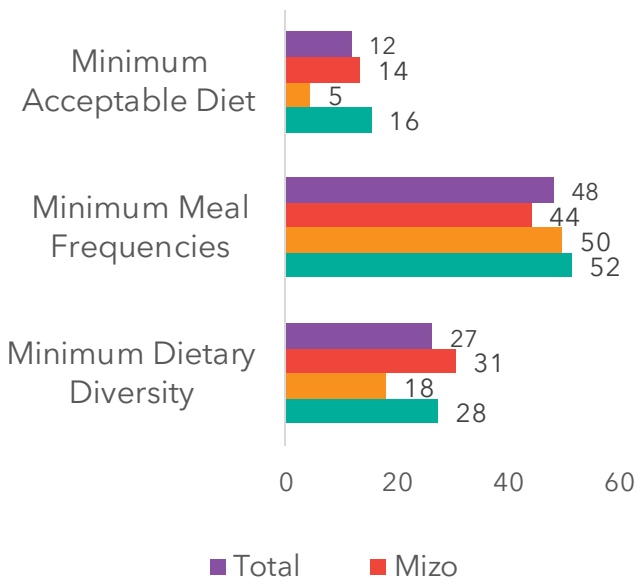
Food insecurity and Women's nutritional status

- One in every six households in Mamit suffers food insecurity
- One third of HHs in the remotest block (West Phaileng)

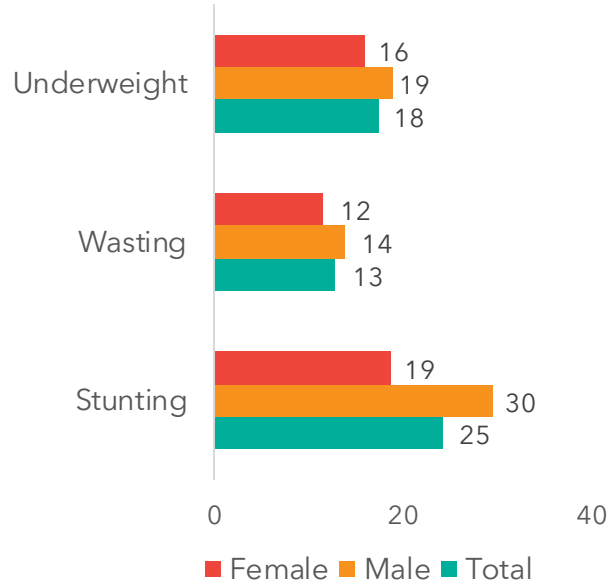
- 18% of pregnant women had very low dietary diversity

- Around 17% of lactating women had low dietary diversity

- One in seven lactating women are underweight
- Higher among women with low Dietary Diversity



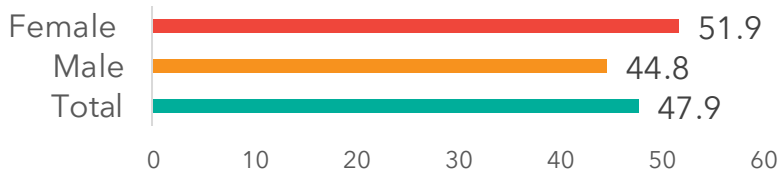
Dietary diversity among children aged 6-23 months (%)



Nutritional status of children (0-5y) by sex (%)

Children's nutritional status

Minimum Dietary Diversity among children aged 2-6 years



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Exploring Food Insecurity and Support in Slum Areas of Bangladesh during COVID-19:

Lessons for future emergencies in light of the "right to food"

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RATIONALE/OBJECTIVE

Nearly half of Bangladesh's slum dwellers faced food insecurity, exacerbated by COVID-19

Objectives:

- ✓ To explore the changes and causes of food insecurity during the pandemic
- ✓ To understand the nature and extent of the support received from duty bearers considering the "right to food"

METHODS

Repeated cross-sectional survey

- Round 1: 2018-19 [1,112 HH Heads]
- Round 2: 2022 [614 HH Heads]

10 slums across **8** divisions
Descriptive analysis using Stata-17

Qualitative interviews (over the phone)

- Round 1: Rapid semi-structured interviews; March–April 2020 [**80** participants]
- Round 2: In-depth interviews; October 2020 – January 2021 [**30** participants]

6 slums of Dhaka
Slum dwellers, community leaders, and health workers
Thematic analysis using NVivo software

RESULTS

COVID-19 worsened food insecurity in slums, affecting both already vulnerable and new groups

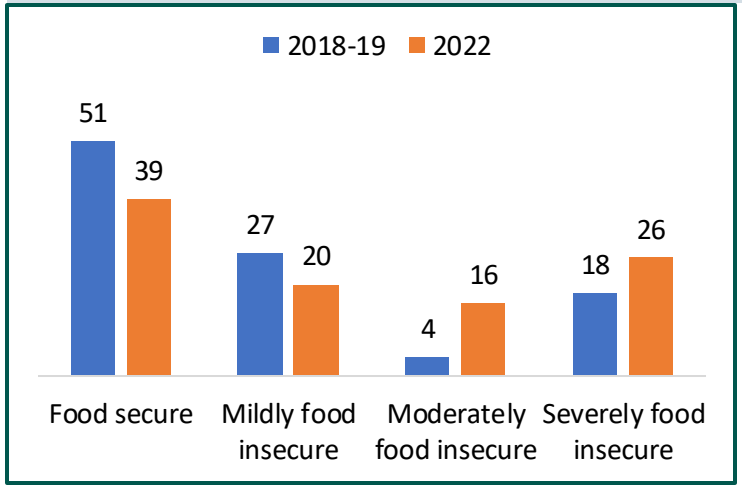

Figure: % of HHs by food security status

Causes of food insecurity

Decreased affordability

- Job losses
- Business failures
- Reduced wages
- Salary withholding
- Lack of savings
- Limited loan access
- Price hikes

Reduced accessibility

- Mobility restrictions
- Shop closures

- ✓ Inadequate and temporary food and cash support from govt. & NGOs
- ✓ Viewed support as a favour rather than a right
- ✓ Corruption and flawed beneficiary selection make slum dwellers feel powerless and rarely claim their rights

IMPLICATIONS

- The pandemic magnified food insecurities and the State failed to ensure food security for slum dwellers
- Residents lacked clarity on their rights to demand assistance
- Clear policies and better accountability to uphold the "right to food" during crises and post is needed

Food and nutritional diversity by ethnicity in Nepal

A panel data analysis

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Food and nutritional diversity by ethnicity in Nepal

- Food and nutrition security among ethnic minorities are concerning.

What we did?

- We used 3 waves of HRVS consumption data and employed a random effect model and ESTER to find how ethnicity impacts food diversity (consumption scores and Dietary diversity scores) at the household level.

Model

$$y_{it} = \alpha_0 + \alpha_1 Dalit_i + \beta_1 Xs_{it} + \varepsilon_{it} \quad (1)$$

y_{it} represents the diet diversity and food consumption scores for household i in year t, $Dalit_i$ is a categorical variable where 1indicates the Dalit household and 0 otherwise, Xs_{it} are several socioeconomic variables, and ε_{it} indicates random error.

VARIABLES	CS	DDS
Dalit	-0.380***	-0.295***
	(0.091)	(0.043)
Other caste	0.108*	-0.008
	(0.059)	(0.028)
Controls	YES	YES
Observations	17,452	17,452

Results

- Dalits' CS and DDS are significantly less than those of higher castes (Brahmin and Chhetri), while, other castes' (Janajatis) CS and DDS are not that different than those of higher castes.
- ESTER model suggests that the food diversity and consumption scores of Dalits would have been 8.5% and 12% higher, respectively, if they had characteristics of higher castes.

Recommendation

- Dalit-targeted nutritional support and education programs are recommended.

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Strengthening Urban Food Security through Enhanced Food Safety Practices in West Bengal

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BACKGROUND

Street food vending is essential to West Bengal's urban food supply and economy, yet food safety remains a critical issue, as unsafe practices risk foodborne illness and nutritional insecurity. This study examines food safety and nutrition security among street food vendors, focusing on hygiene practices to support public health. Collaborating with FOSTAC and local health authorities, the research underscores the need for improved food safety standards to protect community health.

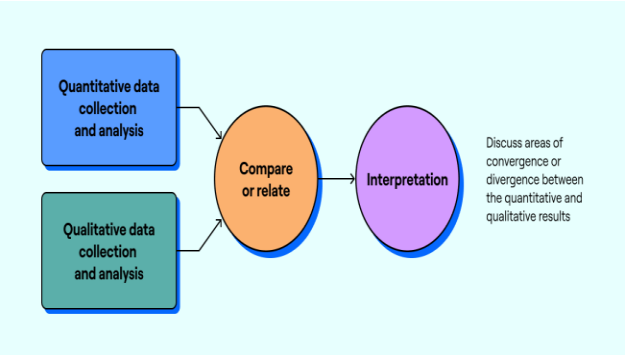
OBJETIVES

- Evaluate food safety practices by assessing food handling and hygiene among street food vendors to identify knowledge and practice gaps.
- Understand challenges and training needs by documenting the difficulties vendors face in maintaining food safety and determining their specific training requirements.
- Provide insights for public health improvement by offering guidance for interventions aimed at enhancing food safety and public health in urban West Bengal.

METHODS

A mixed-method approach was used to assess food safety practices among 201 street food vendors in West Bengal, divided into FOSTAC-trained (80), Aspiring (71), Untrained (50), and Catering groups. Quantitative data were collected through structured surveys on demographics, hygiene practices, and compliance, while qualitative observations focused on real practices, particularly in the Catering group. Behavior Change Communication (BCC) workshops and demonstrations were conducted. Data were analyzed using descriptive statistics and ANOVA (SPSS) for quantitative data, and thematic analysis in Atlas.ti for qualitative data. The integration of findings combined both data types to address the study's objectives.

Fig 1 Study Framework



RESULT & DISCUSSION

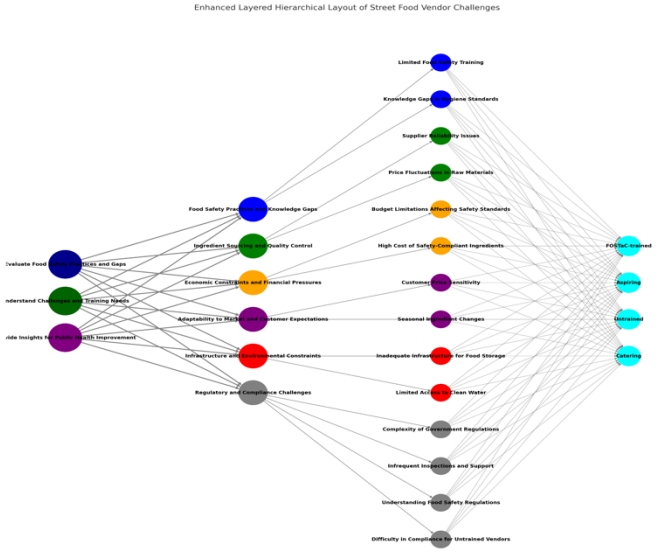
Quantitative Exploration

Fig 2 Comparative Demographic Profile of Street Food Vendors in West Bengal by Training Status: FOSTAC-Trained, Aspiring, and Untrained Group

The demographic analysis (Fig 2) shows that untrained vendor groups are largely older males, while trained groups are primarily female. General caste vendors dominate trained groups, with SC and OBC more prevalent in untrained groups. All untrained vendors are Hindu, whereas trained groups have some Muslim representation. Most vendors are married, especially in the untrained group. Higher education levels are common in trained groups, while untrained groups have more basic literacy. Lower-income vendors and those with over five years of experience are mostly found in the untrained group.

Quantitative Exploration

Fig 4Thematic Network Analysis of Challenges Faced by Street Food Vendors in Food Safety and Compliance



The network diagram (fig 4) demonstrates the interconnectedness of various themes and sub-themes impacting food safety practices among street vendors. Each layer from challenges to vendor categories is depicted, showing the influence of factors such as financial constraints, supplier reliability, and regulatory compliance.

Figure 3: Comparative Analysis of Food Safety Practices, Challenges, and Public Health Insights Across Vendor Groups

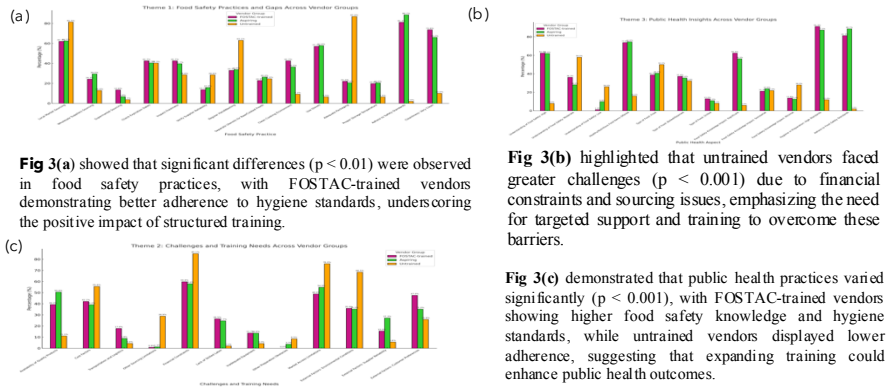


Fig 3(a) showed that significant differences ($p < 0.01$) were observed in food safety practices, with FOSTAC-trained vendors demonstrating better adherence to hygiene standards, underscoring the positive impact of structured training.

Fig 3(b) highlighted that untrained vendors faced greater challenges ($p < 0.001$) due to financial constraints and sourcing issues, emphasizing the need for targeted support and training to overcome these barriers.

Fig 3(c) demonstrated that public health practices varied significantly ($p < 0.001$), with FOSTAC-trained vendors showing higher food safety knowledge and hygiene standards, while untrained vendors displayed lower adherence, suggesting that expanding training could enhance public health outcomes.

Integrated Quantitative and Qualitative Findings

Table 1: Integrated Quantitative and Qualitative Findings on Food Safety Themes

Theme	Focus Group	Integration		Qualitative Insight
		Quantitative Score of qualitative phase	Quantitative Phase Findings	
Food Safety Practices and Gaps	FOSTaC-trained	4.5	85% adhere to regular hand washing and hygiene practices.	High adherence due to structured training; regularly follow hygiene practices like handwashing and safe sourcing
	Aspiring	3	60% follow basic hygiene practices, though gaps exist in food safety adherence.	Moderate adherence with limited resources; hygiene practices are observed but require further training
	Untrained	2	Only 30% report consistent hygiene practices; financial and knowledge limitations hinder adherence.	Low adherence due to financial constraints and knowledge gaps; hygiene practices are inconsistent
	Catering	4		Good adherence to sourcing but impacted by customer demands; balances cost with quality sourcing
Challenges and Training Needs	FOSTaC-trained	3.5	78% report stable access to quality ingredients due to established supplier relationships.	Effective quality control due to training; established relationships with suppliers maintain ingredient quality
	Aspiring	2.5	50% face issues accessing high-quality ingredients, often compromising on quality.	Financial limitations restrict access to high-quality ingredients; compromises on quality control
	Untrained	1.5	Only 20% have reliable access to quality ingredients, with reliance on low-cost options due to budget constraints.	Severe challenges in obtaining quality ingredients due to cost constraints; reliance on low-cost options
	Catering	3		Maintains quality control but impacted by price fluctuations and supplier reliability
Public Health Improvement	FOSTaC-trained	4.5	90% maintain high safety standards that align with public health objectives	Strong financial planning and training support safe, high-quality practices, aligning with public health goals
	Aspiring	3	55% follow safe practices but face budget constraints impacting ingredient quality and portion control.	Struggles with portion control and ingredient quality; learning to balance cost with effective choices
	Untrained	2	Only 25% meet basic safety standards; financial and knowledge limitations pose risks to public health.	Limited planning skills and inconsistent safety practices due to budget constraints, posing risks to public health
	Catering	4		Prioritizes safe food practices within budget limits but occasionally influenced by customer demands/expectations

The integration table 1 combines quantitative and qualitative data, highlighting key challenges faced by vendor groups. FOSTAC-trained vendors showed high adherence to food safety, while untrained vendors struggled with financial and knowledge limitations. Aspiring vendors performed moderately, indicating the need for targeted interventions. Overall, the findings stress the importance of training and financial support to improve food safety compliance.

Significance and Application

Training programs like FOSTAC play a crucial role in enhancing food safety practices among street food vendors, improving hygiene standards and food safety knowledge. Addressing challenges like financial constraints and sourcing limitations, especially for untrained vendors, is essential for long-term public health and food security improvements. Targeted interventions and community engagement are key to ensuring safer food practices.