

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.



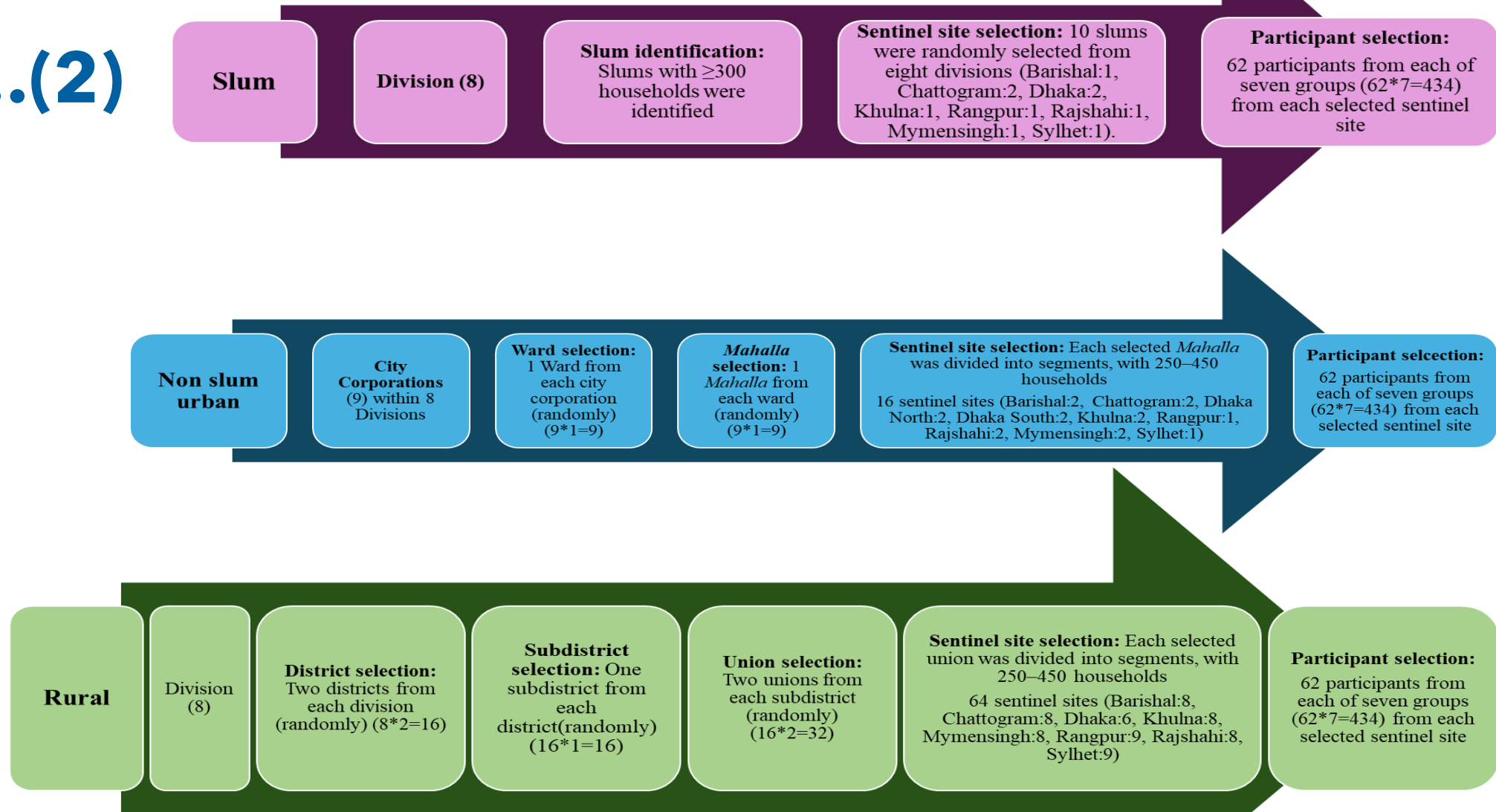
Sample size: 11,912 households (Rural: 9,187; non-slum urban: 1,422; and slums: 1,303) from 82 clusters during each round.



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

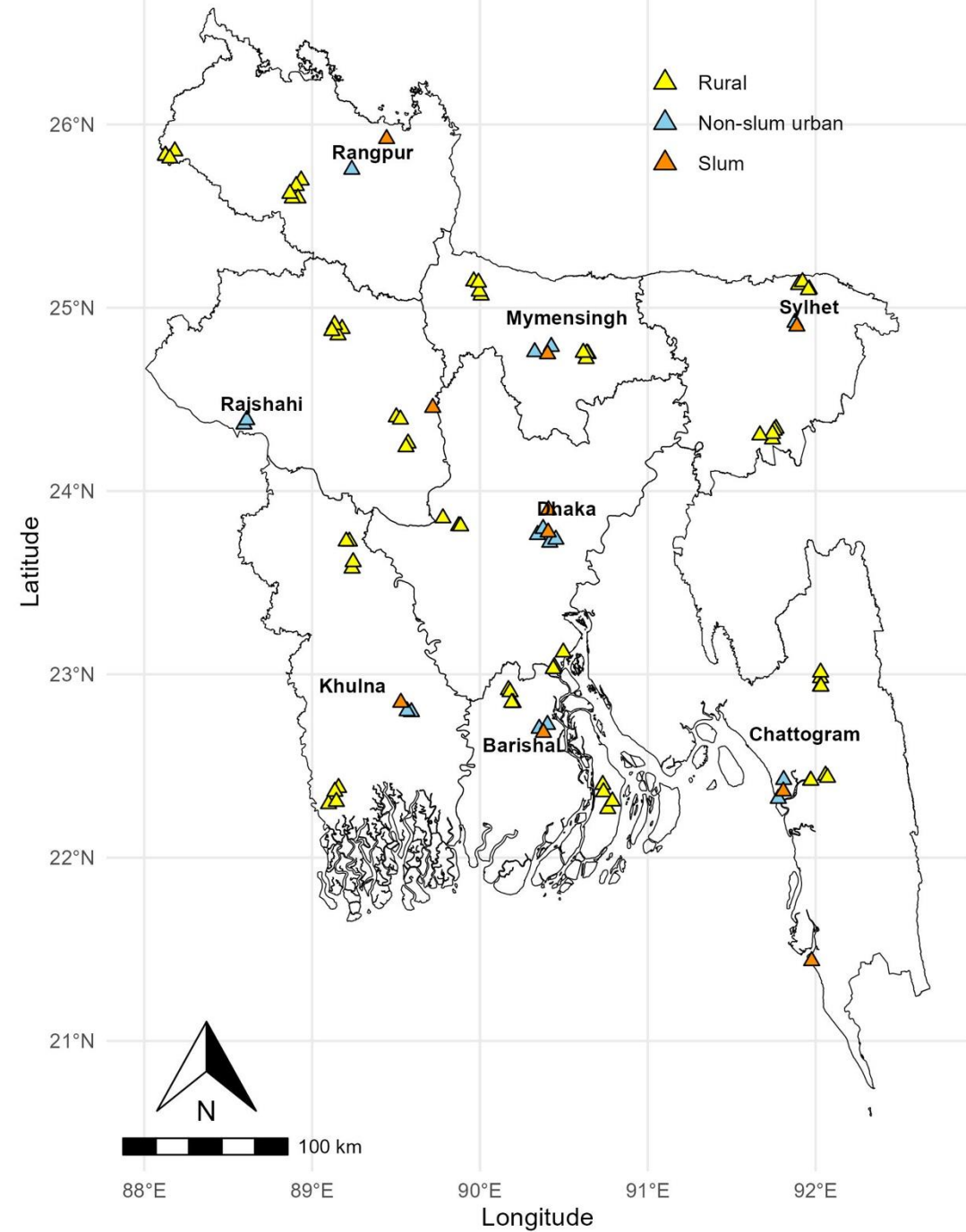
Methods...(2)

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.

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 !