HOUSEHOLD-LEVEL FOOD SECURITY AND COPING STRATEGIES: A STUDY ON SQUATTER SETTLEMENT OF URBAN AREA

Abstract

Objectives: India achieved success to combat with transient food insecurity, although it failed to fight with chronic food insecurity. Low intake of energy and high occurrence of malnutrition are responsible for it. Present study aimed to determine households level food security; explore the determinants and coping strategies of such incidents.

Methods: The present study population was selected from squatter settlement of Bagbazar khal, North Kolkata, metropolitan city of West Bengal, India. Data was collected from women. Generally they take responsibility of food preparation and food distribution within own household. Data collected on socio economic aspect and consumption behaviours. Consumption behaviours can be measured through Coping Strategies Index and The Household Food Insecurity Access Scale.

Results: One fifth sections of them were food secure. However, majority of houses have severe food insecurity followed by moderate and mild insecurity. Overwhelming sections were not capable of eating their favourite food. They have to take less variety of food due to lack of their monetary resources. Monthly household income found to be a significant factor of food insecurity. Participants adopted severe food coping strategies like consume less preferred, inexpensive food and decrease number of meals eaten in a day.

Conclusion: Food insecurity in slum and squatter settlement areas of urban is the result of absence of agricultural productivity, owing to inadequate resources, extremely low literacy rate and lack of job opportunities.

Keywords: households level food security, squatter settlement, consumption behaviour.

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I. INTRODUCTION

The concept of food security reflects three key dimensions: (1) food availability and accessibility (2) biological use of food and (3) steady food status (FAO 2006). Steady food status can be described as sufficient food availability including both quantity and quality food within the reach of households (FAO 2006). At household-level food security is achieved when a household has the ability to provide safe and nutritious diet to household members (FAO 2006). Income gaining activities and food obtaining potentiality are the important factors of household's ability to buy food (Renfu et al. 2012). Moreover, at present food security concerns include biological utilisation of consumed food (Aidoo, Mensah, and Tuffour 2013). Moreover, availability to take healthy drinking water, cleanliness practice, nutritional intake and knowledge can act as barriers or facilitators for psychological food absorption into the body (MSSRF and WFP 2008).

Worldwide around 795 million people were undernourished. However, the incidence of undernourishment has reduced from 18.6 percent in 1990–92 to 10.9 percent in 2014–16 (McGuire 2015). The proportion of hunger population is greater in developing countries (McGuire 2015). In India food scarcity occurs at the household level for numbers of individuals, who belong from socially and economically underprivileged groups, backward and remote regions (Xaxa 2014; Das and Saha 2016). However, India achieved success to combat with transient food insecurity, although it failed to fight with chronic food insecurity which depicted by high occurrence of malnutrition (Ahlawat and Kaur 2013). National level data shows that here, about 35 per cent of children (<5 years) are underweight, 38.4% and 21% of them are stunted and wasted respectively. Micronutrient deficiencies are common, such as 54.2 % of women aged 15-49 years, 25.2% men of this age and 58.5% children aged 5-59 months are anaemic (IIPS 2015). Other factors that affect food and nutrition security include access to safe drinking water and toilets within the premises (MSSRF and WPF 2008).

In India, few studies focus on food security (Xaxa 2014; Das and Saha 2016; Chyne et al. 17). But none of them try to find out the various determinants of food security. Dietary diversity, adequate quantity and quality of food, the socio-cultural factors all are the concomitants of food security. In this country food allocation within the household may not be based on the nutritional needs of each member. Gender inequality plays a role in this aspect (Pinstrup 2009). Study (XaXa, 14) furthermore shows generally household experiences temporary and permanent food scarcity that may affect development, wellbeing and nutritional status of the household members. Households adopt particular coping strategies to combat short term insufficient food access. Barring few (Bhagat et al. 2019; Xaxa 2014) none of the studies have focused on household strategies to prevent and manage the food crises. Present study aims to find out food security status among households. It examines the factors responsible for food security status. It also tries to explore the adopted coping strategies of population at the time of food insecurity.

II. MATERIAL AND METHODS

1. **Study areas & Study Population:** This study was done in Kolkata district, of the state of West Bengal. Kolkata was purposively selected as one third of the population of Kolkata lives in registered slums and unregistered squatter. Slums and squatter of Kolkata are

inhabited by inter-district and inter-state poor migrants. The present study population was selected from squatter settlement of Tala, Bagbazar khal, locally known as Maratha Ditch area. They inhabited at the both bank of this ditch. The migrants primarily belong to lower economic status and were dominantly non literate. These people live in overpopulated and unhygienic conditions. A large number of them were engaged in non-informal sectors like, petty manufacturing, factory work, transport sector and domestic helper. They have no job security, late and non-payment of wages, intermittent availability of work, no job contract and no social securities (Banerjee 2016). Women aged 17-65 years who were engaged in meal preparation and meal distribution within the household, were selected as interviewee of present study. A total number of 150 households were selected at study area.

2. **Data Types and Date Collection Techniques:** Data were taken on socio economic aspect, and consumption behaviour.

- **Socio Economic Aspect:** Socioeconomic aspect include data on marital status, years of education, occupation type, monthly income of household in Indian rupees, years of living in squatter settlement, wall and floor type, cooking place and cooking medium of household.

- **Tools to Access Food Security:** Consumption behaviours were measured through Food Coping Strategies (FCS) (SPRING 2008) and The Household Food Insecurity Access Scale (Coates, Swindale, and Bilinsky 2007). FCS counts the numbers (how often coping strategies used) and severity (the degree of food insecurity) of activities in which people cope when they do not have sufficient food or money to buy food.

  Data on household consumption behaviours like coping strategies of food and household food insecurity access scale were collected by the one trained female research assistant by using a structured questionnaire. Each of the women was interviewed individually in her own household. Community focus groups discussions were conducted by author to determine the severity scoring of the various coping strategies that they adopted.

  The Household Food Insecurity Access Scale (HFIAS) was designed to capture house hold coping behaviours during insecure food access (Coates, Swindale and Bilinsky 2007). It consists of nine frequency-of-occurrence questions related to food insecurity that ever occurred during the previous one month (30 days) at the time of data collection. The participants were asked to respond to each of these questions with one of the four options provided to them that signify the frequency of occurrence of each of these incidents: (i) no occurrence=0; (ii) rarely (once or twice in the past four weeks)= 1; (iii) sometimes (three to ten times in the past four weeks)=2; (iv) often (more than ten times in the past four weeks)=3. Thus the total score of nine questions varied from 0-27. After that Household Food Insecurity Access (HFIA) category for each household had been calculated; 1 = Food Secure, 2=Mildly Food Insecure Access, 3=Moderately Food Insecure Access, 4=Severely Food Insecure Access (ref: table-2). Category of food security was determined followed by these rule:

HFIA category = 1 (food secure) if [(Q1a=0 or Q1a=1) and Q2=0 and Q3=0 and Q4=0 and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]
HFIA category = 2 (mildly food insecure) if [(Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1) and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]
HFIA category = 3 (moderately food insecure) if [(Q3a=2 or Q3a=3 or Q4a=2 or Q4a=3 or Q5a=1 or Q5a=2 or Q6a=1 or Q6a=2) and Q7=0 and Q8=0 and Q9=0]
HFIA category = 4 (severely food insecure) if [Q5a=3 or Q6a=3 or Q7a=1 or Q7a=2 or Q7a=3 or Q8a=1 or Q8a=2 or Q8a=3 or Q9a=1 or Q9a=2 or Q9a=3]

- **Household Food Insecurity Access Score:** Prevalence of different levels of household food insecurity (access) of this particular area was calculated in this way: HFIA Prevalence = (Number of households with specific HFIA category/ Total number of households with a HFIA category) ^{x} 100 [ref: table-3].

  Specific coping behaviours depend on local circumstances and practices. In this study coping behaviours was estimated through quantitative and qualitative way. Firstly how frequent these specific behaviours used in the recent (recall time was last seven days) and secondly how "severe" was each of these coping strategies observed to be? This information was collected from focus groups of study population and it offers the understanding of perceived severity of each coping strategies. The women who form study populations and already interviewed for this study were divided into ten focus groups of twelve members each. The focus groups discussed their coping behaviours at the time of food scarcity and they asked to identify the least and most severe individual strategies that they adopted. Then they instructed, to identify any other strategies that seem to them equivalent to these two extreme individual strategies. After identification of these two extreme strategies the rest of the consumption behaviours were taken as intermediate categories. This level of severity is based on frequency of use of the individual strategy. There were eleven different coping strategies. After that average score had been calculated from each of the eleven coping strategies. Consensus ranking was considered from average score. Perceived severity had been grouped into four categories, where 1=least severe category; 4 = most severe, and 2 and 3 were intermediate. Highest and lowest consensus ranking values were considered as most and least severe coping strategies and rest were intermediate (ref: table-5).

3. **Ethical Consideration:** Participants were informed about nature, aim of the study and their voluntary participation before data collection.

4. **Data Analyses:** Data was analysed with the help of SPSS 20. Descriptive statistic was used for socio demographic profile, household food security status and food coping strategies. Linear regression was calculated to explore the factors for food insecurity. For calculating factors for household food insecurity those households identified as food insecure was consider as dependent variable. Number of family members, years of education of female and male adult populations, income of households and years of living in squatter settlement were taken as independent variables.

III. RESULTS

Table 1 stated socio demographic features of the population and their households. An overwhelming section of population was married. The mean years of education of female and male were 3.2±0.2 years and 3.7±0.2 years respectively. Majority of female and male were engaged in informal sector, worked as household helper and daily labour respectively. Majority of households wall were built by bamboo and mud, floors were cemented. Larger section had no separate place for cooking; they did it in their bedroom. An overwhelming section used wood as cooking medium. Larger section of households' members lived more than twelve years in this squatter settlements.

Table 1: Socio Demographic Variable

	Mean/ (percentage)
Marital status of population (n=355)	
Married	320 (90.1)
Separated	4 (1.1)
Widow/widower	31 (8.7)
Mean years of education of adult female (mean±sd)	3.2±0.2
Mean years of education of adult male (mean±sd)	3.7±0.2
Occupation of female (n=309)	
Small scale business	8(2.6)
Homemaker	10(3.2)
household helper	250(80.9)
Student	41(13.3)
Occupation of male (n=346)	
Labour	251(72.5)
Van puller	26 (7.5)
Business	9 (2.6)
Dependant	5 (1.4)
Student	55 (15.9)
Mean monthly household income (in Indian rupees)	2835.44±0.7
Wall type of household (n-150)	
Bamboo and mud built	109 (72.7)
Cemented	41 (27.3)
Floor type of household	
Asbestos	35 (23.3)
Cemented	95 (63.3)
Mud made	20 (13.3)
Cooking place	
Have no separate place	105(70.0)
Have separate place	45(30.0)
Cooking medium	
Kerosin	3(2.0)
Wood	137(91.3)

Hearth	10(6.7)
Years of living in squatter settlement (n=150)	
Twelve years	15(10.0)
More than twelve years	100(90.0)

All the responds were taken with the help of last four weeks recall period. More than half of individuals were worried that their household would not have sufficient food. Overwhelming sections were not capable to take preferred food and had to take less variety of food due to lack of their resources. Two fifth populations had to eat foods that they really do not want. Around thirty percent of them had to eat a small quantity of meal, sleep hungry at night and spend a whole day and night without eating anything. One fifth had no food to eat in household or eat fewer meals in a day because of food scarcity (Table 2).

Table 2: Status of Household Food Insecurity, based on HFIS

		Rarely	Sometimes	Often	No
1	In the past four weeks, did you worry that your household would not have enough food?	33(22.0)	29(19.3)	26(17.3)	62(41.3)
2	In the past four weeks, were you or any household members not able to eat the kinds of foods you/they preferred because of a lack of resources?	26(17.3)	44(29.3)	36(24.0)	44(29.3)
3	In the past four weeks, did you or any household members have to eat a limited variety of foods due to a lack of resources?	26(17.3)	41(27.3)	27(18.0)	56(37.3)
4	In the past four weeks, did you or any household members have to eat some foods that you/they really did not want to eat because of a lack of resources to obtain other types of food?	22(14.7)	20(13.3)	21(14.0)	87(58.0)
5	In the past four weeks, did you or any household members have to eat a smaller meal than you/they felt you/they needed because there was not enough food?	19(12.7)	11(7.3)	13(8.7)	107(71.3)
6	In the past four weeks, did you or any household members have to eat fewer meals in a day because there was not enough food?	13(8.7)	6(4.0)	11(7.3)	120(80.0)
7	In the past four weeks, was there ever no food of any kind to eat in your household because of lack of resources to get food?	9(6.0)	6(4.0)	2(1.3)	133(88.7)
8	In the past four weeks, did you or any	17(11.3)	7(4.7)	8(5.3)	118(78.7)

	household members go to sleep at night hungry because there was not enough food?				
9	In the past four weeks, did you or any household members go a whole day and night without eating anything because there was not enough food?	19(12.7)	16(10.7)	5(3.3)	110(73.3)

Majority of households had portrayed severe food insecurity followed by moderate and mild food insecurity. One fifth sections of them were food secure. With respect of food insecurity prevalence of study area found that percentage of severely food insecure (access) households were 40.68, moderately and mildly food insecure households were 30.51 and 28.81 respectively (Table 3).

Table 3: Categories of Food Security

Food security status	**Freq(%)**
Household with food security	32(21.3)
Household with mildly food insecure	34(22.7)
Household with moderately food insure	36(24.0)
Household with severely food insure	48(32.0)
Total number of households (n=150)	150(100.0)
HFIA Prevalence of study area	
Mildly food insecure (access) households	28.81
Moderately food insecure (access) households	30.51
Severely food insecure (access) households	40.68
Total number of households with a HFIA category (n=118)	100.00

Decrease of Monthly Household Income Significantly Increase the likelihood of household food insecurity (Table 4).

Tables 4: Factors for Household Food Insecurity

Dependent variables	Independent variables	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
Household food insecurity access score	(Constant)	11.568	1.967		5.880	0.0001
	Number of family members	0.332	0.364	0.112	0.913	0.364
	Education of female	-0.261	0.176	-0.188	-1.484	0.142
	Education of male	-0.035	0.150	-0.029	-0.234	0.815
	Monthly household income (in Indian rupees)	0.0001	0.0001	-0.337	-2.783	0.007
	Years of living in squatter	-0.013	0.032	-0.045	-0.410	0.683

None of our study participants consumed wild foods, eat seed stock, had not begged and not starving for a whole day. Food borrowing and feed breed owners only were least severe strategies had adopted by household members. Buying food on credit, sent household members to elsewhere, consume less portion of food and restrict food consumption by adults instead of children were intermediate strategies. Consume non preferred, in expensive food and less number of meals eaten in a day were severe strategies of these households (Table 5).

Table 5: Food Coping Strategies Adopted of Study Populations

	FG 1	FG 2	FG 3	FG 4	FG 5	FG 6	FG 7	FG 8	FG 9	FG 10	Ave.	Consensus Ranking	Severity
Less preferred food intake	4	3	5	2	3	2	4	5	4	5	3.7	4	Most severe
Less expensive food intake	5	4	5	4	6	5	5	3	4	2	4.3	4	Most severe
Borrow food	2	1	0	2	1	1	1	0	1	1	1.0	1	Least severe
Buy food on credit	7	5	2	2	3	1	4	2	2	2	3.0	3	Intermediate
Household members eat elsewhere	1	2	2	1	0	3	1	2	3	2	1.7	2	Intermediate
Beg	0	0	0	0	0	0	0	0	0	0	0.0	0	Not applicable
Eat limited portion of food	1	3	1	1	3	0	0	3	4	4	2.0	2	Intermediate
Restrict adult intake	2	3	2	4	3	3	2	4	3	7	3.3	3	Intermediate
Feed workers	1	2	1	1	2	0	0	0	2	3	1.2	1	Least severe
Reduce number of meals	4	3	3	4	3	3	4	5	4	5	3.8	4	Most severe
Skips entire days without eating	0	0	1	0	1	0	0	0	0	0	0.2	0	Not applicable

IV. DISCUSSION

India has considerable economic progress in the domain of agriculture (Upadhyay and Palanivel 2011). The National Food Security Mission has played a key role in increasing production of food stuffs in eastern India (Narayanan 2015). However, today the crux of

India's food problem is poverty and inequality in productive resources. Ensuring food access in a sustainable way would appear to become more concerns over food availability. Semi-urban and urban living poor people face the problem of food insecurity mainly because most of them do not have any productive resource. Present study conducted on the household level food security at the squatter settlement of Kolkata. All of the inhabitants were migrated from rural areas of North 24th pargana or Nadia district. The major reasons of these migrations were lack of job opportunity and food insecurity. Population in the present study were engaged in informal sector, those have no job security. They live in unregistered area and did not get the facilities of Public Food Distribution System (PDS). They had to purchase their food from local areas. Baring one fifth sections of household, rest of them were food insecure. Among various level of food insecurity, severe food insecurity was more prevalent in those households (40.68%). However, food insecurity reported in present study was lower than earlier that already conducted in other parts of the country (Chinnakali et al. 2014). Present study revealed that monthly low household income was one of the statistical significant factors of food insecurity. Thus sustainable employment initiative in that area can be way to get rid from household food insecurity. Along with that, others problems that play a role for food insecurity in slum and squatter settlement of urban areas are absence of agricultural productivity, owing to inadequate resources, extremely low literacy rate and lack of job opportunities (Bhagat et al. 2019; Das and Saha 2016). Present research corroborate with it.

This research has some limitation. As this is a small scale study generalization is not possible. This is time constraint study, thus I have not explore their coping strategies over different seasons and times.

Conflict of Interests: There is no conflict of interests regarding the publication of this paper.

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