

Household Food Security of Urban Slum Dwellers: A Case Study in Colombo Municipality, Sri Lanka

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Abstract

Food is a basic right and food security is a priority concern to any nation. It is very critical to identify food security issues of vulnerable people to uplift their food security status. As urban slum dwellers are still considered a neglected community, this study was conducted to identify the food security status, determinants of food security, and coping up strategies against food insecurity of urban slum dwellers in Colombo municipality. A total of 90 households from 9 slums were purposely selected for the survey from Colombo North and Central 2A administrative divisions. Food Consumption Score (FCS) and the Household Food Insecurity Access Score (HFIAS) were used to determine the food security status of slum households. Multilinear regression was used to identify the determinants of food security. The study revealed that 90% of household heads were males with temporary occupations earning daily wages. About 57% of males had education at the junior secondary level while 15% of females did not have a formal education. According to the FCS, 37% of the respondents were in poor food consumption, while 39% and 24% were in borderline and acceptable food consumption levels respectively. According to the HFIAS, 28% of respondents were less food insecure while 72% were highly food insecure. Education of household head, household size, monthly average income, the monthly average expenditure on food, and the number of working members in the family are the determinants of food security status in the study area. The study indicates that the use of low-quality food, food on credit from grocery shops, and relying on less expensive foods as the most widely used coping strategies for food insecurity of urban slum dwellers. Therefore, there is a need to empower families economically especially women through establishing livelihood opportunities, encouraging school education for children, and promoting urban and community gardening for the urban poor living in slums in Colombo Municipality of Sri Lanka for achieving adequate household food security.

Keywords

Coping strategies, Household food security, Poverty, Urban slum dwellers

Introduction

Sri Lanka's urban poverty is a growing problem due to the expanding population and increasing migrations into urban cities. Colombo is the most commercialized city in the country where urban poverty is most predominant and the 'urban' nature most intense [1]. Poor people live in slums with minimum facilities. A slum is defined as a heavily populated urban area characterized by inadequate access to safe water and sanitation, poor structural quality of housing, overcrowding, and insecure residential status [2]. Slum settlements tend to be

small and scattered, and about 74% of them have less than 50 housing units [2]. As per the information provided by the Urban Development Authority (UDA), the most recent survey finds that there are 1735 slums in Colombo city with 68,812 slum households with a population of 336000 in 2019. Nearly fifty percent of the population in Colombo city is living in slums [3].

Urban cities are characterized by money-based economies. Therefore, even the extremely poor have to access most of their essentials through the market [4]. These urban slum dwellers have a more daily challenge of how to put food on the table. Therefore, stable sufficient income is necessary for household well-being and food security as most of the urban poor are highly dependent on their livelihoods.

Food is a basic right. Everybody needs food despite whether they are rich or poor. Hunger affects poverty since it prevents people from realizing their potential and making contributions to the development of their societies. Food insecurity continues to be a major developmental problem across the world lowering people's health, productivity, and often their survival. Efforts to overcome the challenges posed by food insecurity are essentially initiated by recognizing the causes at the household level.

Household food security is important because a household is a basic economic unit that determines the levels of consumption by individuals. Household food security exists when all people in the household, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life [5]. It provides the basis for monitoring future progress and assessing the impacts of various projects, programs, and policies for helping vulnerable populations and the effective way of targeting assistance for them.

Food security has four facets as food availability, food access, food utilization, and stability [5]. Utilization needs not only a sufficient diet, but also a healthy physical environment, including safe drinking water and enough sanitary facilities to prevent diseases and an awareness of proper health care, food preparation, and storage methods. Therefore, living condition, education, the income of urban slum dwellers affect their food security status.

Household food security is an important aspect of well-being. Even though it may not capture all dimensions of poverty, the lack of ability of households to acquire access to enough food for an active, healthy life is certainly an important component of their poverty. Due to poverty, many urban poor families in these slums struggle to meet their daily dietary needs. Without access to adequate, affordable, nutritious food, generations remain trapped in poverty, unable to take advantage of educational and job opportunities to fulfill their potential.

Poverty increases the risk of and risks from malnutrition [6]. Women, infants, children, and adolescents are the major victims of this issue. Poor people are more prone to be affected by different forms of malnutrition. Hunger and malnutrition lead to reduced capacity to access markets, re-

duced school attendance and learning capacity, less education and employment, and weakened maternal and infant health. Furthermore, malnutrition increases health care costs, reduces productivity, and slows economic growth, which can continue a cycle of poverty and ill-health [6].

Food secured nations can have several positive impacts including economic growth and job opportunities, poverty reduction, trade opportunities, and also improved health and health care [7]. As food security is a bigger priority of any nation, it is very critical to identify the vulnerable people to food security mainly targeting to uplift their food security status. Since the urban poor slum dwellers still is a neglected community, this case study is to evaluate the household food security status of slum dwellers in Colombo municipality.

The study also tries to identify coping strategies adopted by urban slum dwellers to prevent the situation of food insecurity and to provide recommendations to improve food security. Thus, understanding these coping strategies could be a good starting point to develop appropriate contributions to improve household food security in urban slums. It is expected that information gathered by this case study would provide a baseline for planners, social workers, and administrators for making their policy proposals and programs concerning food security problems and overcoming such problems of urban slums.

Materials and Methods

Study area and sample selection

A cross-sectional study design was used as it is considered the most suitable to study the food security status of slum communities in Colombo municipality [8]. The target population was urban poor people living in slums in Colombo North 1 and Colombo Central 2A administrative divisions in Colombo city (Figure 1).

Nine slums were selected purposively for the study considering the access and safety for data collectors and existing data as reaching some slums are not safe and allowed by the dwellers. Ten households from each slum were randomly selected to get a total of 90 households for the survey. Both primary and secondary data were collected using a questionnaire, key informant interviews, focus group discussions, and available different literature sources.

Data analysis

Both qualitative and quantitative methods were used to analyze the data. Socio-economic characteristics, disease occurrences in the household, food consumption patterns, source of food, water treatment methods as well as garbage disposal methods of the respondents were identified. Food Consumption Score (FCS) and Household Food Insecurity Access Score (HFIAS) were calculated and used to measure the food security status.

The food consumption score was calculated using the frequency of consumption of different food groups consumed

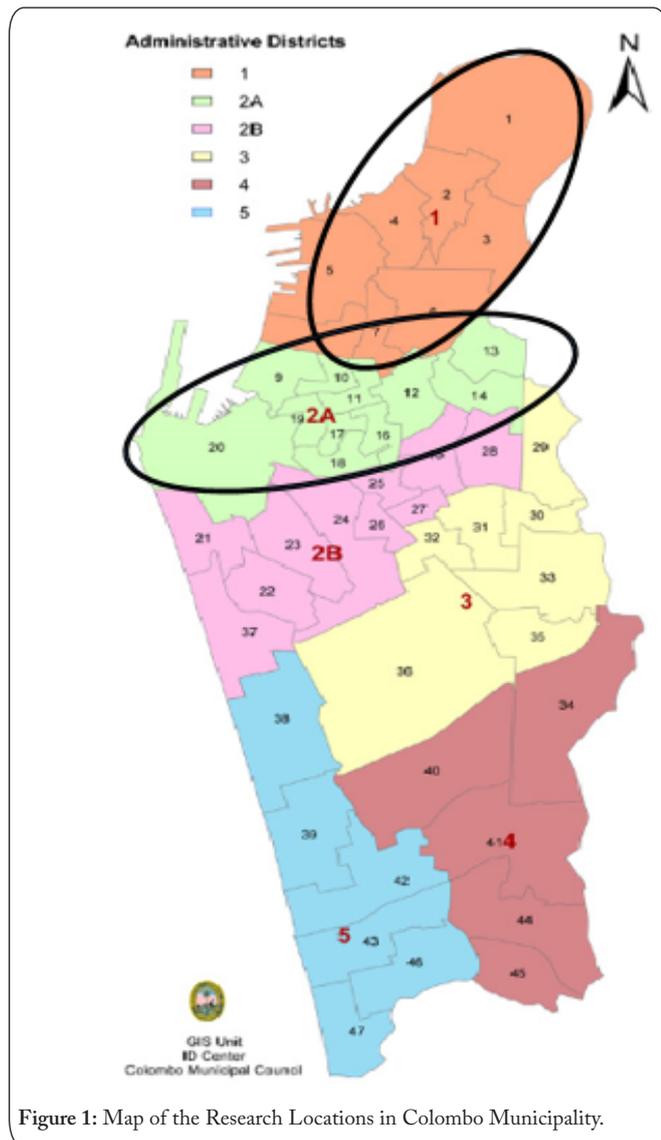


Figure 1: Map of the Research Locations in Colombo Municipality.

by a household during the 7 days before the survey. It is a combined score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. This score gives a clear idea about the food groups consumed by households [9].

The HFIAS captured the household behaviors signifying insufficient quality and quantity, as well as uncertainty over household insecure access or food supply. In this calculation, an individual's responses and experiences regarding food insecurity were summarized into a score that divides respondents either as highly food insecure or less food insecure. In this calculation, an individual's responses and experiences regarding food insecurity for the past 30 days were summarized into a score [10]. A high score above average score means the household is highly food insecure and a low score below average score means the household is less food insecure.

The multilinear regression analysis was used to identify the factors affecting the food security status in the slum dwellers. Coping strategies practiced were analyzed descriptively using the Likert scale method.

Results and Discussion

Household Socioeconomic Characteristics

Male dominance was prominent in these slum households (Table 1). As males were the income earners in the family,

Table 1: Percentage Distribution of Respondents by Socio-economic Characteristics of Urban Slum Dwellers.

Variables	Description	Frequency	Percentage
Gender of the household head	Male	81	90%
	Female	9	10%
Age of the household head (years)	20-29	10	11%
	30-39	32	36%
	40-49	25	28%
	50-59	19	21%
	60-70	4	4%
Marital status of the household head	Single	0	0%
	Married Widow/divorce/separated	81	90%
Ethnicity	Sinhala	60	67%
	Tamil	7	8%
	Muslim	19	21%
	Christian	4	4%
Household size	<3	4	4%
	03-May	60	67%
	>5	26	29%
Education of the household head	No Formal Education	1	1%
	Primary Education	24	13%
	Junior Secondary Education	48	57%
	Senior Secondary Education	11	29%
Education of spouse	No Formal Education	13	15%
	Primary Education	28	5%
	Junior Secondary Education	42	48%
	Senior Secondary Education	4	32%
Occupation of the household head	No occupation	0	0%
	Temporary occupation	82	91%
	Permeant occupation	8	9%
Occupation of spouse	No occupation	67	83%
	Temporary occupation	14	17%
	Permeant occupation	0	0%
Monthly average income (LKR)	0-10000	3	3%
	10000-15000	21	23%
	15000-20000	55	61%
	20000-25000	9	10%
	25000-35000	3	3%
Monthly average expenditure on food (LKR)	0-10000	41	48%
	10000-15000	43	45%
	15000-20000	6	7%
Number of working members	Only one	76	89%
	More than one	9	11%
Dependency ratio	0-2	29	32%
	02-Apr	35	39%
	04-Jun	26	29%
Occurrence of diseases	Yes	22	24%
	No	68	76%

Source: Field Survey Data, 2020

they were the ones who involve in decision-making. However, women had more consideration on the availability of food and preparation methods when it comes to food matters. The study further recognized that even in male-headed households, women still bear the burden of ensuring the availability of food for household members. Many respondents indicated that most men spend their time and money on alcohol and other leisure instead of supporting their families to fulfil their food needs. This has left women to take over the food leadership in families.

Education plays a vital impact in knowledge about food habits, food nutrition, and household sanitation. Thus, the parents' educational attainment has important implications on children's diet, sanitation, and health status. The household heads with high education levels were able to handle day-to-day livelihood matters more than those with lower education levels because they have the great advantage of being employed. Most families (91%) did not have any source of regular income and those household heads had temporary occupations and most of them earned daily wages. Their main sources of income were from activities such as driving hiring three-wheelers, working as labourers in construction sites, working as cleaning/sanitary labourers, engaging in small trading or selling activities (fruit, fish, and vegetable, etc.), and mainly the women as housemaids in high-income houses in Colombo city.

Some households (23%) stated that most of the food is purchased on a day-to-day and sometimes meal-to-meal basis. Furthermore, higher dependence on purchasing 'ready-made' and fast foods was also popular among the slum dwellers. During the discussion held with these slum dwellers, most of the wives complained (78%) that men are highly addicted to alcohol, cigarettes, and drugs wasting much of their income. This showed these slum dwellers certainly need knowledge on cash management, as they make money, they hardly earn for unnecessary expenditures.

Food security status of slum households

The food security status of the urban slum dwellers was analyzed using two food security indices. The food consumption score (FCS) and Household food insecurity access score (HFIAS).

Food consumption score (FCS)

Table 2 summarizes the food consumption score results of the respondents. Accordingly, only 24% of the sample was at an accepted food consumption level where 39% was at the broader level of food consumption.

Food Security Status	Range	Frequency	Percentage
Poor Food Consumption	0-21	34	37%
Borderline Food Consumption	21-35	36	39%
Acceptable Food Consumption	35-112	22	24%

Source: Field Survey Data, 2020

According to respondents, inadequate quality and lack of diversity of food were the matters of concern with respect to their food consumption. The food plate consisted only of rice and one or two vegetables which were cheaper to them. Protein-energy intake was usually low in urban slums. However, some households could manage fish or meat every week, but the quality and quantity were relatively low. According to the survey, it was clear that the majority of these slum dwellers do not get a healthy balanced diet. Their dietary diversity, quality, and quantity were very poor.

Household food insecurity access score (HFIAS)

Figure 2 depicts the food insecurity status of the respondents in the sample. The results report that 72 % of the households are highly food insecure while 28% are less food secure. Most of the households did not have a proper income and they could not buy nutritious food such as meat, milk powder, fruits often due to their expensive nature. Hence, these households were relying on less expensive foods such as cheap vegetables, bread, rice, etc. which might not add all the required nutrition components to their diet. Furthermore, they did not consider the quality of the food but only the quantity.

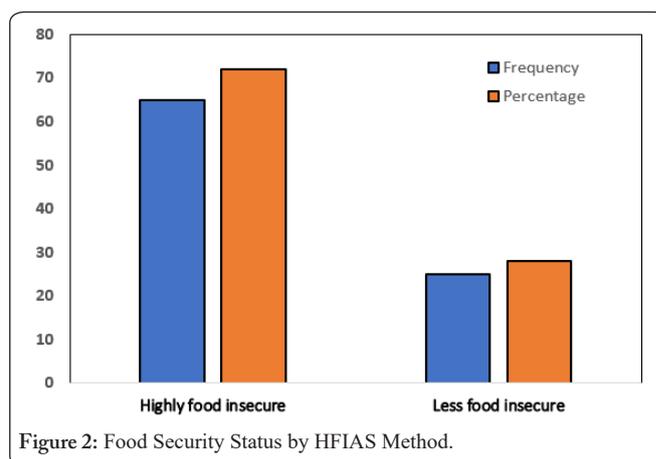


Figure 2: Food Security Status by HFIAS Method.

Factors affecting the food security of urban slum dwellers

The factors affecting household food security were analyzed with a multiple linear regression method using the mini tab version 16.10 statistical software. The calculated values which were less than the critical values (at a 5% level of significance), indicate that there is a significant impact between food insecurity and the specified variables. Furthermore, the R-square value which is 0.696 is suggesting that the model has a good fit for the data (Table 3).

Age of the household head, household size, education level of the household head, spouse education, occupation of the head of the household, monthly average income, the monthly average expenditure on food, number of working members in the household, and the occurrence of diseases in the households were the factors used for the analysis. As presented in table 3, the household size, household head education status, monthly average income of the household, the monthly average expenditure on food, and the number of working members

in the household significantly influenced the food security status of the slum households.

Table 3: Factors Affecting the Food Security of Urban Slum Dwellers.

Variable	Coefficient	Standard error	P-value
Intercept	-10.55	7.503	0.164
Age of the household head	0.0309	0.1236	0.803
Gender of the household head	0	.	.
Marital status of the household head	0	.	.
Household size	-1.5628	0.811	0.050**
Household head education	5.087	2.2623	0.028**
Spouse education	-1.713	1.4771	0.25
Household head occupation	5.565	3.133	0.08
Monthly average income	3.55	1.6257	0.032**
Monthly expenditure on food	4.108	1.7254	0.020**
Number of working members	10.402	2.8368	0.000**
Disease occurrence	-0.371	2.6049	0.887

R- Square 0.69

** 0.05 significance level

Source: Field Survey Data, 2020

Household size had a negative and significant relationship with food security. This finding was similar to findings by Aidoo et al. and Diallo et al, [11, 12]. The coefficient of household size was found to be negative and statistically significant at $p < 0.05$ level of probability which showed an inverse relationship with household food security. This result can be expected because a household with a large number of members could have less food when compared with smaller household size. According to this study, the coefficient of education of the household head was positive and statistically significant at $p < 0.05$ level. This was expected since the level of education should positively affect both income-earning capacities as well as the ability in managing household food resources.

The findings of this study agree with Diallo et al, and Keku et al who reported that the higher the educational level of the household head, the higher the probability of being food secure the household tends to be [12, 13]. This was expected since the level of education should positively affect the income earning capacity. Education is associated with skills enhancement which enhances the opportunity to find different jobs. This result indicated that households who have household heads with relatively better education are more likely to be food secure than those headed by uneducated households.

Income is one of the most important determinants of food insecurity and hunger [14]. The coefficient of monthly average income was statistically significant at $p < 0.05$ level and found to positively influence the food security status of slum households. The result is further strengthened with Farkhanda et al., who revealed a positive and significant relationship between household income and food security [15].

The coefficient of monthly average expenditure on food was statistically significant at $p < 0.05$ level and found to positively influence the food security status of slum households. This indicated that the higher the monthly average expenditure on the food of households, the greater the probability of being food secure. But people with low income did not have money to spend adequately. With the limited income, they had to manage all the expenditures including food expenses, education expenses for the children, utility bills payments for water, electricity, medicines, and many more. So that a very small proportion of the income was spent on foods.

The coefficient of the number of working members in the household was positive and statistically significant at $p < 0.05$ level. The result is consistent with Wiesmann et al., who stated that households with more dependents, faced higher levels of food security specifying that more working members mean fewer dependents in households [16].

However, the finding of this study did not conform to the findings of Arene et al [17] who revealed that the age of the household head also has a positive effect on food security status indicating that the older household heads have a higher possibility of being food secure.

Furthermore, this study is dissimilar from the findings of Jakaria et al [18] who revealed that that the households headed by married persons care more about the food security of the household than a household that is headed by unmarried persons.

Coping strategies adopted by slum households

Coping strategies are defined as techniques or practices that households generally apply to cope with crises during moments when the resources are limited or lacking [19]. In this situation, an effort has been made to recognize coping strategies adopted by urban slum dwellers in Colombo municipality to prevent food insecurity.

This study indicated that relying on less expensive food (93% always), obtaining food on credit from grocery shops (94% always), and consumption of low-quality foods (69% always) as the most widely used coping strategies adopted by the urban slum dwellers in Colombo municipality (Table 4). The coping strategies adopted by urban slum dwellers were categorized as financial strategies, dietary strategies, and social strategies. According to the survey, most households practiced financial strategies to mitigate food insecurity (52% always). Since most of the households did not have the proper income, they were unable to often purchase quality and nutritious food such as meat, milk powder, fruits which are usually expensive, and relying on less-expensive food including cheap vegetables, bread, rice, etc. These households did not care about the quality of food since the quantity mattered highest. The findings of this study agree with Murage et al. [4] who revealed that the use of street foods was found to be a common practice among slum dwellers. Households with small children stated that they prioritize children over adults. The findings of the study are also consistent with Hamelin et al [20] who revealed that parents prioritize their children during food insecurity

conditions. This was common to almost all households in the study area.

Table 4: Percentage Distribution of Frequency of Adoption of Coping Strategies of Slum Households.

Strategy	Frequency of adoption of strategies		
	Always %	Sometimes %	Never %
Financial strategies			
Relying on less expensive food	93%	7%	0%
Food on credit from grocery shops	94%	1%	4%
Part time jobs	10%	4%	86%
Buying street foods	52%	26%	22%
Use of reserves	13%	18%	69%
Dietary strategies			
Reducing food portion size	36%	54%	10%
Limiting the number of meals per day	19%	41%	40%
Use of low-quality food	69%	16%	16%
Preserve food	21%	17%	62%
Go to sleep hungry	3%	32%	64%
Social strategies			
Borrowing food from neighbours	6%	20%	74%
Drop out children from school	9%	13%	78%
Early marriage of children	1%	1%	98%
Prioritizing children over adults	46%	28%	27%
Women go to work	22%	1%	77%

Source: Field Survey Data, 2020

Slum-dwellers in Colombo municipality used dietary strategies (29% always) and social strategies (17% always) also to cope up with food insecurity. According to the respondents, most believed borrowing food from neighbors is a loss of pride and hence very few households practiced this strategy (6% often). Some parents did not drop out of children from school permanently (78% never). However, these households did not send their children to school on days they did not have a proper meal for their kids' lunch boxes. So, this disturbed slum-dwelling children's continuous learning.

According to the survey, most of the slum dwellers adopted many coping strategies together. Some households adopted few strategies while some households adopted more strategies to cope with food insecurity status. Coping strategies adopted by slum households were varying with their food security status of the household. The families did not have sufficient income and proper occupations, and households with large household sizes are identified as the people who are highly exposing to food insecurity.

Women played a major role in food security. Women are the ones who ensured the food needs, care, and hygiene of their families. Therefore, her knowledge of quality and nutrition, food varieties, preparation methods, and hygiene is very crucial. During the survey, it was clear that food storage, pres-

ervation, and reduction of wastage practices are within households with educated females. This signifies that educating not only men but also women is vital to improve health, nutrition, household income, and quality of life in the slum communities.

Coping strategies involve an alternative plan of action. This does not certainly mean that their choice of strategies is always successful in achieving their intended purposes. As the urban poor tend to be dependent on income from informal sector jobs that hardly cover their consumption needs, they are more likely to use risky coping mechanisms, especially high levels of debt [21]. These coping strategies might have unintended negative effects. Especially, coping strategies like food on credits from grocery shops might negatively affect the financial status of the household later. Continuing to buy food on credit will increase their debt to repay later. This makes people fall into the poverty trap and a lifelong cycle of repaying the money-back which again worsens their life financially. Such negative strategies can prone to food insecurity again and again.

Conclusion

The study concludes that the majority of the urban slum dwellers in Colombo municipality are food insecure. The education level and income of the households, proportionate expenditure from the income on food, number of working members in the household, and household size are the major determinants of the food security status of urban slum dwellers in Colombo municipality. Consumption of low-quality food, food on credit from grocery shops, and relying on less-expensive food are the coping strategies most widely used to mitigate the food insecurity situation prevailing in the households of urban slum dwellers in Colombo municipality in Sri Lanka.

Recommendations

The results of the study lead to recommend the need for provision of training for slum dwellers, especially women and youth on livelihood skills that will enable them to carry out small businesses to sustain themselves and their families. Women empowerment and ensuring girls' education is needed as it will enhance the food and nutrition security and health status within the livelihoods. School feeding programs are also recommended as they will increase children's school attendance and improve the nutrition of children. The government can consider establishing fairly-priced food shops in the vicinity of urban slums to make low-cost food available for the poor and the provision of subsidies on the food items mostly consumed by children and pregnant mothers. Providing educational facilities, and promoting school enrolment while giving attention to the quality of education are some other recommendations to enhance the education level of urban slums children in Colombo Municipality which will invest in long-term for enhancing higher food security status. Conducting public campaigns to promote low or no space gardening, or community gardening for the improvement of

household food security status are some recommendations to make food available and accessible for the urban slum dwellers in Colombo Municipality in Sri Lanka.

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Conflicts of Interest

The authors declare no conflict of interest.

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