

Household Food Insecurity and Associated Coping Strategies in Kinshasa, the Democratic Republic of Congo

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Résumé

Contexte : La situation alimentaire de la ville de Kinshasa fut l'une des plus dramatiques à la fin des années 90. Afin de lutter contre cette crise alimentaire, plusieurs stratégies furent appliquées et la population tenta de développer des mécanismes de survie. Cependant, la situation alimentaire des ménages ne s'améliorait pas. Cette étude avait pour but d'accroître la compréhension générale de l'insécurité alimentaire au niveau des ménages. **Objectif :** Identifier les mécanismes de survie utilisés par les ménages pour lutter contre l'insécurité alimentaire. **Méthodes :** Un total de 1591 ménages provenant de 2 zones de santé sélectionnées dans la ville de Kinshasa ont été interviewés en 2001 et 2004 en utilisant un échantillonnage probabiliste à plusieurs degrés. Une mesure à 16 questions a été développée sur base d'une échelle sommative pour évaluer l'état de sécurité alimentaire des ménages. Un ménage avec un score compris entre 0 et 7 était considéré en sécurité alimentaire tandis que celui avec un score entre 8 et 16 en insécurité alimentaire. La régression logistique binaire a été utilisée pour identifier les mécanismes de survie au niveau des ménages. **Résultats :** Trois mécanismes de survie furent utilisés par les ménages pour lutter contre la crise alimentaire. Cependant, la proportion était plus élevée parmi les ménages en insécurité alimentaire comparée à ceux en sécurité alimentaire. Les ménages en insécurité alimentaire avaient deux fois plus de risque de changer la composition des repas (OR_{adj} 1,96; IC 95% 1,52 – 2,54), de réduire le nombre de personnes à charge dans le ménage (OR_{adj} 1,64; IC 95% 1,15 – 2,33) et de recevoir l'aide alimentaire des centres nutritionnels (OR_{adj} 1,74; IC 95% 1,11 – 2,76) que les ménages en sécurité alimentaire. **Conclusion :** Cette étude a établi la relation statistique entre les ménages en sécurité alimentaire ainsi que ceux en insécurité alimentaire et le choix de leurs mécanismes de survie. Les interventions ou les programmes d'assistance aux ménages vulnérables doivent être basés sur une évaluation des ménages en insécurité alimentaire.

Mots-clés: Insécurité alimentaire, Ménages, Mécanismes de survie, Kinshasa/RDC.

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Summary

Background: The situation in Kinshasa, the capital of the Democratic Republic of Congo, was one of the worst in the world at the end of the nineties. In order to manage this food crisis, several strategies were developed, and the population tried to develop survival mechanisms. Yet, the household food situation did not seem to improve. This study aimed to increase the general understanding of food insecurity at the household level. **Objective:** To determine coping strategies used by households' food-insecure and food-secure to manage the food crisis. **Methods:** A total of 1591 households from two selected health zones of Kinshasa were surveyed in 2001 and 2004 using a multiple stage-cluster design. A 16-question measure was developed using a summative scale to capture the food security status. A household with a score from 0 to 7 was considered as food-secure and that with a score from 8 to 16 as food-insecure. A binary logistic regression was run to determine household coping strategies. **Results:** Three coping strategies were used by households to manage the food crisis. However, the proportion was higher among households' food-insecure than those food-secure. Households' food-insecure were two times more likely to change their meal composition (OR_{adj}, 1.96; 95% CI, 1.52 – 2.54), to reduce the number of persons in charge (OR_{adj}, 1.64; 95% CI, 1.15 – 2.33), and to receive food aid from nutritional centers (OR_{adj}, 1.74; 95% CI, 1.11 – 2.76) than households' food-secure. **Conclusion:** The study established the statistical associations between food-secure and food-insecure households use based on their choice of survival mechanisms. Assistance programs or interventions to vulnerable households should be implemented based on evidence assessment of households food-insecure.

Key words: Household Food Insecurity, Coping strategies, Kinshasa/DRC.

Introduction

The situation in Kinshasa, the capital of the Democratic Republic of Congo (DRC), was one of the worst in the world at the end of the nineties. Countless people, fleeing the successive conflicts, have descended upon the city in their fugitive quest for peace and security. Kinshasa experienced difficulties getting enough food for the population estimated at about 6 million people. In order to manage this food crisis, several strategies were developed. These included: small livestock raising and gardening in the compounds, and community awareness programs (1-3). The population tried to develop survival mechanisms to adapt to the food crisis. Yet, the household food situation did not seem to improve. Among children under five years old, the acute and chronic malnutrition rates remained high, respectively 8.1% and 22.4% (4). Few reports gave some clues about household coping strategies but they remained superficial (5-7). This study aimed to increase the general understanding of food insecurity at the household level. The objective was to identify the coping strategies used by households food-insecure and food-secure to manage the food crisis.

Material and methods

Study design

This paper is based on two cross-sectional studies collected at two different time periods: the first survey during the war period in 2001 when Kinshasa was cut off from provinces and food suppliers, and the second survey in 2004 during the peace period (After the signed Sun City Accord). Two health zones of Kinshasa, named Kisenso and Masina, were the selected sites because previous studies on malnutrition, realized throughout randomly selected

health zones of the capital city, have shown high prevalence in those two health zones. The overall, the sample size for the study was estimated at 1600 households. The sampling method of statistical units was a multiple stage-cluster design. The same study design and methodology were applied for the two time periods. Permissions to carry out the two studies were obtained from Congolese administration and health authorities of Kisenso and Masina communities and health zones. Within the household, only one eligible individual was interviewed: mainly the householder spouse, if not available the householder, its child or any relative aged at least 18. All participants gave their informed verbal consent before each interview. The same participants were not surveyed twice, but it was different random selection of eligible individuals during the two surveys.

Measurements and statistical analysis

To measure the outcome "household food insecurity", we developed a 16-question measure of household food security status. We created a summative scale using specific questions in the survey questionnaire. Each answer was recoded either zero or one. The item responses were summed to compute the score ranging between 0 and 16 points, with 0 corresponding to the most food-secure households and 16 to the households most severely affected by food insecurity. Based on the frequency of the score distribution, the median score was used as the cutoff point: a household with a score from 0 to 7 was considered as food-secure and that with a score from 8 to 16 as food-insecure. In the survey questionnaire, specific questions were used to capture the household coping strategies adopted to manage the food crisis. We used EPI INFO version 6.4b

(WHO & CDC) to enter and clean the data, and SPSS (Statistical Package for Social Sciences) version 16.0 (SPSS Inc, CHICAGO, IL, USA) to analyze the data. The p-value, less than 0.05, was regarded as the statistical threshold of significance.

Results

Table 1 summarizes the characteristics of the sample. The final total sample size was 1591 households (Response Rate of 99.4%). The respondent's mean age was 39

± 13 years, 68% of them were females. In 45.8% (n = 728), the respondent was the householder spouse who is normally responsible for cooking. The majority of household heads were natives of Bas-Congo and Bandundu provinces, the nearest provinces of Kinshasa. Seventy five percent (n = 1186) of householders were married in monogamy. Regarding the food security status, 62.2% (n = 990) of households were food-insecure.

Table 1. Frequency distribution of some characteristics of the sample

Characteristics of the sample	n = 1591	Percent
Respondent age, mean (SD), years	38.63 (13.308)	
Respondent sex, female	1082	68.0
Respondent relation with the householder		
- Himself (chief)	465	29.2
- Spouse	728	45.8
- Child or relative	398	25.0
Householder marital status		
- Single	49	3.1
- Married in monogamy	1186	74.5
- Married in polygamy	52	3.3
- Divorced/widowed/separated	203	12.8
- Free union	101	6.3
Householder native province*		
- Bas Congo	726	46.4
- Bandundu	489	31.1
- Equateur	93	6.0
- Kasai Occidental	30	1.9
- Kasai Oriental	188	12.0
- Katanga	7	0.4
- Kinshasa	11	0.7
- Maniema	3	0.2
- Nord Kivu	4	0.3
- Province Orientale	9	0.6
- Sud Kivu	3	0.2
Household food security status		
- Households' food-secure	601	37.8
- Households' food-insecure	990	62.2

* There were 28 missing data

Abbreviation: SD = Standard Deviation

Table 2 presents the frequency distribution of household coping strategies. Nine main survival mechanisms were adopted by households to manage the food crisis. The

majority of households used to change their meal composition, and third of them did gardening or commercial activities. Less than 10% of households received food aid

from nutritional centers, did small livestock raising, remunerated work, little crafts or ristourne. Among households that reduced the number of persons in charge, 41.2% sent family members to villages, 32.4%

sent children to friends or other relatives, in 24.2% people went themselves, and 11% sent people away. However in third of households, none survival mechanism was used to manage the food crisis.

Table 2. Frequency distribution of household coping strategies used¹

Household coping strategies used	n = 1573	Percent
Change of meal composition	1,214	76.7
Gardening	534	33.9
Commercial activities	530	33.7
Reduction of persons in charge	190	12.1
Food aid from nutritional centers	122	7.8
Small livestock raising	65	4.1
Remunerated work	63	4.0
Little crafts	51	3.2
Ristourne	25	1.6
None survival mechanism	520	33.1

¹ There were not many missing values among coping strategies, they ranged from 0.6 to 1.3%

Table 3 shows the associations between household coping strategies and household food security status: univariate associations (Chi-square test) and binary logistic regression model (adjusted odds ratio). At the univariate level, the coping strategies found to be statistically associated with household food insecurity were the following: change of meal composition ($p<0.001$), gardening ($p<0.001$), reduction of persons in charge ($p<0.05$), food aid

from nutritional centers ($p<0.001$), remunerated work ($p<0.01$), and none survival mechanism ($p<0.01$). In multivariate analysis, only three household coping strategies were significantly associated with the outcome. Households' food-insecure were two times more likely to change their meal composition, to reduce the number of persons in charge, and to receive food aid from nutritional centers than households' food-secure.

Table 3. Association between household coping strategies and household food security status (n = 1573)

Household coping Strategies used	n (%) of Households		Chi-square test	Adjusted Odds Ratio (95% CI) ¹
	Food-secure	Food-insecure		
Change of meal composition (n = 1582)			78.405***	
- yes	386 (64.7)	828 (84.1)		1.96 (1.52 – 2.54)
- no	211 (35.3)	157 (15.9)		
Gardening			30.126***	
- yes	152 (25.5)	382 (39.1)		Ns
- no	443 (74.5)	596 (60.9)		
Commercial activities			0.869	
- yes	192 (32.3)	338 (34.6)		--
- no	403 (67.7)	640 (65.4)		
Reduction of persons in charge (n= 1576)			6.303*	1.64 (1.15 – 2.33)
- yes	56 (9.4)	134 (13.7)		
- no	539 (90.6)	847 (86.3)		
Food aid from nutritional centers (n = 1568)			12.833***	
- yes	28 (4.7)	94 (9.7)		1.74 (1.11 – 2.76)
- no	569 (95.3)	877 (90.3)		
Small livestock raising			1.329	
- yes	29 (4.9)	36 (3.7)		--
- no	566 (95.1)	942 (96.3)		
Remunerated work			8.772**	
- yes	35 (5.9)	28 (2.9)		Ns
- no	560 (94.1)	950 (97.1)		
Little crafts			0.452	
- yes	17 (2.9)	34 (3.5)		--
- no	578 (97.1)	944 (96.5)		
Ristourne			1.043	
- yes	7 (1.2)	18 (1.8)		--
- no	588 (98.8)	960 (8.2)		
None survival mechanism			10.491**	
- yes	226 (38.0)	294 (30.1)		Na
- no	369 (62.0)	684 (69.9)		

* p<0.05 ** p<0.01 *** p<0.001

¹Forty-three records with missing data over 1,591 were excluded from multivariate logistic regression analyses.

“no” is the baseline

Abbreviation: Ns = not significant, Na = not applicable

Discussion

The study did not look at the usual food-based coping strategies used when there is not sufficient food in the household, because they were integrated in the measure of the food security. It looked at other kind of household coping strategies, which could be adopted to face food crises. The change of meal composition was the most coping strategy used. Seventy seven percent of households chose less preferred and/or lesser quality foods to manage the nutritional crisis at the household level. The literature describes it as the least severe coping strategy (8) and one of the most frequently used (9). This common survival mechanism and the reduction of persons in charge are own decisions made by households to survive. Borthon and Nicholds (10) consider the reduction of persons in charge as the last phase in the adaptation strategies that a household uses and Marxell (8) classified it among the long-term strategies. The food aid from nutritional centers was the third coping strategies used by households to manage food crisis. This survival mechanism is part of interventions usually developed by the majority of NGOs working in the field of nutrition to help households' food-insecure (1-3). However, the study revealed that 5% of households' food-secure received food aid from nutritional centers. This could be due to a non-based assessment of vulnerable households. It appeared also that the households food-secure did not really need to practice a coping strategy. The proportion of not practicing survival mechanisms was higher among them. That was something quite normal as they were not in situation of food insecurity.

The study had some limitations. Since the data have been collected five years ago, the situation might have changed since then. However, results of the Demographic and Health Survey (DHS) conducted in DRC in 2007 revealed that the nutritional status of children less than five years old remained

the same: in Kinshasa, the acute malnutrition rate is 11.2% and that of chronic malnutrition is 32.2% (11). Hence, the situation may not have changed much. Secondly, no measure of food security can be accepted as the international "gold standard" and the agreed best approach for measurement uses several proxy and outcome indicators in combination to measure each dimension of food security (12). Hence, the selected questions to capture food security permitted to define and measure our outcome variable, and inferences could be made from that. However, missing of some questions to measure the outcome may have introduced some biases. Thirdly, the retrospective responses could lead to information bias, specifically recall bias concerning food consumption. However, the risk was very low as the asked questions referred to recall period of 24 hours for food consumption or one week for food habits. Fourthly, due to the geographic limitation of the study, the results cannot be generalized to the entire country.

Conclusion

This research conducted in Kisenso and Masina, two health zones of Kinshasa the Capital of the DRC, has provided a better and in-dept general understanding of household coping strategies. It was the first time that the exhaustive list of coping strategies used by households to manage a food crisis is presented. The study established the statistical associations between food-secure and food-insecure households use based on their choice of survival mechanisms. Food intervention programs should be better coordinated. Food security vulnerable households should be prioritized and food assistance programs implemented based on evidence assessment of vulnerable populations.

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