# Coping Strategies to Achieve Food Security among Households with Children in an Urban Poor Community in Quezon City during COVID-19

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## **ABSTRACT**

**Background.** In the Philippines, the prevalence of food insecurity increased during the COVID-19 pandemic, affecting the nutritional status of communities nationwide. Urban areas in particular are vulnerable to the harmful effects of food insecurity, and the effects are extended and magnified when it comes to children.

**Objectives.** This study aims to evaluate the coping strategies of households with children aged 0-10 years old in an urban poor community in Quezon City. In particular, the study will determine Coping Strategies Index (CSI) scores and the frequency of specific coping strategies used.

**Methods.** A descriptive cross-sectional study was conducted to assess the coping strategies of 405 households with children in the community during the pandemic. Mothers or caregivers were given a survey inquiring about the sociodemographic data and CSI.

**Results.** Sociodemographic profiling showed that the households generally belonged to class D and E (PhP 15,000 and below) income households (73.8%). The majority of the household heads (52.6%) have their highest educational attainment at the high school level.

The majority (77.5%) of the households were categorized as having low CSI classification (90%CI: 73.9, 80.8). This could indicate that relief operations conducted in the community may have helped ease their food insecurity. Coping strategies that were most frequently employed by the households were depending on less preferred or more affordable food (74.8%), rationing money for prepared food (69.1%), and purchasing food on credit (58.5%).

**Conclusion.** Low CSI classification was noted, which may be due to increased adaptation to persistent food insecurity and the utilization of coping strategies not indicated in the questionnaire. Common coping strategies used by households include reliance on less favored or less costly food items, rationing resources for prepared food, and food on credit. It is recommended that the results collected be used to target food availability and accessibility interventions in the community.

Keywords: food insecurity, nutrition, coping strategies

## INTRODUCTION

Food insecurity occurs when an individual or a household does not have sufficient access to food due to a lack of resources or financial incapabilities. Food insecurity has become more evident during the COVID-19 pandemic and this has been observed in countries such as Bangladesh, and Nepal. The Philippines' food security landscape has been especially hit

Corresponding author: Eryn M. Kiunisala College of Public Health University of the Philippines Manila 625 Pedro Gil Street, Ermita, Manila 1000, Philippines Email: ekiunisala@gmail.com by the COVID-19 pandemic, observing a 22% increase in the number of households that experience moderate to severe food insecurity.<sup>4</sup> These concerns regarding food insecurity greatly contribute to undernourishment.

The UNICEF Theoretical Framework on the causes of malnutrition, shown in Figure 1, serves as a guide for the UNICEF Nutrition Strategy 2020-2030 and focuses on the enabling, underlying, and immediate causes of malnutrition, acknowledging the triple burden of malnutrition. The narrative of this framework discusses what contributes to malnutrition as well as the relationship between the causes of malnutrition.<sup>5</sup> One notable underlying cause of malnutrition is household food insecurity. Undernourishment is a pressing issue in the Philippines, with the Food and Agriculture Organization (FAO) reporting that between 2019 and 2021, 5.7 million Filipinos were undernourished.6 Immediate determinants of maternal and child nutrition include diet and care, and failure to provide adequate diet and nutritional care to children, in particular, increases the risk for diseases and further malnutrition. Underlying determinants that affect these include food, practices, and services. Thus, household food security is important for an individual to have good nutrition. If household food insecurity persists, this can affect the availability of nutrient-rich and appropriate food, resulting in health implications that can affect their development and growth.8

For instance, household food insecurity was established to be associated with stunting among preschool-aged children in Occidental Mindoro. Another study found that having a less diverse diet, along with the prevalence of food

insecurity, was determined to be associated with preschoolaged children being underweight. <sup>10</sup> Children in urban areas in particular are known to be vulnerable to harmful physiological and cognitive effects when experiencing food insecurity. <sup>11</sup> It has been noted that people living in urban environments are at particular risk for food insecurity and poor nutrition outcomes because of their dependence on the commercial supply and their income levels. <sup>12</sup> Other studies have suggested that food diversity in urban areas is better compared to rural areas which in turn gives those in the former better diets. <sup>13</sup> However, the supposed advantage of urban areas is not extendable to those living in poverty as they do not have the means to access the wide variety of food available.

In the Philippines, several areas can be classified as urban poor. In Quezon City, there are several urban poor areas or barangays. <sup>14</sup> During COVID-19, these urban poor areas were greatly affected by the pandemic. Due to restrictive protocols, citizens of the area needed help in having access to food aid as well as following enacted protocols such as social distancing. <sup>4</sup> Amidst the difficulties during the pandemic, certain coping mechanisms or strategies were used by households to address household food insecurity.

One such example is the possibility of households changing the composition of their diet by substituting for cheaper food sources to overcome food insecurity. Households may also attempt to utilize short-term strategies such as borrowing money or consuming wild foods. Another strategy would be to reduce the number of members to feed by asking them to move to a different household with

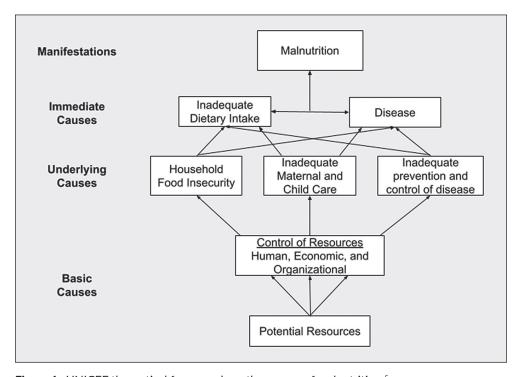


Figure 1. UNICEF theoretical framework on the causes of malnutrition.<sup>5</sup>

more food supply. Some households also resolve to cut down on food portions or the number of meals to conserve food supply.<sup>15</sup>

The Coping Strategies Index (CSI) is a tool developed in Uganda and Ghana that measures what households do to cope with food insecurity. Primary applications of CSI include aiding in the improvement of decision-making and management during emergency food situations. Specifically, these include the following. First, the CSI can be utilized to measure the impact of food aid interventions. Ineffective interventions would be seen to not affect the CSI score of the households as these interventions may be adjusted to become more effective. Second, the CSI can be incorporated into Early Warning Systems (EWS) to complete an accurate description of household situations as a complement to other information. This allows for more timely food aid interventions so that different programs may be able to direct resources more efficiently to achieve a targeted level of household food security following the CSI.<sup>15</sup>

At present, there are still gaps when it comes to identifying the coping mechanisms and strategies being used in urban poor communities. Further, the assessment of these strategies has yet to be delved into. Evaluation of coping strategies among urban poor households with children aged 0-10 years old may help in understanding how these households manage to address food insecurity considering the increased vulnerability of children to the consequences of food insecurity. Analyzing these can help recognize food insecurity as a burden during times of crisis and better target interventions for urban poor communities, specifically for households with school-aged children. Hence, this recent study aims to assess the coping strategies related to food insecurity employed by households with children in an urban poor community in Quezon City during the COVID-19 pandemic. Specifically, this study aims to determine the CSI scores of the households and evaluate the severity of the coping strategies employed by these households.

The CSI data obtained from the community may be useful in program planning and interventions organized by the constituents. These benefits are also particularly important as the residents of urban poor communities have already engaged in talks with the local government, proposing a "Community Development Plan" to counter existing corporate development plans for the area in and around the community. Hence, the results of this study may be useful for policy decisions, particularly in conducting evidence-based program planning and policy building for nutrition interventions.

## **METHODS**

## Research Design

A descriptive cross-sectional study was utilized in determining the coping strategies of households in urban poor communities in Quezon City during the COVID-19 pandemic.

## **Study Area**

The study area was an urban poor community located in Quezon City. The area is home to thousands of families with approximately 3 to 5 people in each household. The majority of these households are known to be part of the lowest income groups from lower-income to lower-middle income. Participants were determined with the help of barangay officials as informants.

## **Study Population**

All households with at least one child aged 0-10 years old were included in the study. The mother or caregiver of the child or children must be present at the time of data collection, must be at least 18 years of age during the conduct of the study, and must have been a resident of the community for at least one year before the survey proper.

## Sampling Design

Cluster sampling was conducted to determine the participants of the study. A spot map with pre-determined cluster divisions was obtained from the community's barangay health center. These specified areas were used as the clusters for sampling. Clusters were randomly chosen with the intent of these clusters to be representative of the community. Samples were obtained by house-to-house surveys through selected clusters until the sample size was reached.

## Sample Size

Approximately 6000 families resided in the urban poor community at the beginning of the pandemic. The formula used for calculating sample size is the following:

n = deff × 
$$\frac{N \hat{p}\hat{q}}{(d^2/1.645^2)(N-1) + \hat{p}\hat{q}}$$

Where:

n = sample size deff = design effect

N = population size

p̂ = estimated proportion

 $\hat{q} = 1 - \hat{p}$ 

d = confidence limit

**Equation 1.** Sample size calculation

OpenEpi software was used to calculate the sample size of 389 at a 90% confidence level. The percent frequency of the outcome was set at 50% using a 5% confidence limit and a design effect of 1.5 to calculate the sample size from the estimated 6000 households in the study area. The final sample size was multiplied using the design effect of 1.5 to consider the cluster sampling technique used in selecting study participants.

#### Research Instruments

The following research instruments were used to answer the objectives of this paper:

- 1. General Profile of the Households. This was used to determine the sociodemographic characteristics of the households sampled in the study. The tool used collected the following information: gender of the caregiver, age of caregiver, highest educational attainment of the household head, highest educational attainment of caregiver, marital status of the caregiver, household size, occupation of household head, occupation of caregiver, and socioeconomic classification. The socio-demographic information collected was used to provide additional context to the results of the CSI.
- 2. Coping Strategies Index. CSI involves a series of questions about ways households manage shortages in food availability which results in a numeric score. As different types of behaviors may indicate problems of different severity, the CSI measures both the frequency and severity of each coping strategy and combines them into a single score. 15 This type of method has been applied in areas such as the rural district of iLembe, South Africa. 17 This tool can also be applied to the Philippines, especially in areas that likely experience food insecurity. Upon further checking, permission was granted by the authors to use the CSI questionnaire survey. 18 The exact translations used in this study can be found in the Appendix.

## **Data Gathering**

- 1. Validation and Pretesting. The questionnaire was developed both in English and Filipino. These were then assessed by two public health nutritionists and a Filipino linguist for validation before printing and distribution. Letters addressed to the barangay captains of the pretesting site and the study site were delivered before data collection to acquire permission to conduct surveys in the localities. Pretesting was conducted in an urban poor community with a similar demographic in Quezon City. No revisions were made to the original questionnaire as it was deemed sufficient for use during the pretesting phase.
- Survey Proper. Four hundred and thirty-three copies of each of the Filipino questionnaires and informed consent forms (ICFs) were printed to ensure that there is an excess of copies in case of damage, loss, or nonparticipation. These were distributed to each participating household accomplishing one copy of each. ICFs in Filipino were provided and obtained from the caregivers of the participating households. The ICF included confidentiality assurance from the researchers and indicated that this research underwent an ethical review from the UP-Manila Research Ethics Board before implementation. Information required of the participant was the date of the survey, the participant's name, and their signature. The survey was accomplished by the caregivers of the children aged 0-10 years old in the household. The survey was also accomplished in

the presence of at least one researcher to ensure that the participants could raise clarifications regarding any part of the survey. The researchers were trained to use the CSI tool before data gathering. As all participants willingly provided their data, no participants were excluded from the data analysis, and the minimum sample size was achieved.

## **Data Analysis**

Descriptive statistics was applied to the sociodemographic characteristics obtained from the general profile questionnaire. The frequency of each coping strategy was computed. The sum of households that answered each frequency (every day, 3-6 times a week, 1-2 times a week, less than a day, and never) was determined for each coping mechanism. This was based on a study that focused on the frequency of coping strategies and identifying coping mechanisms in the community.<sup>15,19</sup>

Each frequency category from the survey was converted to its numerical counterpart through a weighing factor that represented the frequency of each coping strategy. The numerical counterparts of the frequency of each coping strategy were 7, 4.5, 1.5, 0.5, and 0, respectively. These values served as multipliers to the severity related to each coping mechanism which ranged from 1 to 4. The abovementioned values used to calculate severity were adapted from the Kenya pilot. The percentage of households for each frequency of every coping mechanism was also determined.

## **RESULTS**

A total of 405 households were surveyed in an urban poor community in Quezon City about the coping strategies they employed. The sociodemographic profiles of the households are presented in Table 1. A majority (92.3%) of the caregivers who participated in the study were female. The mean household size was 5.1 and there was an average of 2.0 children in the household. When it comes to household income, the majority (73.8%) of the households were found to belong to classes D and E, a quarter (24.7%) belonged to Class Broad C, and only a small percentage (1.5%) of the households belonged to Class B and Upper Class C.

More than half of the household heads (52.6%) finished high school while a fifth (18.8%) have a college degree. More than a quarter (26.4%) were only able to finish elementary while only a handful (2.2%) had no educational attainment. In terms of occupation, more than half of the household heads (53.1%) were employed in occupations that are classified as skilled labor such as construction, craft, machine operations, etc.; almost a quarter (24.7%) worked in unskilled labor; a fifth (20%) were employed in professional labor; and a few (2.2%) were unemployed.

Coping strategies adopted by the households are shown in Table 2. Most (82.7%) of the households stated that they relied on less preferred or less expensive food items at least

**Table 1.** Characteristics of Households in an Urban Poor Community in Quezon City, 2022 (n = 405)

Characteristics	Number (n = 405)	Percent (%)			
Gender of Caregiver		-			
Male	31	7.7			
Female	374	92.3			
Mean number of children in household	2.0 ± 0.1				
Mean household size	5.1 ± 0.2				
Household Income					
PhP 30,001-99,000 (Class B and	6	1.5			
Upper Class C)	100	24.7			
PhP 15,001-30,000 (Class Broad C) PhP 15,000 and below (Class D and E)	299	73.8			
Household Head Educational Attainment	277	73.0			
No grade completed	9	2.2			
Elementary graduate	107	26.4			
High school graduate	213	52.6			
College graduate	76	18.8			
Household Head Occupation					
Professional labor	81	20.0			
Skilled labor	215	53.1			
Unskilled labor	100	24.7			
Unemployed	9	2.2			

once a week. A majority (89.9%) of households stated that they rationed money for prepared food at least once a week. Meanwhile, more than half (73.7%) of households stated that they obtained food on credit. Half (52.1%) of households restricted food consumption by adults at least once a week. Almost half (49.7%) of households stated that they borrowed food or help from a friend or relative at least once a week. The same number of households stating that they limited portion size at least once a week also totaled half (48.7%).

In terms of reducing the number of meals and feeding working members, four-tenths (40.5%) of households and

three-tenths (30.8%) of households, respectively practiced these at least once a week. Meanwhile, a quarter (25.9%) of households consumed wild food, harvested immature crops, or sent members to eat elsewhere at least once a week. Meanwhile, two coping strategies practiced at least once a week were skipping entire meals and begging for sustenance. Furthermore, more than a tenth of households (12.0%) skipped entire days without eating while only a small percentage (3.7%) resorted to begging to cope with food insecurity.

A majority (77.5%) of the households were categorized as having low CSI classification (90%CI: 73.9, 80.8). The rest of the households were classified under medium (19.5%; 90%CI: 16.5, 22.9) or high CSI scores (3.0%; 90%CI: 1.9, 4.7). Details are shown in Table 3.

## DISCUSSION

The most common coping strategy employed by households in the urban poor community was their reliance on less preferred or less expensive food items at least once a week, which is a practice used by more than 3 out of 4 households. This is comparable with the results of a previous study that found three-quarters (75%) of households in urban poor areas in the US relied on less preferred or less expensive foods, specifically nutrient-dense foods.<sup>20</sup>

The high percentage of people relying on less preferred or less expensive food could be due to the respondents employing this coping strategy first to mitigate the effects of food shortage and reduction of budget for food. Findings suggested that the first employed coping strategy during food insecurity is compromising the quality and quantity of the food as a response to the lack of resources for food consumption.<sup>21</sup> Another study found that reliance on less preferred or more affordable food is the most common coping strategy employed by urban communities.<sup>22</sup>

Table 2. Coping Strategies used by Households in an Urban Poor Community in Quezon City, 2022 (n=405)

	Frequency of Experience (in the last 30 days)					
Coping Strategies	Everyday n (%)	3-6 days/ week n (%)	1-2 days/ week n (%)	Less than a day n (%)	Never n (%)	
Rely on less preferred/less expensive foods	88 (21.7)	115 (28.4)	100 (24.7)	32 (7.9)	70 (17.3)	
Borrow food/help from a friend/relative	12 (3.0)	65 (16.0)	76 (18.8)	48 (11.9)	204 (50.4)	
Food on credit	32 (7.9)	82 (20.3)	123 (30.4)	61 (15.1)	107 (26.4)	
Wild food/harvest immature crops	13 (3.2)	22 (5.4)	43 (10.6)	27 (6.7)	300 (74.1)	
Send members to eat elsewhere	11 (2.7)	14 (3.5)	35 (8.6)	42 (10.4)	303 (74.8)	
Begging	6 (1.5)	3 (0.7)	4 (1.0)	2 (0.5)	390 (96.3)	
Limit portion size	52 (12.9)	39 (9.6)	62 (15.3)	44 (10.9)	208 (51.4)	
Restrict consumption by adults	61 (15.1)	45 (11.1)	72 (17.8)	33 (8.1)	194 (47.9)	
Feed working members	43 (10.6)	30 (7.4)	33 (8.1)	19 (4.7)	280 (69.1)	
Ration money for prepared food	108 (26.7)	87 (21.5)	85 (21.0)	84 (20.7)	41 (10.1)	
Reduce the number of meals	43 (10.6)	40 (9.9)	48 (11.9)	33 (8.1)	241 (59.5)	
Skip entire days without eating	3 (0.7)	5 (1.2)	23 (5.7)	18 (4.4)	356 (87.9)	

Table 3. Coping Strategies Index (CSI) Classification of Households in an Urban Poor Community in Quezon City, 2022 (n=405)

CSI Classification	Frequency	Prevalence (90% CI)
Low	314	77.5 (73.9-80.8)
Medium	79	19.5 (16.5-22.9)
High	12	3.0 (1.9-4.7)

Most of the least expensive food in the Philippines and surrounding countries is processed food, which has little to no nutritional value as processed food tends to be higher in fat, salt, and glycemic load.<sup>23</sup> Some examples of these processed foods are instant noodles, processed meat, fish, and poultry products, and chips.<sup>24</sup> The changes in the food consumed by the family due to reduced ability to afford healthier food could have implications on their health, especially on the growth and development of children.

In addition, almost three-fourths of the households reported that they borrowed food on credit or coming from a friend or relative. The high frequency of coping strategies relating to borrowing or using credit was also characteristic of another food security study in the Philippines.<sup>4</sup> Poor households had a significantly higher increased risk for food insecurity when experiencing monetary constraints.<sup>25</sup> As three-quarters of the respondents belonged to Classes D and E, the low income of households brought by the nature of their work could explain the high number of respondents that opt to borrow food or use credit.<sup>22</sup>

In terms of coping strategies, lowering the number of members in the household during mealtimes by sending them somewhere was among the least frequent strategies employed by the urban poor community. These results were consistent with a study in Occidental Mindoro, in which the strategies of sending children to eat with neighbors and making members of the household beg were both placed in the "never" category or that of least frequency. This is likely due to the begging strategy being known as a relatively more severe strategy used. Households would prefer going for less severe strategies. Based on this, it seems that strategies focused on dietary changes or changes in food consumption patterns are employed more often by households to cope with household food insecurity. The service of the

It was also observed that nine out of ten households rationed money to purchase prepared food at least once a week. This is a common strategy used in urban settings because of the large availability of prepared food, but it is not commonly used in rural areas.<sup>15</sup> In terms of prioritizing certain family members during meal times, children were found to be prioritized more compared to working members of the family. This is similar to other studies that reported that adults usually tend to prioritize feeding their children and reduce their share of meals during periods of prolonged food shortage.<sup>28</sup> This is especially important to note considering the study population were all households with school-aged

children.

This present study observed that almost half of households reduced meals at least once a week which is comparable to research done in urban areas of Indonesia wherein 27.8% of adults were reported to cut or skip meals.<sup>29</sup> This is likely due to the similarity in the type of community, as the same study also compares this statistic to rural areas where 49.7% of adults were reported to cut or skip meals.

Only 12.0% of households skipped entire days without eating at least once a week. Although this statistic deviates from multiple studies that indicate skipping whole days without food as a common coping strategy, especially in urban areas<sup>22</sup>, some studies reported similar results with a low percentage of skipping meals for a whole day. Another study reported that skipping meals for adults and children was reportedly the least frequently employed in urban areas using the US Household Food Security Questions survey.<sup>29</sup> Cutting meals was more common compared to the aforementioned coping strategy. The case may be similar for the urban poor community wherein reducing meals was a much more frequent strategy than skipping meals the whole day. Skipping entire days without eating is seen as a severe coping strategy, which may be why it is also less utilized in the urban poor community.<sup>22</sup>

More than three-fourths of the respondents were found to have a low CSI score. Generally, low CSI scores indicate less food insecurity or a more food-secure environment. However, a CSI score on its own cannot be used as the sole measure of food security. Rather, its importance lies in its use as a baseline measure to compare food security status over time and its correlation with other study variables. For instance, a study conducted in Umbumbulu, South Africa used the CSI to show that lower CSI scores were related to less frequent implementation of common coping strategies while higher CSI scores showed the opposite. Multiple studies have previously demonstrated that persistent poverty leads people to adapt their behavior and outlook. This may be one of the factors that contributed to the reduced use of the listed coping strategies in the survey, hence the low CSI score.

It is important to note that the study was conducted from August to October of 2022, in which lockdown restrictions were eased compared to the years 2020 and 2021. During the previous years, however, both local government units (LGUs) and non-government organizations (NGOs) provided support through food aid programs, cash incentives, and other initiatives such as community pantries.<sup>31</sup> As the survey was not developed in a context-specific manner due to time constraints, but rather, adapted from a previous study in a different country, this could have also led to the seemingly low use of the coping strategies listed in the questionnaire.

## **Limitations of the Study**

This research focused on coping strategies employed by urban poor households to combat household food insecurity using the CSI for each parameter. Moreover, the survey questions did not cover the respondents' perceptions of the effectiveness of each coping strategy. This present study did not attempt to draw correlations between coping strategies and other nutrition-related variables.

The following possible biases were also identified: recall bias as the study makes use of a retroactive tool, measurement bias, and seasonal variations. Social-desirability bias could also occur when the respondents modify their responses to be perceived as more socially desirable or acceptable. To reduce this, the questionnaire was rigorously reviewed to ensure that survey questions were appropriate. Pre-testing was also done to ensure the validity of the survey tools used. The researchers also underwent training prior to data collection to ensure that proper probing was done to minimize bias.

The study was conducted during the rainy season in the country from August to October 2022. The data presented may only be representative of household food insecurity within a similar annual period due to seasonal variability. Furthermore, due to the unique context of each population, the results of this research may only be representative of the study area. The researchers were also unable to provide context-specific severity rankings for the CSI tool due to time constraints. Hence, validation studies should be performed by future researchers who intend to use the instrument.

#### CONCLUSIONS

Most households were reported to have low CSI scores. Common coping strategies used by households include reliance on less favored or less costly food items, rationing resources for prepared food, food on credit, restricting consumption by adults, borrowing food or taking assistance from peers or relatives, and limiting portion size. Based on the current coping strategies, the overall coping strategies were found to have low severity, which indicates the use of relatively lower-risk coping strategies for food insecurity. However, it is important to note that the CSI score on its own may not be the most meaningful indicator of food security as its use is more accurate as a measure for trends in food security over time. Furthermore, as this study was not able to develop a context-specific CSI survey, the community may have utilized coping strategies not indicated in the questionnaire. Hence, it is still recommended that interventions be provided to the study community to address immediate and underlying causes of malnutrition.

In this regard, it may be optimal to improve food availability and affordability through ayuda programs, special markets selling nutritious food at affordable rates for households in urban poor areas, and a child nutrition program wherein reduced-priced meals are sold to families with children 0-10 years old. It may also be beneficial to provide additional feeding programs or provisions tailored to households with children 0-10 years old. The data on the coping strategies can serve as their basis for targeting coping behaviors. Social markets can also be established in

the community to address the supply and demand for food in the area.

Furthermore, although the researchers achieved the minimum sample size required, it is recommended that the confidence level be increased in future studies. The CSI scores collected in this study are best interpreted in comparison with changes over time. Thus, a similar study conducted in the same study community during different environmental conditions may be beneficial. As the generalizability of the paper is limited to the study area, similar studies can be conducted in other urban poor areas for a more representative set of results. Lastly, focus group discussions should be conducted to develop a context-specific list of coping strategies for the Philippine setting in future studies.

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## **Statement of Authorship**

All authors certified fulfillment of ICMJE authorship criteria.

#### **Author Disclosure**

All authors declared no conflicts of interest.

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#### REFERENCES

- Gundersen C, Ziliak JP. Food insecurity and health outcomes. Health Aff (Millwood). 2015 Nov;34(11):1830-9. doi: 10.1377/ hlthaff.2015.0645. PMID: 26526240.
- Hamadani JD, Hasan MI, Baldi AJ, Hossain SJ, Shiraji S, Bhuiyan MSA, et al. Immediate impact of stay-at-home orders to control COVID-19 transmission on socioeconomic conditions, food insecurity, mental health, and intimate partner violence in Bangladeshi women and their families: an interrupted time series. Lancet Glob Health. 2020 Nov;8(11):e1380-9. doi: 10.1016/S2214-109X(20)30366-1. PMID: 32857955; PMCID: PMC7447230.
- Singh S, Nourozi S, Acharya L, Thapa S. Estimating the potential effects of COVID-19 pandemic on food commodity prices and nutrition security in Nepal. J Nutr Sci. 2020 Oct 9;9:e51. doi: 10.1017/ jns.2020.43. PMID: 33240495; PMCID: PMC7681149.
- Angeles-Agdeppa I, Javier CA, Duante CA, Maniego MLV. Impacts of COVID-19 pandemic on household food security and access to social protection programs in the Philippines: Findings from a telephone rapid nutrition assessment survey. Food Nutr Bull. 2022 Jun;43(2):213-31. doi: 10.1177/03795721221078363. PMID: 35196895; PMCID: PMC8883167.
- UNICEF Innocenti occasional papers [Internet]. Florence, Italy: International Child Development Centre. 1993 [cited 2022 May]. Available from: https://www.unicef-irc.org/publications/pdf/crs5\_low.pdf

- Baclig CE. World Food Day 2022: Rising costs keep millions in PH away from healthy diets. Philippine Institute for Development Studies [Internet]. 2022 October 17 [cited 2023 July 23]. Available from: https://www.pids.gov.ph/details/news/in-the-news/world-food-day-2022-rising-costs-keep-millions-in-ph-away-from-healthy-diets
- UNICEF conceptual framework on maternal and child nutrition [Internet]. New York (NY): United Nations International Children's Emergency Fund. 2021 [cited 2023 Jul]. Available from: https://www.unicef.org/media/113291/file/UNICEF%20Conceptual%20 Framework.pdf
- Gallegos D, Eivers A, Sondergeld P, Pattinson C. Food insecurity and child development: A state-of-the-art review. Int J Environ Res Public Health. 2021 Aug 26;18(17):8990. doi: 10.3390/ijerph18178990. PMID: 34501578; PMCID: PMC8431639.
- dela Luna KLG, Bullecer ER. Household food security is associated with stunting among preschool children in Occidental Mindoro. Phil J Health Res Dev. 2018;22(3):67-76.
- dela Luna KLG, Bullecer ER. Underweight among preschool children as an acute consequence of household food insecurity in Occidental Mindoro. Philipp J Sci. 2020 Sep;149(3):681-93.
- Frayne B, Pendleton W, Crush J, Acquah B, Battersby-Lennard J, Bras E, et al. The state of urban food insecurity in southern Africa [Internet]. 2010 [cited 2022 Dec]. Available from: https://afsun.org/ wp-content/uploads/2013/09/AFSUN\_2.pdf
- Dixon J, Omwega AM, Friel S, Burns C, Donati K, Carlisle R. The health equity dimensions of urban food systems. J Urban Health. 2007 May;84(3 Suppl):118-29. doi: 10.1007/s11524-007-9176-4. PMID: 17401697; PMCID: PMC1891642.
- 13. Levin CE, Ruel MT, Morris SS, Maxwell DG, Armar-Klemesu M, Ahiadeke C. Working women in an urban setting: traders, vendors and food security in Accra. World Dev. 1999 Nov;27(11):1977-91. doi: 10.1016/S0305-750X(99)00096-0.
- Cunanan KM. Slum-fit? Or, where is the place of the Filipinx urban poor in the Philippine city? ACME. 2020;19(1):35-69.
- Maxwell D, Watkins B, Wheeler R, Collins G. The coping strategies index: A tool for rapidly measuring food security and the impact of food aid programs in emergencies [Internet]. 2003 [cited 2022 Dec]. Available from: https://www.fao.org/documents/card/es/c/9b147c15-ae7d-53aa-9a93-69efd9c88dae/
- Collantes CF. "Unforgotten" informal communities and the COVID-19 pandemic: Sitio San Roque under Metro Manila's lockdown. Int J Hum Rights Healthc. 2021;14(3):279-92. doi: 10.1108/ IJHRH-09-2020-0073.
- 17. Drysdale RE, Moshabela M, Bob U. Adapting the Coping Strategies Index to measure food insecurity in the rural district of iLembe, South Africa. Food Cult Soc. 2019;22(1):95-110. doi: 10.1080/15528014.2018.1547067.
- Maxwell D, Caldwell R. The Coping Strategies Index: A tool for rapid measurement of household food security and the impact of food aid programs in humanitarian emergencies [Internet]. 2008 [cited 2022 Dec]. Available from: https://documents.wfp.org/stellent/groups/ public/documents/manual\_guide\_proced/wfp211058.pdf
- Grobler WCJ. Food insecure household coping strategies: The case of a low income neighborhood in South Africa. Mediterr J Soc Sci. 2014 Jun;5(13):100-6. doi: 10.5901/mjss.2014.v5n13p100.
- Wright L, Gupta P. Coping strategies adopted by urban poor to ameliorate food insecurity: case of United States, Belize and India. J Food Secur. 2015;3(2):40-6. doi: 10.12691/jfs-3-2-2.

- Farzana FD, Rahman AS, Sultana S, Raihan MJ, Haque MA, Waid JL, et al. Coping strategies related to food insecurity at the household level in Bangladesh. PLoS One. 2017 Apr 14;12(4):e0171411. doi: 10.1371/journal.pone.0171411. PMID: 28410375; PMCID: PMC5391923.
- 22. Chagomoka T, Unger S, Drescher A, Glaser R, Marschner B, Schlesinger J. Food coping strategies in northern Ghana. A sociospatial analysis along the urban–rural continuum. Agric Food Secur. 2016 Dec;5(4):1-8. doi: 10.1186/s40066-016-0052-x..
- Baker P, Friel S. Food systems transformations, ultra-processed food markets and the nutrition transition in Asia. Global Health. 2016 Dec 3;12(1):80. doi: 10.1186/s12992-016-0223-3. PMID: 27912772; PMCID: PMC5135831.
- Amarra M, Capanzana MV, Gironella G, De Los Reyes F. Identification of foods to monitor the sodium content of processed foods using nationally representative consumption data for developing a sodium reduction program in the Philippines. J Nutr Food Sci. 2021 Dec;11(10):829. doi: 10.35248/2155-9600.21.s9.1000833.
- Chang Y, Chatterjee S, Kim J. Household finance and food insecurity.
   J Fam Econ Iss. 2014;35:499-515. doi: 10.1007/s10834-013-9382-z.
- Declaro-Ruedas MYA. Coping strategies adopted by Iraya-Mangyan households during food insecurity in Abra, Occidental Mindoro, Philippines. J Asian Rur Stud. 2019;3(1):85-92. doi: 10.20956/ jars.v3i1.1718.
- Oldewage-Theron WH, Dicks EG, Napier CE. Poverty, household food insecurity and nutrition: coping strategies in an informal settlement in the Vaal Triangle, South Africa. Public Health. 2006 Sep;120(9):795-804. doi: 10.1016/j.puhe.2006.02.009. PMID: 16824562.
- 28. Nabulsi D, Ismail H, Abou Hassan F, Sacca L, Honein-AbouHaidar G, Jomaa L. Voices of the vulnerable: Exploring the livelihood strategies, coping mechanisms and their impact on food insecurity, health and access to health care among Syrian refugees in the Bequa region of Lebanon. PLoS One. 2020 Dec 2;15(12):e0242421. doi: 10.1371/journal.pone.0242421. PMID: 33264293; PMCID: PMC7710069.
- Usfar AA, Fahmida U, Februhartanty J. Household food security status measured by the US-Household Food Security/Hunger Survey Module (US-FSSM) is in line with coping strategy indicators found in urban and rural Indonesia. Asia Pac J Clin Nutr. 2007;16(2):368-74. PMID: 17468096.
- Mjonono M, Ngidi M, Hendriks SL. Investigating household food insecurity coping strategies and the impact of crop production on food security using coping strategy index (CSI). In: 17th International Farm Management Congress, Bloomington/Normal, Illinois, USA. 2009 Jul.
- De Mesa JAC, Gutierrez NMD, Romandi JMPM, Valencia NCC. Food accessibility of Sitio San Roque during the COVID-19 pandemic. Cosmos J Eng Technol. 2023 Jan-Jun;13(1):33-50. doi: 10.46360/cosmos.et.620231004.
- 32. Krumpal I. Determinants of social desirability bias in sensitive surveys: a literature review. Qual Quant. 2013;47(4):2025-47. doi: 10.1007/s11135-011-9640-9.

# **APPENDIX**

# **Coping Strategies Index**

Lagyan ng tsek ang kahon na tumutugma sa iyong sagot sa bawat tanong.

		O				
	a nakaraang 30 araw, kung mayroong mga pagkakataon kung saan iindi naging sapat ang pagkain o pera na pambili ng pagkain, gaano kadalas mangyari sa inyong sambahayan ang mga sumusunod:	Araw- araw	Mga 3-6 na beses bawat linggo	1-2 beses bawat linggo	Mas mababa sa isang araw	Hindi ito nangyari
1.	Umasa sa mas mura kahit hindi gaanong gusto ang pagkain?					
2.	Nanghiram ng pagkain o umasa sa tulong ng kaibigan o kapamilya?					
3.	Nangutang ng pagkain o nangutang ng pambili ng pagkain?					
4.	Pagkuha ng kahit anong makakain sa labasan o pagpitas ng mga pananim kahit wala pa sa kapanahunan?					
5.	Papuntahin ang pamilya sa lugar kung saan maaaring makakain?					
6.	Utusan ang kapamilya na mamalimos upang makakain?					
7.	Limitahan ang dami ng paghahati-hati ng pagkain tuwing kainan?					
8.	Limitahan ang pagkaing ibibigay sa mga matatanda upang mas makakain ang mga bata?					
9.	Bigyang priyoridad ang mga kapamilyang nagtatrabaho na kumain kaysa sa mga kapamilya na hindi nagtatrabaho?					
10	. Pagkasyahin ang hawak na pera at bumili ng lutong ulam?					
11	. Bawasan ang beses ng pagkain sa isang araw?					
12	. Hindi kumain ng buong araw?					