

Household Food Insecurity among Indigenous Communities in Sarawak, Malaysia: Predictors and Coping Strategies

Wan Jool Teoh¹, Leh Shii Law², Hazmi Helmy³, Jeffery Anak Stephen⁴, Whye Lian Cheah⁵, Yolanda Anak Salleh⁶

¹Doctor of Public Health, ²Senior Lecturer, ³Associate Professor, ⁴Associate Professor and Head, ⁵Professor, ⁶Postgraduate Student, Department of Community Medicine and Public Health, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, Sarawak, Malaysia

Abstract

Background: Food insecurity prevails in people at all phases of their life course and causes remarkable health, social, and financial repercussions. In Sarawak state, Malaysia, information regarding household food insecurity is limited. **Objectives:** The objective of this study was to examine the prevalence of household food insecurity, together with its predictors and coping strategies among the Sarawak indigenous communities. **Materials and Methods:** This cross-sectional study was conducted among 953 Indigenous households (women) located in six districts throughout Sarawak using multistage sampling. Interviewer-administrated questionnaires were used. Simple and multiple logistic regressions were employed to draw inferences. **Results:** The prevalence of food insecurity was 42.2%. Large household size (adjusted odds ratio [AOR] = 1.57 [1.04–2.45]), hardcore poor (AOR = 12.26 [5.07–29.65]), and absolute poor families (AOR = 3.01 [1.76–5.15]), recipient of financial assistance (AOR = 1.94 [1.27, 2.96]), no savings (AOR = 1.63 [1.08–2.46]), increased resource loss (AOR = 1.004 [1.001–1.008]), and employment of coping strategies (AOR = 3.78 [2.50–5.72]) were significantly related to a higher risk of household food insecurity. High level of perceived social support (AOR = 0.73 [0.58–0.93]), optimism (AOR = 0.91 [0.86–0.96]), and general perceived self-efficacy (AOR = 0.88 [0.85–0.91]) among respondents were protective against household food insecurity. **Conclusion:** Nearly half of the Indigenous households faced food insecurity in the current study. The findings suggest that incessant effort by pertinent stakeholders is warranted via diverse strategies to enhance the socioeconomic status and nutrition intervention programs that incorporate components of perceived social support, optimism, and perceived general self-efficacy to mitigate the level of food insecurity among the Sarawak Indigenous communities.

Key words: Coping strategies, food insecurity, Indigenous, Sarawak

INTRODUCTION

Food insecurity denotes the scenario when the availability of safe, adequate, and nutritious food or the capability to obtain food in socially agreeable routes becomes restricted. It is a serious public health issue that results in remarkable health, social, and financial repercussions. In Malaysia, the Sarawak Indigenous communities comprised about 3.6% of the total population.^[1] In Sarawak state (East Malaysia), social issues such as poverty and capability deprivation (lower opportunity for health and education) and malnutrition, particularly stunting and wasting, have remained the challenges.^[2] Moreover, in 2019, Sarawak recorded the third-highest incidence of absolute poverty (9.0%) in Malaysia after Sabah (19.5%) and Kelantan (12.4%).^[3] These findings provide evidence regarding the presence of a potentially high prevalence of household food insecurity among Indigenous communities in Sarawak.

It is essential to understand the factors that potentially influence food security status due to the substantial impacts of food insecurity. Understanding the nature of household food insecurity assists in planning of intervention programs and formulation of effective policies based on the scientific evidence. In Sarawak, related research on household food security is limited. Thus, in conformity with the second sustainable development goal (elimination of hunger), the

Address for correspondence: Dr. Leh Shii Law,
Department of Community Medicine and Public Health, Faculty of Medicine
and Health Sciences, Universiti Malaysia Sarawak, Kota Samarahan,
Sarawak 94300, Malaysia.
E-mail: lslaw@unimas.my

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Submitted: 13-Apr-2023

Revised: 10-Dec-2023

Accepted: 14-Dec-2023

Published: 24-Sep-2024

How to cite this article: Teoh WJ, Law LS, Helmy H, Stephen JA, Cheah WL, Salleh YA. Household food insecurity among indigenous communities in Sarawak, Malaysia: Predictors and coping strategies. *Indian J Public Health* 2024;68:380-6.

Access this article online

Quick Response Code:



Website:
<https://journals.lww.com/IJPH>

DOI:
10.4103/ijph.ijph_545_23

present study aimed to determine household food insecurity prevalence, and its associated factors, including coping strategies among the Sarawak Indigenous communities.

MATERIALS AND METHODS

Study design and sampling

This cross-sectional study was conducted in six districts (Bau, Serian, Simunjan, Sarikei, Sibuluan, and Miri) in Sarawak. Multistage sampling was used to select six divisions from a total of 12 divisions in Sarawak. One district was randomly selected from each opted division. The eligible number of villages/longhouses in each district was calculated using the formula: the number of needed sample sizes in each district/20. Twenty respondents were randomly selected from the chosen villages/longhouses. With the estimated food insufficiency prevalence of 25.0%,^[4] absolute precision of 5%, 95% confidence level, a design effect of 3.0, and a nonresponse rate of 20%, the required sample size was 1037 respondents. The respondents comprised Malaysian Indigenous women aged 20–49 years with at least a child and mentally sound. Lactating and pregnant women were excluded from this study. Respondents were reached by the researcher and enumerators through house-to-house visits, which were led by the heads of the village/longhouse. Briefing sessions were conducted to explain the research objectives and procedures to the respondents. The data collection was executed via a face-to-face interview with the aid of a questionnaire (nine sections).

Instruments

Sociodemographic characteristics

The basic information of sociodemographic information was collected. In Sarawak, hardcore poor denotes income below the food poverty line income (PLI) of Malaysian Ringgit (MYR) 1096, whereas absolute poor connotes income below the PLI value of MYR 2131.^[5]

Food environmental characteristics

An adapted questionnaire based on the community nutrition environments model^[6] was used. In the food availability and accessibility (household level) domain, it contains food availability (five items) and food accessibility (three items). In community food availability domain, it comprises community food availability (objective) (five items) and community food availability (perception) (one item). Next, community food accessibility was divided into community food accessibility (objective) (two items) and community food accessibility (perception) (three items). The items were presented with dichotomous options, “yes” or “no,” whereby respondents were required to choose one best answer for each question, including question of “What is the transportation that you commonly use to go to the nearest market?” in community food accessibility (objective). One item was presented as an open-ended question in which respondents were required to state the time taken (in minutes) to reach the usual, nearest markets from their houses.

Time spent on food management

Time spent on food shopping and food preparation (incorporating preparation, drinking, eating, and cleaning up after meals) was assessed using a questionnaire adapted from the American Time Use Study.^[7]

Perceived social support

The Multidimensional Scale of Perceived Social Support (MPSPP) (12 items), a seven-point Likert scale, was used to assess the perceived social support of the respondents.^[8] The scoring was enumerated by adding the score from each item, which ranges from 1 (very strongly disagree) to 7 (very strongly agree). The mean score was computed by summing across 12 items and dividing by 12. The scale was validated in Malaysia,^[9] and Cronbach’s alpha in this study was 0.89.

Optimism

The Life Orientation Test-Revised (LOT-R) was used to determine the respondents’ level of optimism.^[10] The five-point Likert scale (six items), with options varying from 0 (strongly disagreed) to 4 (strongly agree). An overall mean score (range: 0 to 24) was obtained from the total score of the six items. A greater mean score signifies a higher level of optimism. The LOT-R has been previously validated among Malaysians,^[11] and an acceptable Cronbach’s coefficient of 0.60 was obtained in the present study.

General perceived self-efficacy

The General Self-Efficacy Scale (GSE) (ten items) was employed to examine perceived self-efficacy in adults.^[12] This is a four-point scale, with one denotes “not all true,” while four indicates “exactly true.” The score is calculated by summing the scores obtained from the ten items. A higher score in GSE signifies a higher perceived self-efficacy. The questionnaire was validated in Malaysia.^[13] In this study, Cronbach’s alpha was 0.88.

Resource loss

The Conservation of Resource Evaluation tool was used to measure the actual, and threat of resource loss.^[14] A total of 45 resources/items were used to address the overall loss of the respondents. Actual loss of resources depicts that the availability of the resource has decreased while a threat of resource loss connotes the possibility of resource loss but Zero denotes “no loss, no threat of loss, or inapplicable” while a score of 4 connotes “great degree of loss or threat of loss.” The resource score from actual and threat of resource loss was summed to yield a solitary score for the variable of resource loss. The potential score range is from 0 to 360, with possible score ranges for actual losses and threat of losses was 0 to 180 respectively. Cronbach’s alpha of 0.98 was obtained in this study.

Coping strategies

The Malaysia Orang Asli Coping Strategy Scale (14 items)^[15] was used to measure food-related coping strategies among Indigenous communities. For every item, the score was calculated by multiplying the severity level (1 – less severe, 2 – severe, and 3 – very severe) and the relative frequency

of the item. The relative frequency of an item was coded as “every day” (scored 7), “1 to 6 days a week” (scored 3), “<1 time a week” (scored 0.5), and “never” (scored 0). A score of 0 denotes not using the coping strategy (coded as 0), and a score above 0 indicates using the coping strategy (coded as 1). The scale was validated,^[15] and the internal reliability value in this study was 0.70.

Household food insecurity

The Radimer/Cornell Hunger and Food Insecurity Instrument (ten items) was employed to gauge food insecurity in four levels: food security, household food insecurity (items 1–4), individual food insecurity (items 5–7), and child hunger (items 8–10).^[16] The options “sometimes true” and “often true” signify a positive response, while “not true” implies a negative response. The status of household food insecurity denotes positive responses given to one or more items (1–4) at the household level, but not to adult- or child-level items. Meanwhile, individual food insecurity refers to those with positive responses provided to one or more of items (5–7) at the adult level or the item regarding the quality of diet for children (8), but not to items (9–10). Lastly, child hunger is assigned to positive responses given to at least one item (9–10) that examined food consumption among children. The tool was validated,^[17] whereas Cronbach’s alpha was 0.88 in this study.

Statistical analysis

Data analysis was performed using the IBM SPSS Statistics version 22.0 (IBM Corp., Armonk, NY, USA). All variables were checked for missing values, duplications, and outliers. The outcome variable (household food insecurity) was coded dichotomously, namely food security (coded as 0) and food insecurity (coded as 1). Food insecurity at the household level, individual level, and child hunger were coded into the food insecure group. A simple binary logistic regression was used to obtain the crude odd ratio, and variables with $P < 0.20$ were included in the multiple binary logistic regression as the cutoff level of 0.05 might not pinpoint the essential variables. The enter method of logistic regression has opted. The significance level was set at $P < 0.05$.

Ethics

Ethical approval was procured from the Ethical Committee of the Faculty of Medicine and Health Science, Universiti Malaysia Sarawak (UNIMAS) [UNIMAS/NC-21.02/03-02 Jld.5(24), UNIMAS/NC-21.02/03-02 Jld.5(80)]. Permission to conduct research was acquired from the concerned district offices. Informed consent from the respondents was obtained prior to data collection.

RESULTS

Nine hundred and fifty-three respondents participated in this study (response rate of 61.17%). The majority of them were Iban (44.7%). The mean household size was 5 ± 1 , while 71.6% of the households had fewer than three children, and 65.6% of them had at least one school-going child [Table 1]. Most of the mothers (69.0%) and their spouses (68.1%) had

Table 1: Sociodemographic characteristics (n=953)

Variables	n (%)	Statistics
Age (years)		
20–29	183 (19.2)	Mean±SD:
30–39	406 (42.6)	36.63±7.30
40–49	364 (38.2)	Minimum–maximum: 20–49
Ethnicity		
Iban	426 (44.7)	
Bidayuh	404 (42.4)	
Others [†]	123 (12.9)	
Religion		
Christianity	866 (90.9)	
Others [‡]	87 (9.1)	
Marital status		
Married	891 (93.4)	
Divorced/separated/widowed	62 (6.6)	
Household size		
≤0	370 (38.8)	Mean±SD: 5±1
≥4	583 (61.2)	Minimum–maximum: 2–13
Number of children		
≤u	682 (71.6)	Mean±SD: 2±1
>2	271 (28.4)	Minimum–maximum: 1–7
Number of school-going children		
0	328 (34.4)	Mean±SD: 1±1
1	289 (30.3)	Minimum–maximum: 0–6
≥8	336 (35.3)	
Academic qualification in years (respondents)		
No formal education	26 (2.7)	Mean±SD: 10.52±3.13
Primary school	107 (11.2)	Minimum–maximum: 0–23
Secondary school	658 (69.0)	
Tertiary education	162 (17.1)	
Academic qualification in years (spouses)		
No formal education	15 (1.6)	Mean±SD: 10.03±3.64
Primary school	79 (8.3)	Minimum–maximum: 0–20
Secondary school	649 (68.1)	
Tertiary education	148 (15.5)	
Passed away/divorced	62 (6.5)	
Occupation of respondents		
Working	338 (35.5)	
Homemakers	615 (64.5)	
Occupation of spouses		
Working	864 (90.7)	
No working	6 (0.6)	
Retired	21 (2.2)	
Passed away/divorced	62 (6.5)	
Monthly household income (MYR)*		
Hardcore poor (<1096)	118 (12.4)	Median (IQR): 1800.0 (1858.0)
Absolute poor (<2131)	453 (47.5)	
Normal (≥2131)	382 (40.1)	
Received government/nongovernmental financial aid		
Yes	304 (31.9)	
No	649 (68.1)	

Contd...

Table 1: Contd...

Variables	n (%)	Statistics
Financial aid from children		
Yes	54 (5.7)	
No	899 (94.3)	
Pension		
Yes	27 (2.8)	
No	926 (97.2)	
Dividend/stock bonus		
Yes	40 (4.2)	
No	913 (95.8)	
Rented property		
Yes	9 (0.9)	
No	944 (99.1)	
Transport ownership		
Yes	869 (91.2)	
No	84 (8.8)	
House ownership		
Own	706 (74.1)	
Rented	247 (25.9)	
Savings		
Yes	562 (59.0)	
No	391 (41.0)	

*MYR: Ringgit Malaysia; 1 USD=MYR 4.394 (as of June 2022), *Others (Malanau, Kayan, Kenyah, Lun Bawang/Murut, Kedayan, Sebob, and Berawan), §Others (Islam and Atheism). IQR: Inter-quartile range, SD: Standard deviation

Table 2: The prevalence of food insecurity among the respondents

Food security status	n (%)
Food secure	549 (57.6)
Food insecure-household	201 (21.1)
Food insecure-individual	118 (12.4)
Child hunger	85 (8.9)

completed secondary school education. More than half of the mothers were homemakers (64.5%), and most of the spouses were employed (90.7%). Almost half (47.5%) and 12.4% of the respondents were categorized as absolute and hardcore poor, respectively. One-third of the respondents received financial assistance from a governmental or nongovernmental organization. Almost all of the households did not generate income via pension, stock bonus, or rented property. About three-fifths of the respondents had savings. The prevalence of food insecurity at the household level, individual level, and child hunger level was 21.1%, 12.4%, and 8.9% accordingly [Table 2].

Independent variables with $P < 0.20$ from the simple logistic regression were included in multiple logistic regression. The final model demonstrated that nine variables were significantly associated with household food insecurity ($P < 0.001$) [Table 3]. A household size of more than four family members was associated with a 57% increase in the risk of experiencing household food insecurity compared to

Table 3: Factors associated with household food insecurity among the indigenous communities residing in Sarawak

Variables	Multiple logistic regression		
	AOR	95% CI	P
Household size			
≤ 4	Reference (1.00)		
> 4	1.57	1.04–2.45	0.048
Monthly household income (MYR)*			
Hardcore poor (<1096)			
Absolute poor (<2131)			
Normal (≥ 2131)			
Received government/nongovernmental financial aid			
Yes	1.94	1.27–2.96	0.002
No	Reference (1.00)		
Savings			
Yes	Reference (1.00)		
No	1.63	1.08–2.46	0.020
Perceived social support	0.73	0.58–0.93	0.011
Optimism	0.91	0.86–0.96	0.001
General perceived self-efficacy	0.88	0.85–0.91	<0.001
Resource loss	1.004	1.001–1.008	0.017
Level of coping strategies			
Absence	Reference (1.00)		
Moderate/high	3.78	2.50–5.72	<0.001

*MYR: Ringgit Malaysia; 1 USD=MYR 4.394 (as of June 2022). AOR: Adjusted odds ratio, CI: Confidence interval

a household size of fewer than four persons (adjusted odds ratio [AOR] =1.57 [1.04–2.45]). Those who were hardcore poor and absolute poor had 12.3 times (AOR = 12.26 [5.07–29.65]) and three times (AOR = 3.01 [1.76–5.15]) more likely to face household food insecurity, respectively, than those with a household income of RM 2131 and above. Mothers who received financial aid from the government or nongovernmental organizations had two times higher odds of being food insecure than the mothers who did not receive such aid (AOR = 1.94 [1.27, 2.96]). No savings was associated with a 63% increase in the risk of household food insecurity when compared to households with savings (AOR = 1.63 [1.08–2.46]).

For each one standard deviation (SD) increase in perceived social support, the risk of food insecurity decreased by 27.0% (AOR = 0.73 [0.58–0.93]). For each one SD increase in optimism (AOR = 0.91 [0.86–0.96]) and general perceived self-efficacy (AOR = 0.88 [0.85–0.91]), the odds of household food insecurity reduced by 9.0% and 12.0% correspondingly. Each ten SD increase in resource loss was associated with a 4.0% rise in the odds of household food insecurity (AOR = 1.004 [1.001–1.008]). The odds of household food insecurity were 3.8 times higher in women who used a moderate/high level of coping strategies

compared to the women who did not employ any coping strategies (AOR = 3.78 [2.50–5.72]).

The value of Nagelkerke R^2 showed that 58.8% of the variances in the dependent variable were explained by this model. The variance inflation factor values range from 1.06 to 2.45, signifying the absence of multicollinearity among the independent variables in the model. All the numerical independent variables were correlated linearly with the logit transformation of the dependent variable. The Hosmer and Lemeshow test ($P = 0.071$) indicated that the dataset fit well with the logistic model. From the classification table, 82.9% of the cases were predicted correctly, while the area under the receiver operating characteristic curve of the model was 0.891.

DISCUSSION

The food insecurity prevalence in the present study is higher compared to the estimates in Malaysia (25.0%), Sabah, and Sarawak (39.2%).^[4] Data were collected in the current study from August 2021 to June 2022, which was during the period of phases 1 to 4 of the COVID-19 National Recovery Plan (NRP). Throughout the phases of NRP, small and medium enterprises were yet to fully recover from the hit brought by COVID-19.^[18] Given that 62.5% of the workforce in Sarawak are paid employees,^[1] financial access to food might be restricted among some of the households (for example, individuals who work in agriculture, mining, and construction) owing to income deduction and difficulties in securing jobs during the NRP period. Moreover, the higher prevalence of food insecurity might be attributable to food price inflation following COVID-19-associated supply chain disruptions and the occurrence of the Russia–Ukraine war in which the price of food increased by 2% to 30% in Malaysia from January 2022 to May 2022.^[19]

An increase in the size of household significantly elevated the risk of food insecurity among Indigenous women which were in good agreement with another study.^[20] Household size impacted the food security of a family by affecting the allocation of limited resources. This problem stems from the reliance of household income distribution on household size.^[20] In the same vein, income was inversely related to food insecurity among the Indigenous communities, aligning with results from a previous study.^[21] High-income families can purchase more food as accessibility to food supply was increased imputable to greater resources, while a better household income equips the family members with a better diet and capacity to tolerate unanticipated shocks such as disability and fortuitous unemployment.^[21]

The Indigenous households who were financial recipients from various agencies had higher odds of experiencing food insecurity. This finding corroborates an earlier report.^[22] Within the context of Malaysia, it is not particularly surprising given the fact that the target group for several welfare financial aid programmes, such as Household Living Aid [*Bantuan Sara Hidup* (BSH)], *Sarawakku Sayang* Special Assistance

[*Bantuan Khas Sarawakku Sayang* (BKSS)], cash aid [*Bantuan Keluarga Malaysia* (BKM)], and e-kasih are reserved for the financially under-resourced and low-income households.^[21–24] In this situation, the low-income groups denote households that are categorized as B40 (the group of B40 indicates the bottom 40% of the low-income group in Malaysia) with household income below RM 4850 in Malaysia and below RM 3720 in Sarawak.^[5] In other words, financial aid was offered to Indigenous households that face food insecurity, mainly because low-income households were often at risk of food insecurity. Hence, the result suggests that the provision of financial aid was minimal and insufficient to overcome the food insecurity problem thoroughly. Another point to highlight is that the absence of savings displayed a significantly positive link with food insecurity among the respondents in this study when compared to households that had savings. This substantiates the previous finding in the literature.^[25] The households that possess savings showed signs of a better shield from food insecurity when they encountered income depletion or financial shock.^[25]

Indigenous households with higher perceived social support were at lower risk of food insecurity compared to the households with lower perceived social support. This result corroborates an earlier study, whereby households with high perceived social support can rely on their family members or friends to diminish their disquietude about future food insufficiency.^[26] In this regard, they might be more confident in searching for ways to enhance food security status such as investing in education and businesses.^[26] As observed in this study, more optimistic Indigenous households were less likely to face food insecurity compared to their less optimistic counterparts. This finding resonates with results from a prior study.^[27] Individuals with higher optimism tend to adopt healthy dietary behavior, such as higher consumption of fruits and vegetables, as they are more health conscious, believe in future benefits of healthy food choices, and are proactive in making efforts to lower health risks compared to those with low optimism.

A higher level of general perceived self-efficacy among Indigenous women was found to be protective against household food insecurity compared to women with lower perceived self-efficacy, which concurs well with a previous study.^[28] Self-efficacy signifies one's confidence in his or her ability to organize and execute actions that lead to intended outcomes. Hence, households with higher self-efficacy were thus related to the intention and practices of healthier behavior germane to food selection, cooking approaches, and a lower intake of carbohydrates and fats which lead to food security.^[29]

In contrast to the findings reported by Camel,^[27] resource loss was positively correlated with food insecurity. Depletion in condition resources such as employment and energy resources such as money was associated with the food security status of a household as employment aid in variegating and raising households' income. Besides that, this study indicated that

households that adopted coping strategies were more likely to face food insecurity when compared to households that did not practice coping strategies. This aligns with an earlier study.^[30] Coping strategies served as the indicators of sufficiency and vulnerability in the investigated households. Households that practiced a higher frequency or more severe coping strategies were more susceptible to food insecurity and poverty.

This study covered both objective and perceived measures in assessing the food environmental characteristics in association with household food insecurity. Nonetheless, the findings of this study need to be interpreted with caution while considering the limitations. The data collection was conducted during the National Recovery Phase of COVID-19 in which the food security prevalence might not reflect the usual food security condition of the Indigenous communities. Second, on the ground of cross-sectional study design, changes in the food security status over time could not be seen and the deduction of causality, as well as the directionality between independent variables and household food insecurity among the Indigenous communities, could not be established. Third, data collection was executed via face-to-face interviews using an interviewer-administered questionnaire, which may result in interviewer bias and social desirability bias.

CONCLUSION

Nearly half of the Indigenous households were experiencing food insecurity in Sarawak which warrants the attention of the policymakers. The risk of food security was higher among households with increasing size and a lower monthly household income, recipients of financial assistance, and absence of savings. The Indigenous households with higher perceived social support, optimism, and perceived self-efficacy were more likely to be protected against household food insecurity relative to those with a lower level of similar psychological resources. On the other hand, an increase in resource loss and employment of coping strategies were found to be positively associated with household food insecurity. Hence, strategies devised to eradicate poverty and increase income-generating opportunities among the Indigenous communities are indispensable (for examples, promotion of entrepreneurship, offering of microcredit programmes and provision of financial education). Intervention programs inclusive of perceived social support, optimism, and general perceived self-efficacy are advocated among households experiencing food insecurity or resource loss. Future studies such as qualitative research on the current topic would supplement the findings from this study by gaining more insights into the various psychological resources and coping strategies.

Acknowledgments

The authors would like to express deep gratitude to the Ministry of Higher Education, Malaysia, for the grant that allows us to accomplish this research.

We wish to express sincere appreciation to the district health offices, heads of villages/longhouses, research assistants, and

all the respondents involved in this study for their support and participation.

Financial support and sponsorship

The funding support for this research project is provided by the Ministry of Higher Education, Malaysia, and the Fundamental Research Grant Scheme (FRGS) (grant reference code: FRGS/1/2020/SKK06/UNIMAS/03/1).

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Department of Statistics Malaysia [DOSM]. Pocket Stats Negeri Sarawak ST2 2022. Putajaya, Malaysia: DOSM; 2022.
2. Bong MW, Karim NA, Noor IM. Nutritional status and complementary feeding among Penan infants and young children in rural Sarawak, Malaysia. *Malays J Nutr* 2018;24:539-50.
3. Department of Statistics Malaysia [DOSM]. Household Income and Basic Amenities Survey Report 2019. Putajaya, Malaysia: DOSM; 2020.
4. Ahmad MH, Selamat R, Salleh R, Majid NL, Zainuddin AA, Bakar WA, *et al.* Food insecurity situation in Malaysia: Findings from Malaysian adult nutrition survey (MANS) 2014. *Malaysian J Public Health Med* 2020;20:167-74.
5. Department of Statistics Malaysia [DOSM]. Household Expenditure Survey Report by State and Administrative District: Sarawak 2019. Putrajaya, Malaysia: DOSM; 2020.
6. Shim JE, Kim SJ, Kim K, Hwang JY. Spatial disparity in food environment and household economic resources related to food insecurity in rural Korean Households with older adults. *Nutrients* 2018;10:1514.
7. U.S. Department of Labor, Bureau of Labor Statistics. American Time Use Survey Questionnaire 2011. US Bureau of Labor Statistics; 2012.
8. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess* 1988;52:30-41.
9. Ng CG, Amer Siddiq AN, Aida SA, Zainal NZ, Koh OH. Validation of the Malay version of the multidimensional scale of perceived social support (MSPSS-M) among a group of medical students in faculty of medicine, university Malaya. *Asian J Psychiatr* 2010;3:3-6.
10. Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *J Pers Soc Psychol* 1994;67:1063-78.
11. Abdullah MF, Hami R, Appalanaido GK, Azman N, Shariff NM, Sharif SS. Validation of the Malay version of the life orientation test-revised (LOT-R) among Malaysian cancer patients. *J Biomed Clin Sci (JBSCS)* 2018;2:8-13.
12. Schwarzer R, Jerusalem M. Generalized self-efficacy scale. In: Weinman J, Wright S, Johnston M, editors. *Measures in Health Psychology: A User's Portfolio: Causal and Control Beliefs*. Windsor, UK: NFER-NELSON; 1995.
13. Dev RD, Kamalden TF, Geok SK, Abdullah MC, Ayub AF, Ismail IA. Emotional intelligence, spiritual intelligence, self-efficacy and health behaviors: Implications for quality health. *Int J Acad Res Bus Soc Sci* 2018;8:794-809.
14. Hobfoll SE. *The Ecology of Stress*. New York, NY: Hemisphere Publishing Corporation; 1988.
15. Law LS. Development of the Malaysian Coping Strategy Scale to Measure Household Food Insecurity among the Orang Asli. [Dissertation]. Serdang, Malaysia: Universiti Putra Malaysia; 2018.
16. Radimer KL, Olson CM, Campbell CC. Development of indicators to assess hunger. *J Nutr* 1990;120 Suppl 11:1544-8.
17. Zalilah MS, Tham BL. Food security and child nutritional status among Orang Asli (Temuan) households in Hulu Langat, Selangor. *Med J Malaysia* 2002;57:36-50.
18. Kuriakose S, Ting KO, Hebous S, Tiew H. Firms' Recovery from COVID-19 in Malaysia: Results from the 4th Round of COVID-19 Business Pulse Survey. Washington, DC: World Bank; 2022.

19. The World Bank. Food Security. Available from: <https://www.thedocs.worldbank.org/en/doc/4cda3ceaa5a01b7590e7105fd5e6ca4f0320012022/original/Food-Security-update-LXVI-July-15-2022.pdf>. [Last accessed on 2023 Apr 08, Last update on 2022 Jul 15].
20. Bashir MK, Schilizzi S. Determinants of rural household food security: A comparative analysis of African and Asian studies. *J Sci Food Agric* 2013;93:1251-8.
21. Temple JB, Russell J. Food insecurity among older aboriginal and Torres Strait Islanders. *Int J Environ Res Public Health* 2018;15:1766.
22. Temple JB, Booth S, Pollard CM. Social assistance payments and food insecurity in Australia: Evidence from the household expenditure survey. *Int J Environ Res Public Health* 2019;16:455.
23. Prime's Minister Office, Malaysia. Government's Aid for the People: Bantuan Sara Hidup (Household Living Aid); 2022. Available from: <https://www.pmo.gov.my/governments-aid-for-the-people/>. [Last accessed on 2023 Apr 08].
24. Sarawak Government. Soalan Lazim Bantuan Khas Sarawakku Sayang; 2022. Available from: https://sarawak.gov.my/web/home/article_view/233/325/. [Last accessed on 2023 Apr 08].
25. Birkenmaier J, Huang J, Kim Y. Food insecurity and financial access during an economic recession: Evidence from the 2008 SIPP. *J Poverty* 2016;20:194-213.
26. Miller ME. Food Security and Social Support: Exploring Relationships between Social Resources and Access to Adequate Food [Dissertation]. Canada: McGill University; 2015.
27. Camel SP. Influence of Resources, Resource Loss, and Coping Response on Food Management Practices and Food Security [Dissertation]. Hattiesburg: The University of Southern Mississippi; 2014.
28. Martin KS, Colantonio AG, Picho K, Boyle KE. Self-efficacy is associated with increased food security in novel food pantry program. *SSM Popul Health* 2016;2:62-7.
29. Bartfield JK, Ojehomon N, Huskey KW, Davis RB, Wee CC. Preferences and self-efficacy for diet modification among primary care patients. *Obesity (Silver Spring)* 2010;18:430-2.
30. 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;12:e0171411.