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Patterns and Challenges of Food Access among Households in Baling District, Malaysia

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ABSTRACT

This research aims to ascertain the pattern and challenges of food access among the communities in Baling, Kedah, Malaysia. This study used descriptive analysis to investigate the degree of food security experienced by households in Baling, Kedah's rural and urban districts. The income level, the proportion of household spending on food, the kinds and amounts of social protection benefits received, the perception of income and food prices, and the coping mechanisms used are some of the potential factors that influence food security. The research findings present an understanding of food access among communities of different household income and population density. Although there are still pockets of lack in food security in Baling's urban and rural areas, the survey found that most households believe they have food security, even when their household income is low. Additionally, the economic and social indicator items indicated that certain coping mechanisms are more frequently used than others, indicating that economic and social accessibility does have some influence on the household's food choices. Thus, the Baling case of food security and accessibility summed up those aspects of physical, economic, and social access in a way that may differ from earlier research, indicating that the quality of food selection should be examined rather than the amount of food accessed.

1. Introduction

Since food is a basic human requirement, it should always be available and is essential to the proper operation of the human body. Food security must be prioritized, as the ongoing increase in population and consumption suggests that global food demand will continue to rise for at least the next 40 years [1]. Food security is defined as the condition in which all individuals, at all times, have physical and economic access to adequate, safe, and nutritious food that satisfies their dietary requirements and preferences for an active and healthy lifestyle, as established during the 1996 World Food Summit [2]. Food security is a complex multi-faceted phenomenon that necessitates a

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comprehensive evaluation for accurate measurement [3]. Measuring food security is vital since it serves as a fundamental instrument for formulating and assessing policies.

Similar to global context, ensuring food security will be a crucial focus at the national level as well. Malaysia is witnessing a growing trend in the level of food prices in terms of economic and social accessibility [4]. Food is one of the main items in household expenditure. With the rising of price level, real income of household is decreasing and may affect the level of food security of people, especially in the bottom 40 percent and middle 40 percent income category groups. This viewpoint is further reinforced with the release of the Consumer Price Index (CPI) report for the month of February 2024 by DOSM [4], in which Malaysia's CPI was recorded at 153.9 points, above the overall CPI of 132.1.

The Intelligence Unit of the Economist created the Global Food Security Index (GFSI), another widely used instrument for gauging food security. In order to address the issue of food security threats in nations, regions, and the world at large, the GFSI outlines a framework for comprehending the reasons for lack in food security in 113 countries. Overall, Malaysia ranked at 41 in 2017 of the GFSI (score 66.8 for Food Security Environment), the same position as in 2016 (score 66.3 for Food Security Environment). However, in terms of score, Malaysia became one of the most deteriorated countries when compared between the year 2017 and 2016 [5]. For Malaysia's GFSI standing in the year 2022, Malaysia is ranked at 41 with a score of 69.9 for Food Security Environment, which is a declined position from rank 39 in 2021 with a score of 70.1. From the year 2012 to 2022, GFSI Food Security Environment and three of the sub-components (Affordability, Quality and Safety and Sustainability and Adaptation) shows an increasing trend except for the sub-component of Availability. However, it is important to recall that these indicators are global monitoring indicators which portray Malaysia's profile at a macro level, not at the household level. Having stated that, at the macro level, some sub-components have Weak (40-54.9) and Very Weak (0-39.9) score. Under the overall Food Security Environment, sub-components that have a Weak score are Sustainability and Adaptation with a score of 53.7, while Availability sub-component has a Moderate score of 59.5. Conversely, the sub-component of Quality and Safety has a Good score of 74.7 and the Affordability sub-component has a Very Good Score of 87.0.

Generally, at the global indicators level, Malaysia is currently showing good progress in the FAO Accessibility indicators given that it is exhibiting enhancement in the GDP per capita (purchasing parity equivalent), depth of food deficit, as well as a low percentage in prevalence of undernourishment [6]. However, the prevalence of severe lack in food security in the total population indicator used in the Sustainable Development Goals 2016 reporting showed that there is a significant level of severe lack in food security in Malaysia, which affects approximately 8 million people [7]. Added to that figure are approximately less than 1.6 million people who suffer from undernourishment. There is also a need to further investigate the income distribution and spending power of the population that may affect food security at the household level, and to assess the difference between those in the rural and urban areas. Therefore, the objective of this study to investigate the level of lack in food security specifically on the physical, economic and social accessibility in Baling district of Kedah.

This study examines the level of food security at the household level in the rural and urban areas of Baling district, which in 2022, has the lowest median of household disposable income in Kedah [8] at RM3,130, whereby Malaysia's median household disposable income is at RM5,413; and the lowest mean of household disposable income in Kedah at RM3,823 in 2022, in which Malaysia's mean household disposable income is at RM7,111. Also, according to DOSM [8], in 2022, the total number of households in Baling is 18,900 (total number of households in Kedah is 534,200), which 4,200 is in the Top 20% (out of 106,800 in Kedah), 6,300 in the Middle 40% (out of

213,700 in Kedah) and 9,500 in the Bottom 20% (out of 213,700 in Kedah). The income threshold for Bottom 40% is for disposable income less than RM3,250; threshold for Middle 40% is for disposable income equal to/between RM3,250 to RM6,479 and for top 20%, the threshold disposable income is equal to or more than RM6,480.

2. Literature Review

There are a few theoretical approaches to food security, starting with the more traditional approaches up to the more recent perspective. These theoretical approaches can be linked to several sociological theories that combined economic, social and political contemplations, taking into consideration the interdisciplinary nature of the food security problem itself. Among the theoretical approaches recognized are the Food Availability approach, the Income-based approach, the Basic Needs approach, the Entitlement approach, the Sustainable Livelihood approach and the Capability approach. Based on these theoretical approaches, this study acquaints with the Capability approach. This approach relates that the sources of variations for the relationship between resources owned and the well-being of the owner depends on personal and social factors such as personal heterogeneities, variations in social climate, differences in relational perspectives, distribution within the families and environmental diversities [9]. These are limited influences on food security, specifically pertinent when dealing with food insecurities of people with disadvantaged or socioeconomic groups in adverse conditions. This attribute of the Capability approach suites very much with the definitions of food security as accepted globally during the World Food Summit 1996, where the components of Availability, Accessibility and Utilization are all included.

The sociological theories that are related to this Capability approach are the Urbanization theory and Social Stratification theory, where both looked at the determinants that can cause inequality within the population [10]. The Urbanization theory explained the differences between the urban and the rural areas, where development is more favorable in the urban area, thus urban dwellers have more capabilities than the rural occupants. In addition, the Social Stratification theory identified sociological considerations in inequality within the population such as gender, race and class which can create barriers in food accessibility and utilization. With regards to the relationship between demographic and socioeconomic factors and food security, a cross-sectional study in rural low-income communities in Malaysia was investigated by Shariff and Khor [11], which concluded that more of the food insecure household had larger household size and more children, lived below the poverty line, and comprised of housewives and school-going children. Households resorted to other coping strategies such as borrowing money to buy food, reducing the number of meals and receiving food from others to lessen the impact of lack in food security.

Similarly, Ahmed and Siwar [12] who did a comprehensive review of literature with regards to the issues and challenges of food security in Malaysia, discovered that food security is significantly correlated with the level of income in Malaysia, whereby more insecure households are those who live below the poverty line. Socioeconomic variables that also affect the level of food security include the size of household, the level of education, the number of school-going children and mothers who are housewives. Besides the findings on the dimension of Accessibility, the study concluded that on the dimension of Availability, Malaysia's challenges include achieving the self-sufficiency level requirements and reducing the importation of food, thus the need for effective policies and strategies in the country. On the relationship between prices, availability as well as quality of fruit and vegetables with the socioeconomic status of the suburbs, Crawford *et al.,* [13] assessed the cost of 46 foods, selections of various range of fresh fruit and vegetables and their

quality and concluded that the relationship varied significantly. Based on the analysis, it was found that the food basket was cheaper in low socioeconomic suburbs compared to the high socioeconomic suburbs. However, in terms of variety and quality, the high socioeconomic suburbs have better fruits and vegetables.

Additionally, research by Bakeri *et al.,* [14] demonstrates that the lack in food security in disadvantaged populations is associated with housing status (ownership vs. rental), household income, and food and drink consumption. As for higher-income households and the risks factor of them experiencing the lack in food security, the households in Canada who are single-parents, lower education level, have chronic disease, renters, received unemployment benefits and have smoking and gambling problems tend to experience higher level of food insecurity [15]. Among the proposed policies and programs that could be done include providing access to short-term income support and treatment for addictions. In 2013, typical households which were food-secured in the United States used up to 30 percent more food as compared to household which are of the same size and composition but are food-insecure [16]. The study involved 62 percent of all food insecure households who took part in one or more programs for food and nutrition assistance prior to the survey. This argument is supported by Foley *et al.,* [17], which confirmed that economic disadvantage is formidably linked to food insecurity. The level of food insecurity is likely to be aggravated by the increasing food cost. As food insecurity is correlated with poor health such as chronic disease and obesity, this matter is a concern and requires all-inclusive action in addressing the root cause of this problem. The study by Frongillo *et al.,* [18] in 147 countries through the 2014 Gallup World Poll found that food insecurity was correlated negatively and strongly with subjective well-being within all classes of country income as outlined by the World Bank namely low income, lower-middle income, upper-middle income and high income, with high-income country experiencing higher degree of differences. Food insecurity was also correlated to three living conditions measures specifically income of household, employment and shelter and housing. The study had a sample of 132,618 for the continuous daily experience measure while 122,137 for the life evaluation measure categorized as thriving, struggling and suffering.

3. Methodology

The sample frame for this study is the list of households in Baling, which could not be obtained as a primary source from DOSM since the data are classified Government data. However, DOSM provided the specific proposed sampling location based on systematic random sampling from the primary data source that DOSM has i.e. the population census and the 2016 Household Expenditure and Income Survey. According to data from DOSM [19], the population size of households in Baling is 31,044 therefore the minimum sample size for the study setting with a 90% confidence interval and 8% degrees of freedom is 106 households, aggregately from the urban and rural areas of Baling. The actual sampling done is 124 households. The lowest confidence interval is selected due to the constraint in operational research cost to cover the wide dispersion of the sampling size in the area or district.

The sampling from the district was further divided into urban and rural using stratified sampling based on the definition used by DOSM [20]. The number of respondents interviewed was equally divided between the rural and urban setting (62 samples each). The categorization criteria of urban and rural based on the number of populations is as in Table 1. For analysis purpose, the strata are combined as urban for metropolitan and big city categories, and rural for small city and rural categories. In the case of Baling, the location identified as rural and urban as per categories used by DOSM as in Table 2.

Table 1
Categories of strata [20]

Category	Strata	No of population
High Density Population	Metropolitan	More than 75,000
	Big city	10,000 – 74,999
Low Density Population	Small city	1,000 – 9,999
	Rural	Other areas

Table 2
Categories of strata and location in Baling

Category	Location in Baling
High Density Population	Pasar Besar Kuala Ketil
	Taman Bersatu
	Kg. Pokok Sena
	Kg. Lubok Pedati
	Kg. Charok Bemban
	Kg. Tanah Periuk
	Kg. Rambong
	Taman Tanjung Puteri
Low Density Population	Kg. Charok Beras
	Kg. Parit Panjang
	Kg. Siput
	Kg. Kuala Merah

A questionnaire is developed, with inputs from instruments such as Household Food Insecurity Access Scale and instrument from a study by Maxwell and Caldwell [21]. A completed instrument was subsequently pre-tested among 30 head of households in the district of Federal Territory of Putrajaya. The final instrument which consists of four main parts (Table 3) was then employed on the sampling frame in Baling, Kedah. The Cronbach Alpha value of 0.709 was obtained, which exceeded the value of 0.700 as recommended by Nunally [22].

Table 3
The instrument

Parts	Component	No. of Questions
1. Demographic	General attributes such as gender, members in the household, religion, race, marital status, education level, occupation, income level, financial loan commitment, percentage of household expenditure on food, retail food outlet preferred, types and amount of social protection benefits received	12
2. Food insecurity	A. Anxiety and uncertainty about the household food supply B. Insufficient quality C. Insufficient food intake and its physical consequences	9
3. Physical Access	A. Perceptions of the physical food accessibility environment in the neighborhood	7
4. Economic and Social Access	A. Perceived economic and social influences in household's capability to access food B. Perceived social protection benefits C. Coping strategies	20

For Part 1 (demographic), the respondents, which are the head of households, were given combinations of nominal and ordinal questions while for the answers to Part 2, Part 3 and Part 4, they were measured using a seven Likert Scale option (Scale 1 representing Strongly Disagree to Scale 7 representing Strongly Agree).

Findings is based on primary data, which enquire among others, the gender of the head of household, members in the household, religion, race, marital status, education level, occupation, income level, financial loan commitment, percentage of household expenditure on food, types and amount of social protection benefits received, perception on level of income and food prices, skills and knowledge required for additional income and coping strategies adopted. To measure the level of food security, the aspects of anxiety and uncertainty about the household food supply, insufficient quality and insufficient intake were measured. The answers to the questionnaires were measured using a Likert Scale of 1-7 and were analyzed using quantitative data analysis software before the research findings are prepared.

The data collection process was implemented in five days in April 2019 and was assisted by enumerators who were trained on the instrument before the data collection process started. The data collected were then analyzed using SPSS before the research findings were concluded. Descriptive analyses were run on data such as frequency, mean, percentage and standard deviation. The individual respondent score for Part 2 (Food Insecurity) was divided into three categories namely, Low (score of 9 to 27), Moderate (score of 27.1 to 36) and High (score of 36.1 to 63). For Part 3 (Physical Access) and Part 4 (Economic and Social Access), the individual respondent's scores were divided into 3 categories as well, namely, Strongly Disagree/Disagree (score of 1 to 3), Fair (score of 4) and Strongly Agree/Agree (score of 5 to 7).

Similarly, the overall mean score of patterns and challenges of the components of Food Insecurity, Physical Access and Economic and Social Access range from 1.00 to 7.00, yielding an interval of 6. Since the study aims to categorize the mean scores into three categories, the range were set at Low (mean score range 1.00 to 3.00), Moderate (mean score range 3.01 to 5.00) and High (mean score range 5.01 to 7.00).

4. Results

4.1 Demographic Data

Table 4 represents the respondents' demographic data from the study. It is observed that majority of the head of households are male, and majority are in the age group of 40 to 59 years old. Most of the households consist of 1 to 5 members, and there is 1.6 percent of the households which have 11 to 15 members living together. A total of 53.2 percent of the head of households have a secondary level of education, and 30.6 percent have a primary level of education.

From the economic and social-related data collected, it is also reflected that 34.7 percent of the head of households has an income below RM500 per month, while 29.8 percent has an income between RM501 and RM1,000, and 25.8 percent has an income between RM1,001 to RM2,000. Another distinct attribute of the Baling respondents is that 78.2 percent have no current financial debt, which is a large majority of the respondents. In terms of mode of transportation used by households including for food access, 96.0 percent use their own transport and only 4.0 percent use public transportation as their mode. Another noticeable attribute of the respondents is 83.1 percent have own ownership of their housing, and a majority prefer to access to government health services (89.5 percent) compared to private health services (10.5 percent). In terms of participation in community activities, small majority of the respondents (39.5 percent) are moderately involved, while 23.4 percent do not get involved in any community activities at their residency.

Table 4
Respondents' demographic data (N=124)

Household (HH) Attributes	Frequency	Percentage	Mean
Gender			
Male	104	83.9	
Female	20	16.1	
Age of head of HH (years)			53.59
Below 20	1	0.8	
20-39	20	16.2	
40-59	63	51.2	
60-79	38	30.9	
80-99	2	1.6	
Number of HH members			4.48
1 – 5 people	84	67.7	
6 – 10 people	38	30.6	
11 – 15 people	2	1.6	
Marital Status			
Single	7	5.6	
Married	102	82.3	
Widow/Widower/Divorced	15	12.1	
Level of Education			
Tertiary	10	8.1	
Secondary	66	53.2	
Primary	38	30.6	
Elementary/Non-formal	10	8.1	
Head of HH income			RM1,128.71
RM0 – RM500	43	34.7	
RM501 – RM1,000	37	29.8	
RM1,001 – RM2,000	32	25.8	
RM2,001 – RM3,000	7	5.6	
RM3,001 – RM4,000	1	0.8	
RM4,001 – RM 5,000	3	2.4	
Above RM5,000	1	0.8	
Current Financial Debt			
Housing	9	7.3	
Vehicle	9	7.3	
Education	1	0.8	
Personal	1	0.8	
Others	7	5.6	
None	97	78.2	
Types of transportation used			
Own transport	119	96.0	
Public transport	5	4.0	
Types of housing ownership			
Own housing	103	83.1	
Rent	10	8.1	
Without payment/rent	9	7.3	
Others	2	1.6	
Access to health services			
Government	111	89.5	
Private	13	10.5	
Participation in community activities			
Very active	20	16.1	
Moderate	49	39.5	
Little	26	21.0	
None	29	23.4	

Household (HH) Attributes	Frequency	Percentage	Mean
Percentage of food expenditure (as percentage of total income)			
Less than 30%	20	16.1	
30 – 50%	76	61.3	
More than 50%	28	22.6	
Main factor for food selection			
Nutritional value	75	60.5	
Price	45	36.3	
Ease of access	3	2.4	
Taste	1	0.8	
Main food retail outlet frequently visited			
Supercenter	3	2.4	
Supermarket	51	41.1	
Grocery store	66	53.2	
Convenience store	3	2.4	
Restaurant/food court	1	0.8	

With regards to data related to food access, 61.3 percent spent 30 to 50 percent of their income on food expenditure, while 22.6 percent spent more than 50 percent of their income on food. 60.5 percent stated that their main factor in food selection is the nutritional values of the food, while 36.3 percent mentioned that their main food selection factor is price. On their first-choice access to food retail outlet, more than half of the respondents (53.2 percent) got their food supply from grocery stores, and 41.1 percent got their supplies from supermarket.

4.2 Patterns and Challenges of Food Insecurity

As a whole, the aggregate level of food insecurity of households in the Baling district, and the comparison between high density population areas and low-density population area is as in Table 5 below. From the findings, it can be summarized that although majority of the households in Baling has low level of food insecurity with a mean of 24.22 points (60.5%), there still exists households with high level of food insecurity which is 19.4% or an estimation of 5,898 households in Baling. There are more households with high level of food insecurity in the low-density population ('rural') areas at 30.6% compared to the high-density population ('urban') areas at 8.1%. The very high standard deviation signifies that the scores are vastly wide ranged.

Table 5
Patterns of food insecurity in Baling, Kedah

	Overall	High Density Population	Low Density Population
Low (9 – 27 points)	60.5%	75.8%	45.2%
Moderate (27.1 – 36 points)	20.1%	16.1%	24.2%
High (36.1 – 63 points)	19.4%	8.1%	30.6%
Mean	24.22	20.16	28.27
Standard Deviation	13.49	11.45	14.22
Minimum	9	9	9
Maximum	59	59	57

One of the possible drivers for scenario in which there is a higher level of food insecurity in the low density population can be explained by Smith and Morton [23] who suggested that in rural areas, interconnected factors of environmental, personal, and behavioral have significant roles in determining dietary behavior and the ensuing outcomes of health, among others in "food deserts" (an area where there is inadequate access to healthy food such as fresh fruit, vegetables, and other

whole foods, and associated with low socioeconomic status). Most of the studies on the environmental role in the local food environment emphasized the objective of decreasing and eradicating the disparities in health, comprising the disparities as well in racial and income [24]. As a result, the studies on the ability of people in ensuring the access to adequate quantity of food consumed, also emphasized on purchasing quality food that is healthy, nutritious and affordable. Spatial factors involving the differences between rural and urban areas and its correlation with access to healthy food are increasingly gaining focus.

Table 6
Challenges of food insecurity in Baling, Kedah

No	Statements	Mean	Standard Deviation
A. Anxiety and uncertainty about the household food supply			
1	Worry household would not have enough food	3.78	2.514
2	Fear household will experience hunger	3.73	2.484
B. Insufficient quality			
3	Frequently not able to eat food preferred	3.31	2.049
4	Has to limit types of food consumed	2.98	1.988
C. Insufficient food intake and its physical consequences			
5	Reduce amount of food compared to requirement	2.68	1.859
6	Reduce the number of meals in a day	2.63	2.010
7	Frequently has no food supply at all	2.12	1.846
8	Household goes to sleep at night feeling hungry	1.66	1.414
9	Household go a whole day feeling hungry	1.33	1.026

In terms of components that represent challenges of food insecurity, it is observed from Table 6 that the mean scores recorded for the component of anxiety and uncertainty about the household supply is higher than the other two components of food insecurity namely insufficient quality and insufficient food intake and its physical consequences. Such results reveal that the respondents felt that the main problems faced are worrying about not having enough food and fearing that their household will experience hunger. It also reveals that the lowest number of respondents go a whole day feeling hungry, go to sleep at night feeling hungry, and frequently has no food supply at all. However, the results also show that these least number of respondents still subsists in the community and needs to be identified and connected with for further interventions.

4.3 Patterns and Challenges of Physical Food Access

On challenges of physical food access in Baling, Table 7 shows that respondents are of the opinion that raw food items are easily accessible, are of high quality and are easier to access than fast food or cooked food. On the easiness to purchase fast food, the difficulty to go to grocery store to buy food, and the presence of agricultural activities in the community which makes it easier to get raw food items, the mean score is moderate (approximately divided between those who agree and disagree). As for the prevalence of food online shopping, the mean score is low, which may indicate that the respondents in Baling are not accustomed to access food online.

The pattern of physical access, especially on the easiness to access raw food items, and of high quality is in contrast with Rossimel *et al.,* [25], whereby the study in Melbourne discovered that people who are living in the outer suburbs of Melbourne have poorer access to healthy food. Comparably to a study by Hyman, Larrea, and Farrow [26] in Bangladesh, Vietnam, Mexico, Sri Lanka, Ecuador, Kenya and Malawi, it was concluded that outcomes of food security and poverty in small areas across countries can be described by significant factors of accessibility and distances to

market and services. As a similar correlation comparison to a study of a Malaysian context, a study by Masron, Abdul Gapor and Ismail [27] in the district of Pendang, Kedah in three of its sub-district namely Mukim Ayer Putih, Mukim Bukit Raya dan Mukim Guar Kepayang, this spatial pattern study showed where the pockets of food insecurity were, with majority of the respondent's food necessity were met although not the types of food that they wished to consume due to affordability reason.

Table 7
Challenges of physical food access in Baling, Kedah

No	Statements	Mean	Standard Deviation
1	Large selection of raw food items is easily accessible in the neighborhood	6.55	0.905
2	Raw food items in the neighborhood are of high quality	6.31	0.932
3	Easy to purchase fast food	3.99	2.207
4	Difficult to go to grocery store to buy food	3.29	2.492
5	Easier to get raw food items as compared to fast food or cooked food	6.07	1.499
6	Agricultural activities in community makes it easier to get raw food items	3.42	2.352
7	Often access food through online shopping	1.35	1.238

It is evidenced that there are challenges in measuring the conceivable spatial access to food resources in the rural areas [28]. The challenges include defining the food environment in the rural areas while acknowledging the changing of market factors, describing to differentiate the features of food stores and food-service areas which may look similar, and establishing the coordinates of location for food stores and food services areas. This comes to the next point, which is the importance of retailing environment of food commerce.

To illustrate this, in the urban and rural setting, the retail food environments had different impacts on fruits and vegetable intake [29]. Hence, in the effort to improve the intake of fruits and vegetables, interventions should consider the importance of distance to the retail food environment in the rural areas [29]. This is further reinforced by a study by Liese *et al.,* [30] in a county in South Carolina, USA, whereby in the rural environment that has been selected, stores which are offering lower cost and healthier food were outnumbered by convenience stores which offer less amount of healthier food. In contrast, another study with regards to food desert found that, where there is no supermarket, access to healthy food is restricted [31], which may include rural areas. This portrays a hint of challenges confronting the acquisition of healthful and inexpensive food in the different food retailing settings. For the respondents in Baling, it reveals that the access to raw food items that are of high quality is not a major concern, albeit food retail settings in the district.

4.4 Patterns and Challenges of Economic and Social Food Access

To delve further into the economic and social accessibility of the food insecurity level, Table 8 below indicates some indicator items of the component in Baling, Kedah. The results confirmed that the majority of the households felt that their household income is sufficient to access food. However, the majority of them too, have resorted to a coping strategy of buying products with fewer prices. They are also more likely to resort to getting their supply from gathering food around the house, hunting or harvesting immature crops, as compared to other coping strategies.

Surprisingly, households in Baling have a common impartial fair opinion, with mean score ranges from 4.01 to 4.89 (neither agreeable nor disagreeable) on a number of indicators. Indicators in this category are related to knowledge and skills needed to increase income, the effect of cost of living to food access, prices of raw, processed and cooked food items as well as indicators

pertaining to sufficiency of financial assistance received and its effect on quantity and quality of food accessed. In terms of influences of culture and religion on food consumption behavior, most of the households agreed that culture and religion do gave influence on food consumption behavior and disagreed that the influence of both factors are diminishing in their households. It is also important to note that from the analysis, most of the standard deviation score is above 1, indicating that data are spread out over a wider range of values to the mean.

Table 8
Challenges of economic and social access in Baling, Kedah

No	Statements	Mean	Standard Deviation
1	Household income is sufficient to access food	5.61	1.695
2	Knowledge and skills adequate if needed to increase income	4.86	2.10
3	Cost of living lessen ability to access food	4.31	1.831
4	Prices of raw food items are reasonable	4.14	1.841
5	Prices of processed foods are reasonable	4.01	1.876
6	Prices of cooked foods in food retail shop are reasonable	4.23	1.979
7	Culture influence food consumption behavior	5.55	1.736
8	Influence of culture on food consumption is diminishing	2.34	1.607
9	Religious factors influence food consumption behavior	6.73	0.966
10	Influence of religion on food consumption is diminishing	1.64	1.553
11	Financial assistance received is sufficient	4.05	1.949
12	Financial assistance received help increase food quantity in household	4.80	1.899
13	Financial assistance received help increase food quality in household	4.89	2.016
Coping Strategies			
14	Switch to cheaper food	5.30	1.739
15	Ask for donations/alms	1.35	1.090
16	Borrow food or buy food using credit	1.29	1.018
17	Gather food around house, hunt or harvest immature crops	3.27	2.421
18	Send household member elsewhere	1.20	0.865
19	Limit food consumption of adult	1.56	1.461
20	Working members eat enough food but non-working members limit food intake	1.22	0.992

Among the key points on the impact of economic and social accessibility towards food insecurity is, there is a positive correlation between incomes of the household with the level of food insecurity. Sheng *et al.,* [32] studied the Household Expenditure Survey of 2004/2005 of Malaysia, with the objective of analyzing the overall food demand system using Linear Approximate Almost Ideal Demand System. The study inferred that the demand of all food responds positively to income, with the price of fruits, vegetables, meat, sugar and beverage as well as other food being elastic, thus following the law of demand. As Malaysia moves up the economy and the income of Malaysian grows, the pattern of food consumption also moves up towards higher value food such as meat, and functional food such as vegetables and fruits. In line with this, Tarasuk [33] stated that household food insecurity is connected inseparably with financial security. His findings suggested that sometimes, expenses on goods and services other than food were foregone to give way to expenses for food. However, the reverse was also correct. The study examined patterns of food intake and other contextual factors linked with household food insecurity among 153 women in families who were seeking for food assistance in Toronto, Canada. These women were characterized as having severe or moderate hunger in the past 30 days, where they had lower intakes of fruit, vegetables, meat and other alternatives, and reported longstanding health complications or activity limitation.

Interestingly, these studies contrasted with the respondents of Baling in this study, because despite Baling district having the lowest median and lowest mean of household disposable income in Kedah [8], with mean of income of the respondents at RM1,128.71, generally households felt that their income is sufficient to access food, and they scored moderately in indicators related to cost of living and food prices. By a different token, a report by the High-Level Panel of Experts on Food Security and Nutrition [34] stated that price volatility has a strong impact on food security because it affects household incomes and purchasing power. Zhang *et al.,* [35] found that higher overall price of food is associated with increased risk of low food security and very low food security. Higher prices for fast food and vegetables and fruits also contributed to the increased risk, but not the price of beverages such as soft drinks, coffee and orange juice. This means that even though food price changes were related strongly to food insecurity among households with children that are low in income, the effects were not consistent across different types of food. Hence, when policies of food security are formulated especially on changing of food price, these inconsistent relations should also be taken into consideration.

In linking between food pricing and consumption of healthy food, price estimation studies to investigate the effect of food substitution from unhealthy to healthy food is suggested by Andreyeva, Long and Brownell [36], where 160 studies in the USA on price elasticity of demand for main food categories such as meats, fruits, cereal, eggs, sugar and sweets, juice, soft drinks and fats and oils were reviewed. The study concluded that food away from home, meats, juice and soft drinks were the most responsive to price changes. For instance, the consumption of soft drinks was reduced by 8 percent to 10 percent when the price of soft drinks increased by 10 percent. This factor is reflected by the respondents in Baling, whereby the mean score of indicators "Easier to get raw food items as compared to fast food or cooked food" in Table 7 may suggest that the access to healthy food contributes to the overall low score of food insecurity in Baling.

In terms of coping strategy, households in Baling resorted to switching to cheaper foods and gathering food around house, hunt or harvest immature crops as the main strategy. Studies discovered that popular coping mechanisms include purchasing food at the market, eating less desired meals, reducing the quality and quantity of food consumed, increasing reliance on wild foods, selling livestock or household assets, and borrowing money or food from friends and relatives. The adoption of these coping methods has been linked to greater food insecurity, with households using more coping strategies being more likely to be food insecure. Compromise food consumption strategies, such as eating less liked meals or reducing food quality and quantity, were highly associated with food poverty [37]. While certain coping techniques such as using savings may provide short-term respite, they might deplete household assets and exacerbate food insecurity in the long run, particularly when combined with other shocks such as climate or health difficulties [37].

5. Conclusions

This paper employed the descriptive analysis to examine the level of food security of the households in the urban and rural areas of Baling, Kedah. Among the possible determinants of food security include the income level, percentage of household expenditure on food, types and amount of social protection benefits received, perception on level of income and food prices, and coping strategies adopted. The study disclosed that there are still pockets of food insecurity in both the urban and rural areas of Baling, but the majority of households perceived themselves as having food security, despite the low level of income households that they have. Also, the economic and social indicator items suggested that economic and social accessibility does have some impact on

the food choice in the household, with some coping strategies being adopted more than other strategies. It is recommended that further study be conducted on how the level of food security is related to the utilization component, whereby nutritional aspects of the food choice through actual consumption of food is assessed to better reflect the perception of high food security that they have.

Also, policies in relation to physical food access should take into consideration the food retailing environment in the rural and urban area, so as to promote better access to healthy food, despite the different levels of economic and social background in the community. In this aspect, social assistance to those in the pockets of food insecurity should be further examined, as well as recommendations for those who have low food insecurity to have a better understanding and application level of food and nutrition literacy in their food consumption pattern. Behavioral factor could also be an important deciding factor in the perception of low food insecurity in Baling. The case of patterns of food insecurity and accessibility in Baling thus summarized those factors of physical, and economic and social access may take a different position from previous studies, suggesting the need to look at the quality of food selection factor rather than the quantity of food accessed.

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References

[1] Godfray, H. Charles J., John R. Beddington, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Jules Pretty, Sherman Robinson, Sandy M. Thomas, and Camilla Toulmin. "Food security: the challenge of feeding 9 billion people." *science* 327, no. 5967 (2010): 812-818. https://doi.org/10.1126/science.1185383
[2] FAO. (1996). Rome Declaration on World Food Security and World Food Summit Plan of Action. World Food Summit 13-17 November 1996. Rome.
[3] Aurino, Elisabetta. "Selecting a core set of indicators for monitoring global food security: A methodological proposal." *Rome: FAO* (2014).
[4] Department of Statistics Malaysia. (2024). Consumer Price Index Malaysia, May 2024. https://newss.statistics.gov.my/newss-portalx/ep/epFreeDownloadContentSearch.seam?cid=211756
[5] The Economist Intelligence Unit. (2017). Global Food Security Index. [Data set] Global Food Security Index. http://foodsecurityindex.eiu.com/
[6] FAO. (2017). Food Security Indicators. Retrieved from http://www.fao.org/economic/ess/ess-fs/en/
[7] Economic Planning Unit. (2017). Malaysia Sustainable Development Goals Voluntary National Review 2017. Putrajaya. ACT: Author.
[8] Department of Statistics Malaysia. (2022). Household Income Survey Report and Basic Amenities by State And Administrative District, Kedah. Retrieved from https://newss.statistics.gov.my
[9] Sen, Amartya. "Commodities and capabilities." *OUP Catalogue* (1999).
[10] Scanlan, Stephen J. "Food security and comparative sociology: Research, theories, and concepts." *International journal of sociology* 33, no. 3 (2003): 88-111. https://doi.org/10.1080/15579336.2003.11770272
[11] Shariff, Z. Mohd, and G. L. Khor. "Obesity and household food insecurity: evidence from a sample of rural households in Malaysia." *European journal of clinical nutrition* 59, no. 9 (2005): 1049-1058. https://doi.org/10.1038/sj.ejcn.1602210
[12] Ahmed, Ferdoushi, and Chamhuri Siwar. "Food security status, issues and challenges in Malaysia: A review." *Journal of Food, Agriculture and Environment* 11, no. 2 (2013): 219-223.
[13] Crawford, Belinda, Roy Byun, Emily Mitchell, Susan Thompson, Bin Jalaludin, and Siranda Torvaldsen. "Socioeconomic differences in the cost, availability and quality of healthy food in Sydney." *Australian and New Zealand journal of public health* 41, no. 6 (2017): 567-571. https://doi.org/10.1111/1753-6405.12694
[14] Bakeri, Nur Arina, Norhasmah Sulaiman, Nur Syaqiera Mansor, Wan Ying Gan, and Seok Kwan Tan. "Socio-economic Status, Food Security Status and its Coping Strategies among'The Lost Food Project'(TLFP) Recipients in

Klang Valley during COVID-19 Pandemic." *Malaysian Journal of Medicine & Health Sciences* 19 (2023). https://doi.org/10.47836/mjmhs.19.1.12

[15] Olabiyi, Olayemi M., and Lynn McIntyre. "Determinants of food insecurity in higher-income households in Canada." *Journal of Hunger & Environmental Nutrition* 9, no. 4 (2014): 433-448. https://doi.org/10.1080/19320248.2014.908450

[16] Coleman-Jensen, Alisha, Christian Gregory, and Anita Singh. "Household food security in the United States in 2013." *USDA-ERS Economic Research Report* 173 (2014). https://doi.org/10.2139/ssrn.2504067

[17] Foley, Wendy, Paul Ward, Patricia Carter, John Coveney, George Tsourtos, and Anne Taylor. "An ecological analysis of factors associated with food insecurity in South Australia, 2002–7." *Public health nutrition* 13, no. 2 (2010): 215-221. https://doi.org/10.1017/S1368980009990747

[18] Frongillo, Edward A., Hoa T. Nguyen, Michael D. Smith, and Alisha Coleman-Jensen. "Food insecurity is associated with subjective well-being among individuals from 138 countries in the 2014 Gallup World Poll." *The Journal of nutrition* 147, no. 4 (2017): 680-687. https://doi.org/10.3945/jn.116.243642

[19] Department of Statistics Malaysia. (2016). Report On The Household Expenditure Survey, Malaysia 2016. Retrieved from https://newss.statistics.gov.my

[20] Department of Statistics Malaysia. (2000). Glossary A-Z. Retrieved from https://www.dosm.gov.my/v1/index.php?r=column/cglossary2&menu_id=eWd2VFdIZ2xpdzBmT2Y0a0pweDcwQT09&keyword=M25lT21CWEUzTUlDckhoQUtoK0RBZz09&release=1

[21] Maxwell, Daniel, and Richard Caldwell. "The coping strategies index: field methods manual." *Maxwell, R. Caldwell.-2d Ed.-2008* (2008).

[22] Nunnally, J. C. (1978). Psychometric theory (2nd ed.). New York: McGraw-Hill.

[23] Smith, Chery, and Lois W. Morton. "Rural food deserts: low-income perspectives on food access in Minnesota and Iowa." *Journal of nutrition education and behavior* 41, no. 3 (2009): 176-187. https://doi.org/10.1016/j.jneb.2008.06.008

[24] Walker, Renee E., Christopher R. Keane, and Jessica G. Burke. "Disparities and access to healthy food in the United States: A review of food deserts literature." *Health & place* 16, no. 5 (2010): 876-884. https://doi.org/10.1016/j.healthplace.2010.04.013

[25] Rossimel, Adam, Sun S. Han, Kirsten Larsen, and Claire Palermo. "Access and affordability of nutritious food in metropolitan M elbourne." *Nutrition & Dietetics* 73, no. 1 (2016): 13-18. https://doi.org/10.1111/1747-0080.12142

[26] Hyman, Glenn, Carlos Larrea, and Andrew Farrow. "Methods, results and policy implications of poverty and food security mapping assessments." *Food Policy* 30, no. 5-6 (2005): 453-460. https://doi.org/10.1016/j.foodpol.2005.10.003

[27] Masron, Tarmiji, Salfarina Abdul Gapor, and Norhasimah Ismail. "Spatial Mapping of Food Security in Mukim Pendang, Kedah, Malaysia." *Academic Journal of Interdisciplinary Studies* 3 (2014). https://doi.org/10.5901/ajis.2014.v3n4p349

[28] Sharkey, Joseph R. "Measuring potential access to food stores and food-service places in rural areas in the US." *American journal of preventive medicine* 36, no. 4 (2009): S151-S155. https://doi.org/10.1016/j.amepre.2009.01.004

[29] Dean, Wesley R., and Joseph R. Sharkey. "Rural and urban differences in the associations between characteristics of the community food environment and fruit and vegetable intake." *Journal of nutrition education and behavior* 43, no. 6 (2011): 426-433. https://doi.org/10.1016/j.jneb.2010.07.001

[30] Liese, Angela D., Kristina E. Weis, Delores Pluto, Emily Smith, and Andrew Lawson. "Food store types, availability, and cost of foods in a rural environment." *Journal of the American Dietetic Association* 107, no. 11 (2007): 1916-1923. https://doi.org/10.1016/j.jada.2007.08.012

[31] Walker, Renee E., Christopher R. Keane, and Jessica G. Burke. "Disparities and access to healthy food in the United States: A review of food deserts literature." *Health & place* 16, no. 5 (2010): 876-884. https://doi.org/10.1016/j.healthplace.2010.04.013

[32] Sheng, T. Y., Mad Nasir Shamsudin, Zainalabidin Mohamed, Amin Mahir Abdullah, and Alias Radam. "Complete demand systems of food in Malaysia." *Agricultural Economics* 54, no. 10 (2008): 467-475. https://doi.org/10.17221/279-AGRICECON

[33] Tarasuk, Valerie S. "Household food insecurity with hunger is associated with women's food intakes, health and household circumstances." *The Journal of nutrition* 131, no. 10 (2001): 2670-2676. https://doi.org/10.1093/jn/131.10.2670

[34] HLPE, 2012. Social protection for food security. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome 2012.

[35] Zhang, Qi, Sonya Jones, Christopher J. Ruhm, and Margaret Andrews. "Higher food prices may threaten food security status among American low-income households with children." *The Journal of nutrition* 143, no. 10 (2013): 1659-1665. https://doi.org/10.3945/jn.112.170506

[36] Andreyeva, Tatiana, Michael W. Long, and Kelly D. Brownell. "The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food." *American journal of public health* 100, no. 2 (2010): 216-222. https://doi.org/10.2105/AJPH.2008.151415

[37] Danmaigoro, A., Kaka, Y., & Maikasuwa, A. (2020). Food Security and Coping Strategy among Farming Households in Zuru Agricultural Zone of Kebbi State, Nigeria. *IOSR Journal Of Humanities And Social Science*, 25, 47-53. http://10.9790/0837-2504034753