

# ASSESSMENT OF RURAL AREA FOOD CONSUMPTION STATUS IN THE NATIONAL NUTRITION POLICY OF MALAYSIA

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**Abstract:** *Food consumption is one of the most important components in ensuring household food security. However, there are practices and beliefs that some foods are detrimental to health among low-income people, which affects food consumption in the household. This situation is directly related to nutrition policy. This study aims to investigate the food consumption households in the rural areas of Kedah State, to fulfill the national nutrition policy of Malaysia. The study centers on rural Kedah State, specifically the municipalities of Kubang Pasu, Baling, Pendang, Alor Setar, and Kuala Muda. The technique of stratified random sampling was used to choose 225 rice growers from the rural regions of the chosen districts. SPSS 25 and food intake results scores were used to analyze the information. The results of the reading revealed that food consumption among farmers was low with a value of less than 29.9. Almost the total food intake for each food category is low except for beverages that have a high value of above 80. The study also found that this group believes that some foods have an impact on health. The study suggests that the government should sensitize the rural population in particular to eat balanced foods. At the same time, the restructuring of the primary school curriculum and syllabus needs to be holistic so that awareness of nourishment and fitness can be raised in early childhood education.*

**Keywords:** *food consumption, behavior, farmers, rural area.*

## Table of Contents

1. INTRODUCTION
2. NATIONAL NUTRITION POLICY OF MALAYSIA
3. METHODOLOGY
4. RESULTS AND DISCUSSION
  - 4.1 Demographic
  - 4.2 Food Consumption Pattern
  - 4.3 Food Belief
  - 4.4 Food access and vulnerability
5. CONCLUSION
6. ACKNOWLEDGEMENT

## 1. INTRODUCTION

Malaysia has always been mindful of the welfare of low-income residents. Various forms of safety net programs have been implemented to improve the living standards of this group. These efforts are repeated from time to time to ensure that this group does not fall out of the flow of development. There are three main categories in determining the social class in Malaysia based on income position, namely T20 group (T20 group is the household earning the highest 20 percent of the total income of Malaysians) M40 (M40 group are the households earning 41 percent to 80 percent of the total income of Malaysians) and B40 (B40 group are the households with the lowest income of 40 percent) (Department of Statistics Malaysia (2017) as a Table 1. This classification's

primary objective is to make it easier to plan, monitor, and carry out the programmed in a targeted way in accordance with the requirements of each category of the general population.

**Table 1. Scarceness Line Income**

Decile Group		Income threshold (RM)
T20	T2	> 15,039
	T1	10,960 - 15,039
M40	M4	8,700 - 10,959
	M3	7,110 - 8,699
	M2	5,880 - 7,099
	M1	4,850 - 5,879
B40	B4	3,970 - 4,849
	B3	3,170 - 3,969
	B2	2,500 - 3,169
	B1	< 2,499

Source: Department of Statistics Malaysia (2020)

Many studies have shown that low-income people spend a large proportion of their income on food. Compared to other components of expenditure. This happens due to limited sources of income and ultimately has an impact on the household's food intake habits. Badari et al. (2013) explain that socioeconomic factors influence nutritional status and dietary intake, including poor eating habits and inadequate food intake in households. Directly, this situation will increase the risk factors for chronic diseases (Lam and Khor, 1997). Lee et al. (2019) explain Malaysians' poor dietary habits and lack of physical activity can exacerbate an unhealthy lifestyle. Malaysia's national dietary guidelines and way of living are insufficient. According to Lee and Muda (2019), Malaysians consume an unbalanced quantity of energy, which leads to poor diet quality and a higher chance of illness. Low purchasing power is the root of this issue, which has an impact on family food consumption.

In reality, farmers are a vulnerable group and dependent on the main source of income. Due to their lack of education and skills, this group is unable to diversify their revenue streams. Economic Planning Unit (EPU) (2015) found that only 36.4% of household leaders held a Sijil Pelajaran Malaysia (SPM) or equivalent degree, while 36% lacked a degree and 84.6% had only completed secondary school. Lack of education makes it challenging to land better employment that raises socioeconomic standing and consequently improves quality of life (Sawaluddin et al., 2020). 89.9% of family heads work in weak and semi-skilled occupations as a result of their lack of education (EPU, 2015). Due to this circumstance, families with low incomes who have little access to sufficient nutrition are experiencing a problem with food insecurity, which is primarily caused by low incomes, increasing costs, and the cost of living (Andersen, 1990).

These problems affect food intake in the household. These people only meet basic needs without paying attention to nutrition. A study by Norimah et al (2008) found that in rural areas, households are more likely to consume rice, leafy vegetables, sea fish, local food, anchovies, and biscuits. Other drinks like tea (47%) and coffee (28%) as well as drinks with chocolate (23%) and syrup (11%) were also consumed on a daily basis but by a lesser percentage of the populace. In the rural populace, everyday eating of marine fish was prevalent (51%). According to a study by Djunaidah (2017), the low level of consumption of fish is caused by a lack of general awareness of the advantages of eating fish. This issue is also caused by a dearth of facilities and infrastructure.



Meanwhile, a study by Diehl et al. (2019) it was discovered that due to the expensive costs of these foods, only 20% of poor households in Jakarta and India with low incomes ingest chicken eggs, seafood, meat, cheese, milk, and produce. Households in the region also reduce their food intake in summer and reduce their consumption of meat and fish in summer. They also eat vegetables as a meal at least once a day.

Arnawa et. al, (2019) According to their research, farmers spent the most on grains, particularly rice, which represented 38.32 percent of the average amount they spent on food. This was closely followed spending on food with an animal's origin, which came in at 26.40 percent. The cost of buying fruits and veggies came in third. In addition, no expenditure was found on the consumption of oily fruits and seeds. Wardle et al. (2000) stated that there is a strong relationship between knowledge of nutrition and the consumption of fruits, vegetables, and fats. The analysis's findings demonstrate that understanding of nourishment and dietary habits is influenced by one's occupation and educational background. This statement implies that a key factor affecting food intake at the level of the family is the degree of education. For low-income groups, such as farmers, it has an impact on household food consumption.

At the same time, Food consumption affects customer behaviour as well. Food consumption and choice are influenced by a variety of dynamic and complex variables, which are closely linked to each person's disposition (Keller & Siegrist, 2015). Arbit et al. (2017) found five terms linked to food in the context "choose food," including "high," "good for you," "social," and "vinegar." Food is closely connected to religious practises and ceremonies in terms of the sacred. (Rozin, 2007). Food is a term used to describe how eating habits and food choices can have a positive or negative effect based on the viewpoints of the person making them (Rozin, Markwith, & Stoess, 1997). When we talk about health, we are talking about food choices as the most important prerequisite for a healthy life. (LepkowskaWhite & Chang, 2017). The community speeds up consumption of food while taking into account the social aspect of eating, which responds with possible food where it is spread (Woolley & Fishbach, 2017). The eating experience that links enjoyment to food intake is referred to as beauty (Rozin, 2007).

Brown (2006) explains how social scientists explain how emotions, thoughts, beliefs, motives, attitudes, and goals affect behavior in deciding how something will behave. This issue is closely linked to how food is chosen and consumed in households. The idea of food phobia is viewed as having a clear correlation to mindset and personality at the exact same time. Eertmans et al., (2005) clarify Some individuals may avoid trying certain novel foods due to neophobia, which also serves to validate the rationale behind various attitudes towards food preferences. Neophobia serves as a defence mechanism against assault, but it also prevents people from appreciating different foods (Altisent et al. 2013)

However, dietary intake is also influenced by beliefs about food. Asi and Teri (2018) explained that a belief is a rule, an unwritten commandment, or a declaration by the leader of a community and its environment that declares some things sacrosanct or forbidden to the members of the community. Beliefs about food exist in all communities. Every cultural community is shaped by conventional norms, beliefs, and practices, and there are repercussions if they are neglected. Food beliefs have a lengthy history and are accepted as social norms by all groups in society (Shahar et al. 2000). Dashti et al (2019) explain that food preferences are also influenced by cultural and environmental factors, behavioral and personal preference factors, and physiological factors that affect the timing of food consumption.

The study by Goswami and Thakur (2019) demonstrates that in the Karbi tribal region of Assam, India, meat, eggs, and poultry are shunned because it is thought that these foods are spicy and would cause diarrhea and increased menstrual bleeding. In a poll of pregnant women in Madura's, Diana et al. (2018) discovered that squid and shrimp, pineapples, cauliflower, and cold water/ice sorbet were the most frequently forbidden items. All the ages of expectant women were forbidden



from eating squid, shrimp, skate, and crab. These fish were regarded as harmful during pregnancy and delivery.

Shahar et al. (2020) elderly Malays in Mersing, which Johor, who participated in a survey revealed that they avoided particular foods because they were bad for their health. "Cooling foods" include okra, squash, pumpkin pie, long beans, auberges, mustard sauce, leaves, marsh cabbage, and coconut shoots. Research by Chakona & Shackleton (2019) also revealed that 37% of the female population in the Kat River Valley, South Africa, reported one or more dietary practices that were influenced by regional cultural taboos or beliefs. Meat goods, seafood, the potato, berries, legumes, eggs, butternut, and squash were the foods that people shunned the most.

Abu Bakar et al (2012) also note that there are many food beliefs in the Mijikenda community, some of which are likely to influence food selections. The Mijikenda culture claims that when a woman is expecting a baby or toddler, "the radiation" of the unborn baby burns the youngster when the child sleeps with the mom, causing severe underweight. According to prior study, many scientists pay more attention to the feeding taboo among pregnant women (Iradukunda, 2020; Oni & Tukur 2012; Chakrabarti, & Chakrabarti, 2019; Mohammed, et al. 2019; Tilahun, et al. 2022) and limited discussion of the food taboo or food belief among farmers. In light of Malaysia's National Nutrition Policy, this research seeks to ascertain the food consumption habits of farmers in a rural the Kedah area.

## 2. NATIONAL NUTRITION POLICY OF MALAYSIA

To ensure that household food intake meets established nutritional requirements, the Malaysian government has enacted a nutrition policy to ensure that every individual has access and the right to obtain safe and continuous food that meets the body's nutritional needs. This National Nutrition Policy is a nationwide sectorial document that aims to ensure nutritional well-being and enable people to access adequate, nutritious, safe, and quality food, as well as the right information and support to practice healthy eating. It represents the government's commitment to eliminate or reduce hunger, widespread malnutrition, and micronutrient deficiencies that impede progress in human and social development. A comprehensive nutrition policy would therefore systematically address optimal nutrition from birth through childhood, adolescence, and adulthood to old age (MOH 2005). The policy has three objectives as a below;

- i. to improve and maintain the nutritional status of all people;
- ii. to ensure food security for all households;
- iii. to strengthen inter and intra-sectoral linkages in the development and implementation of all nutrition-related activities.

To achieve the objective, the Malaysian government, through the Ministry of Health (MOH), will introduce strategies to achieve the target in Figure 1.

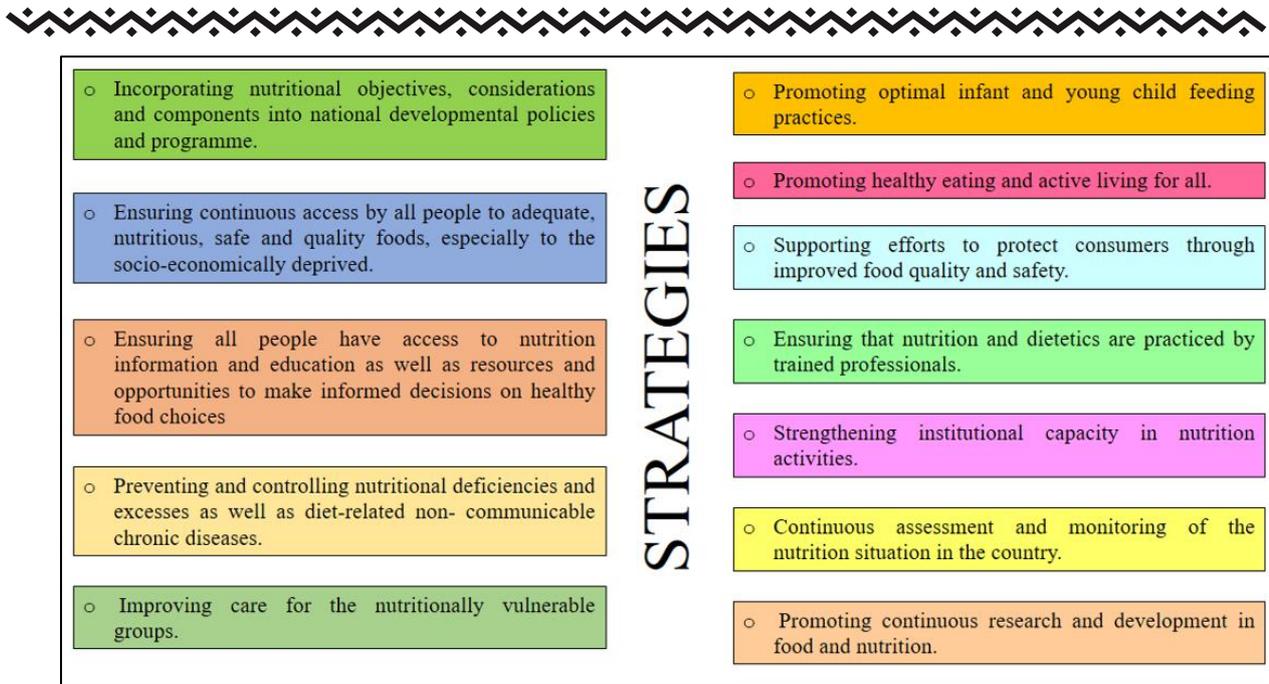


Figure 1: Strategies for Achieve Objective National Nutrition Policy

Source: modified from MOH (2005)

### 3. METHODOLOGY

This study was conducted on farmers in rural areas in Kedah State, Malaysia. The selection of farmers in Kedah State follows from the fact that Kedah State is one of the low-income states in Malaysia compared to other states. For the research, random stratification was used to choose 225 low-income farmers as participants. Five districts in Kedah State were identified: Baling, Kuala Muda, Alor Setar, Pendang, and Kubang Pasu (Figure 2).

A, B, and C were the three parts of the form. The demographic information of the respondents, including marital status, age, gender, employment, family size, etc., are detailed in Section A. Information on the food consumption patterns of farmer's families can be found in Section B. Finally, Section C provides details on interviewees' attitudes towards food.

The survey includes a variety of question types, such as open-ended inquiries, a Likert scale with five points, and continuous information. The questionnaire was created in the Malay mother tongue and the poll was carried out with the assistance of local research aides under the researchers' supervision (Malay). In-person conversations with chosen rice producers in chosen locations served as the survey's mode of administration. The results were examined using SPSS Statistic version 25. Dietary habits were described using descriptive statistics with a mean. The method was then used to roughly determine the pattern of food intake of Badari, et al (2013) in Figure 3.



Figure 2: Study of Location

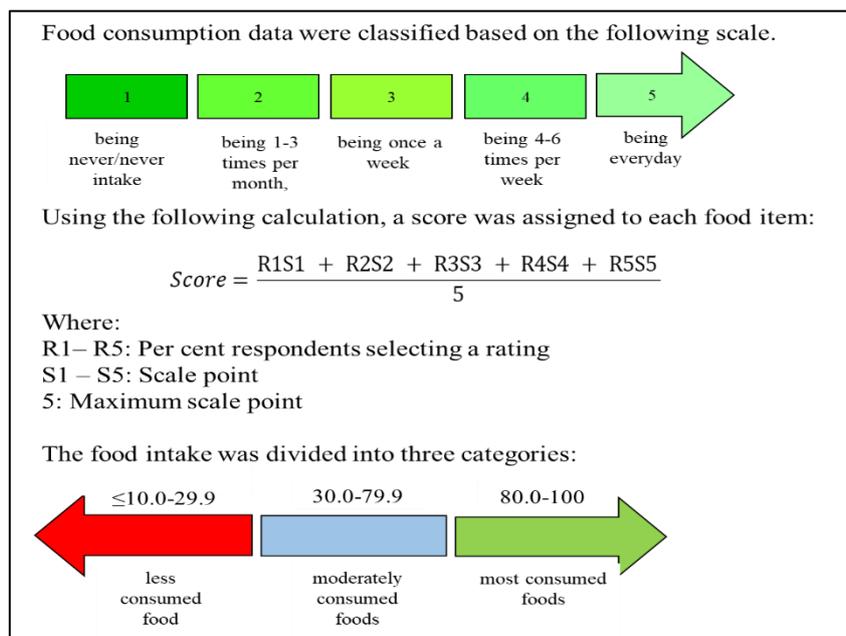


Figure 3: Food consumption calculation

#### 4. RESULTS AND DISCUSSION

##### 4.1 Demographic

Most of the respondents were women (76.4 percent) and aged between 48 and 52 years (17.3%) and 58 to 62 years (16%), with a median age of 54. The respondent is a paddy grower in general. 28 percent of the interviewees had finished upper secondary school, according to data on their educational backgrounds. The other survey participants had finished lower secondary school (35.1 percent). As the majority of the respondents were women, most of them were housewives (62.5 percent) and relied on their husband's income. Some respondents get help from zakat to ensure survival. This finding is in line with the research done by Wahab et al. (2016).

Overall, low-income farmers in the study were classified as poor because their income was below RM2499 (Malaysia Poverty Line Income-PLI) compared to RM1941, the mean income/month of farmers in the studies. Meanwhile, the average monthly household expenditure of RM 1169.10 and RM 465.64, or 39.83 percent was spent on food and beverage expenses. Followed by expenditure on transport (petrol costs and installments for car and motorbike) RM 218.92 (18.73 percent). Utilities also accounted for 12.73 percent of the total expenditure of farmers. In addition, farmers spent 17.36 percent (RM 17.36 per month) on education. This situation shows that although this group is in distress, they value education for their children and hope that their future generations will not inherit the poverty they are experiencing. That group also spends on health or medicine by RM 91.07 per month and less on clothing by 2.45 percent per month.

##### 4.2 Food Consumption Pattern

Based on Figure 4, the results of the study show that plain water, coffee, and tea are the most consumed in the daily diet of farmers. The cheap price and culture in the community favor coffee and tea to be the first choice with a score of over 80. At the same time, vegetables, condensed milk, fruits, herbs (*ulam*), chicken egg, chicken, and seafood were found to be moderately consumed with scores ranging from 32.11 to 42.13. For the other food categories, the value for consumption of the listed foods was found to be low and below the value of 29.9. This is due to factors such as taste, price, taboo practices, and so on. Indirectly, this factor has a direct impact on the food intake of farmers and also affects the health status of this group.

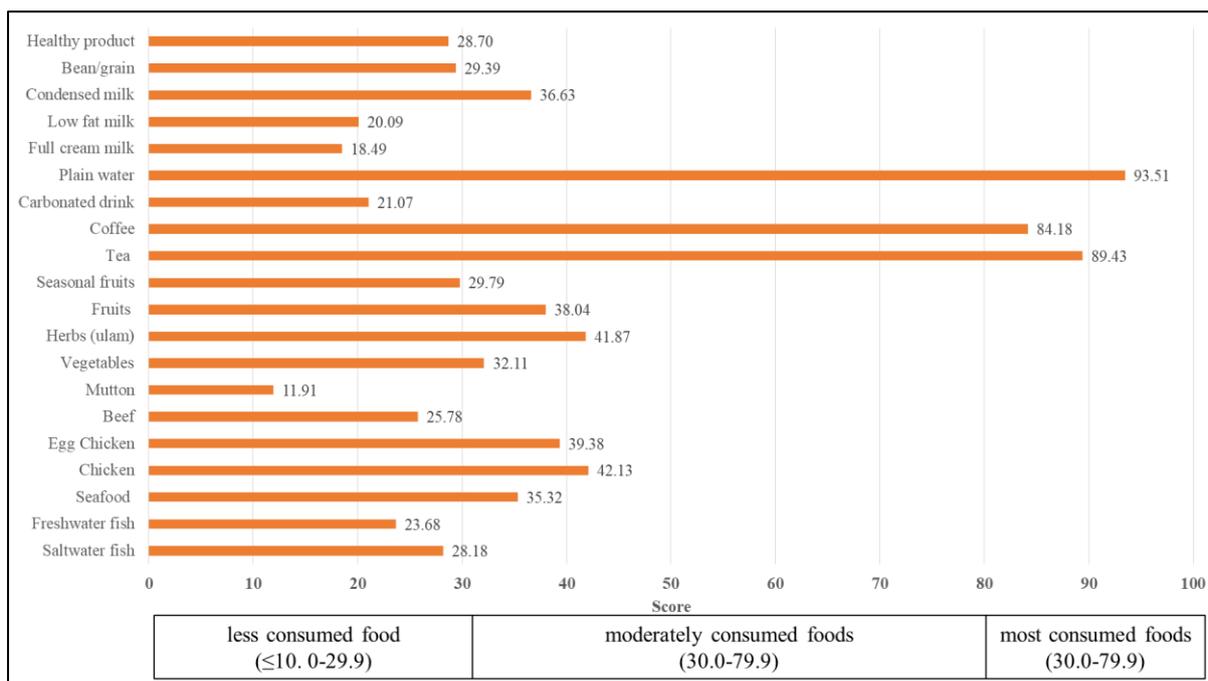


Figure 4: Score food consumption among low-income farmers

In obtaining protein sources, farmers in the study area obtained protein sources through saltwater fish and freshwater fish. In the category of freshwater fish, the average farmer consumes Channa Stria type fish with a score of 24.63, followed by Climbing Perch type fish with a score of 24.45, Gourami (22.84), Catfish (22.48) and Tin Perch (21.15). Overall, the consumption of fish in the freshwater category is low (Figure 5). In the saltwater fish category, chub is very high at 78.48, followed by black skip jack (34.21), slim sprat (34.21), and hardtail scad (36.09) (32.89). The cheap and readily available price factor in the market leads to high consumption of this food among rice farmers. For other fish species in this category such as Sardine, Japanese Threadfin Bream, Yellow Scad, and Mangrove Red Snapper, the consumption rate of this fish species is low with a value below 29.9 (Figure 5 & Figure 6).

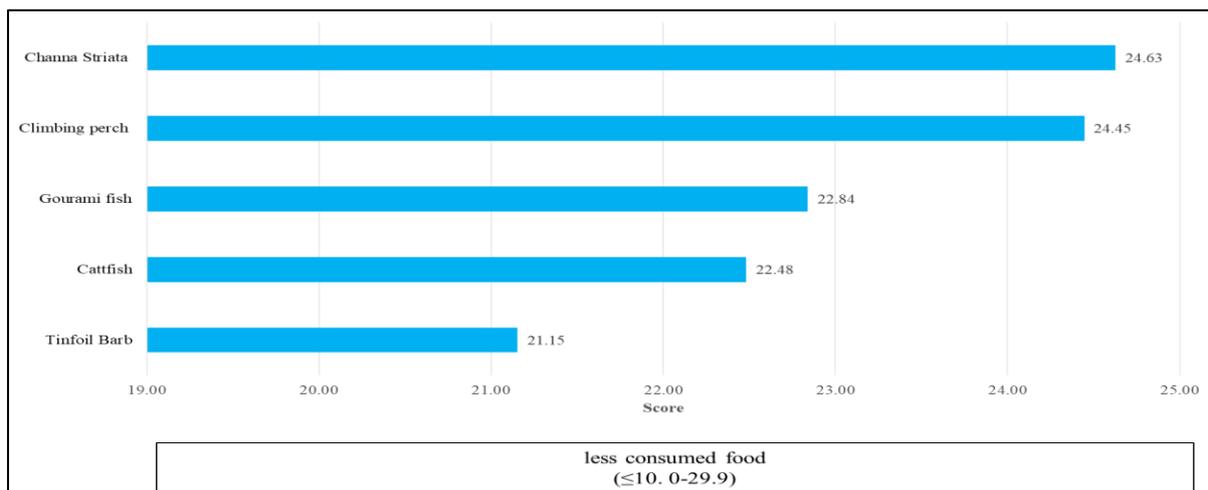


Figure 5: Score food consumption for freshwater type

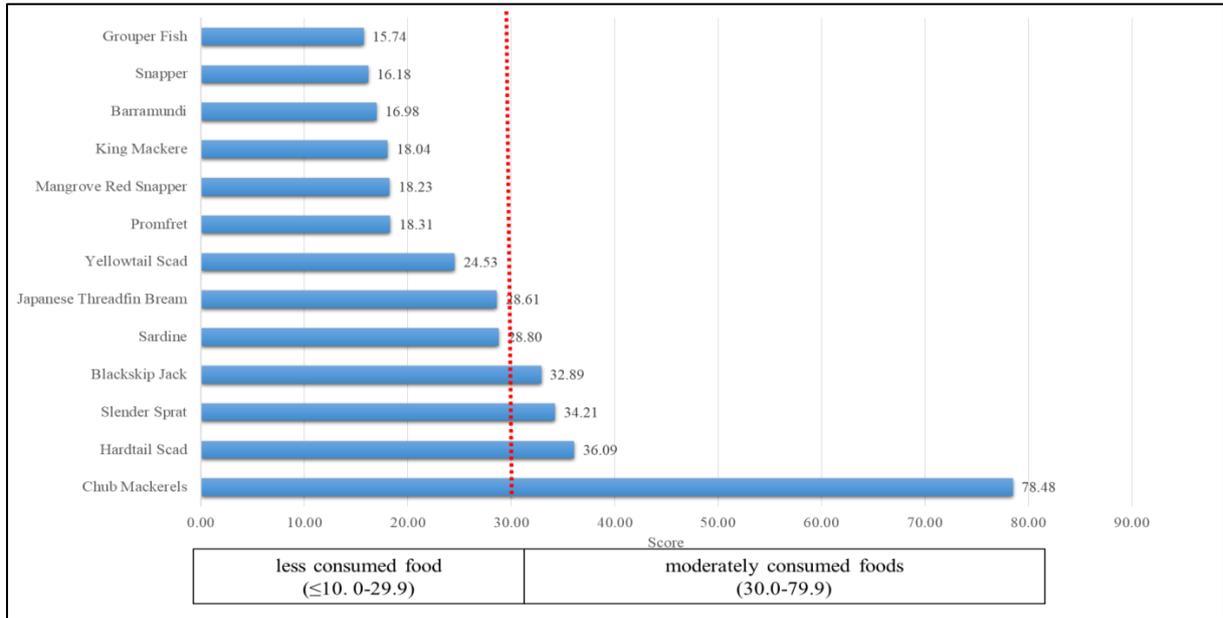


Figure 6: Score food consumption for saltwater fish type

The sources of vitamins and minerals were veggies (Figure 7). In the group of vegetables, choy sum is the first choice among rice farmers with a score of 51.64, followed by cabbage (45.78), spinach (43.38), sprouts (42.31), and yardlong beans (38.92). The use and consumption of these vegetables are rated as moderate. Compared to bamboo shoots, fiddlehead, star gooseberry, water chip, and cassava shoots, the consumption of this vegetable type is low with a score below 29.9. These vegetables are readily available and cheap in farmers' residential areas. In general, the consumption of vegetables among farmers is still low. Cultural factors, practices, and education that do not value vegetables in the diet result in low consumption of vegetables.

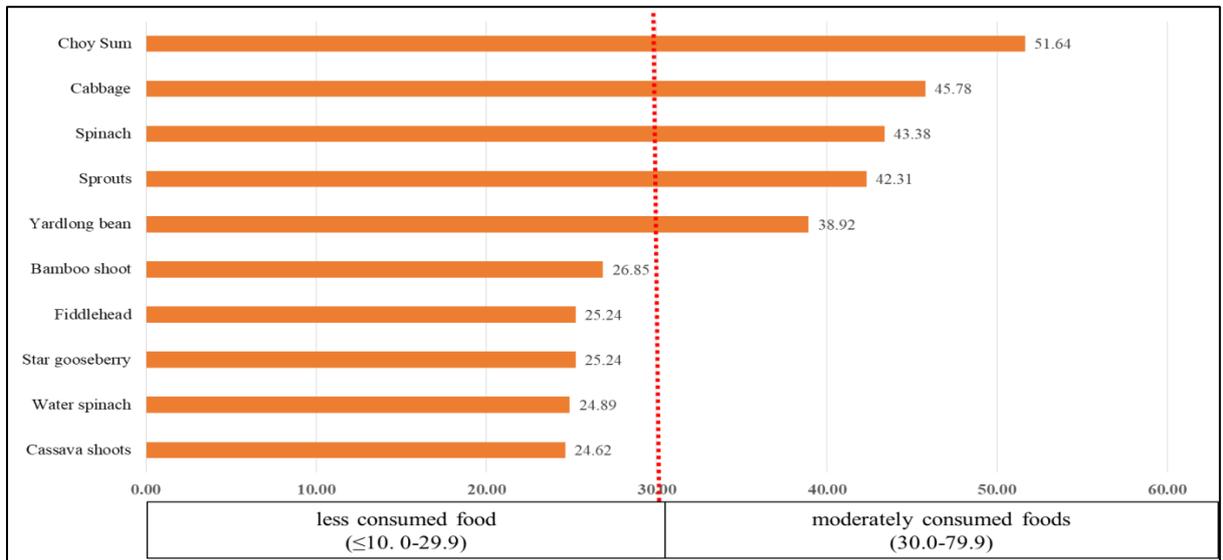


Figure 7: Score food consumption for vegetable type

### 4.3 Food Belief

In the context of food consumption, practice and cultural factors have a great influence on each individual's choices. This has been happening from one generation to another for a long time.

Despite the fact that no research has been done to determine how certain meals affect health, beliefs and convictions are a barrier to eating certain foods.

Based on the research conducted, foods have been classified into six major categories: drinks, windy, fragrant, spicy, itchy, and pungent. According to the study's findings, 37.11 percent of this population does not consume coffee, fizzy beverages, whole milk, or low-fat milk. They contend that these beverages are to blame for nausea, indigestion, aches in the stomach, and migraines. All of their family members continue this practise as well. Mutton and durian beef are prohibited in this category. 18.66 percent of rural residents in Kedah State think that these spicy foods have negative impacts on their health. They think eating these foods will cause them to experience headaches, elevated blood pressure, and skin issues (enzymes). poultry, red meat, seafood, and poultry eggs are also categorised as itchy foods that aggravate skin conditions (enzymes)

Some foods, including cassava fires, growing bamboo, yardlong beans, emerges, ground nuts, and bean sprouts, are regarded as breezy foods in rural areas of the state. They make you feel queasy and swollen after eating. The same is true for consuming spicy foods, which can result in heartburn, stomach discomfort, and miscarriage. Examples include asparagus, bamboo shoots, pineapples, and vinegar. People with health issues like numbness or discomfort in the joints depend on and steer clear of foods like yardlong beans, star gooseberries, and sprouts that are categorised as cooling foods.

It can be explained that taboo practices on some foods are based on the experiences and observations of individuals in the community. The matter becomes taboo when an unexpected event occurs due to the consumption of certain foods. These beliefs and taboos are difficult to change because they have been integrated into the life of the community. They also affect the resilience of each individual's body.

Table 2: Food belief among low-income people in a rural area, Kedah

Classification	Food items	Reasons for avoidance	Percentage
Beverages	coffee, carbonated drink, fresh milk, low-fat milk	headache, stomach-ache, heartburn, nausea	37.11
Hot foods	mutton, beef, durian	headache, high blood pressure, skin problems (eczema)	18.66
Itchy foods	chicken, red meat, seafood (e.g. prawns, prawns paste, mussels) egg chicken	skin problems (eczema)	5.34
Windy foods	cassava shoots, bamboo shoot, yardlong bean, sprouts, groundnut, green bean	windy stomach, nausea	5.33
Cooling foods	yardlong bean, star gooseberry, sprouts	joint numbness/pain,	2.66
Sharp foods	pineapple, vinegar	heartburn, stomach-ache	1.33

#### 4.4 Food access and vulnerability

This study also found that 60 percent of farmers were getting enough food. While 40 percent of the farmers said that they do not get enough food. Several factors contribute to households' lack of access to food. One of the factors leading to a lack of food is dependent on main income. In addition, declines in production due to natural disasters, disease infestation, and pest infestation lead to a lack of income sources, which ultimately affects farmers' achievement of perfect nutrition.



Indeed, farmers in this study are vulnerable groups who face recurrent precarious situations. When unforeseen events such as economic shocks, natural disasters, etc. occur, this group is easily hit in terms of income, motivation, and life security. Climate uncertainty, for example, also forces people in rural areas to deal with seasonal changes, especially monsoons and drought. Flooding events, for example, are unpredictable. This directly affects livelihood, especially food security.

The study also found that farmers are aware that climate change has affected production outcomes. The results of the study also show that climate change also threatens farmers' activities and jobs. A total of 79.1 percent stated that climate change affects their work activities. The findings of the study also explain that the involvement of government agencies/non-governmental organizations at the community level in improving the knowledge of these groups on climate change is less than satisfactory. Indirectly, this reflects that the management and knowledge of this phenomenon depend on the initiative of the farmers themselves. There is a fear that farmers' understanding will deviate from the actual concept if there is no specific guidance and leadership from the agencies involved.

## 5. CONCLUSION

In summary, this study finds that food consumption by farmers in rural areas of Kedah, Malaysia is lower and the Malaysian nutrition policy targets are not being met. Socio-economic factors such as low income, a higher number of households, low education level and lack of skills and training affect household food intake. At the same time, the respondents also have a monthly installment for buying furniture and electrical appliances. This factor affects the purchasing power of farmers. In addition, there are still taboo practices and beliefs about some food that have a negative impact on health, which is an obstacle to achieving this policy goal.

In general, food consumption by farmers in rural areas of Kedah State is low for all food categories except beverages. The research conducted revealed that farmers in the study spend almost 40 percent of their income on food procurement. This allocation is only to meet basic household food needs, namely rice, vegetables, and fish. At the same time, some farmers take dried fish as one of the menu items. The study also found that most farmers buy fish or vegetables at a cheap price, but the quality is not satisfactory. This is because of the narrowness of life which makes this group do so. The high price of food in the market makes this group give priority to the right purchases. For them, the quantity of food in the household should be sufficient compared to the quality of food. Some parents skip taking a portion of food and give preference to household members. Food is also rationed to ensure an adequate food supply. Austerity measures are also implemented by farmers to ensure that the food source is always sufficient.

In addition, there is a belief in some foods can affect health, so a household does not consume or eat food. This happens to be adopted by other households as well. It is difficult to convince this group of the importance of a balanced diet because their beliefs and convictions are too strong. Eventually, these practices and beliefs affect health status.

To overcome this problem in the long term, the government needs to raise the importance and need for balanced nutrition among the rural population. Education on the importance of nutrition is necessary to raise awareness of the practices and taboos that have persisted all along and ultimately affect the body. Planned and targeted education on nutrition can be done through pregnant women who go for regular check-ups at the hospital (for example). At the same time, restructuring of the curriculum on health and nutrition needs to be addressed holistically and comprehensively right from primary school. This is important to sensitize the next generation to the issue of nutrition. At the same time, health campaigns, especially in remote areas, must be regular and a priority. As you know, inland areas are difficult to access. Indirectly, it will be difficult for people there to get relevant information. Regularly conducted health campaigns will raise the awareness of the population to a certain extent.

The study has the following three limitations. When trying to determine the dietary intake patterns of low-income populations in rural Malaysia, it is important to take the study's limitations into account. For the purposes of this research, each zone had a small sample size of low-income groups, which only adequately captured a small percentage of the low-income population.

## 6. ACKNOWLEDGEMENT

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## REFERENCES

- [1] Abubakar, A., Van Baar, A., Fischer, R., Bomu, G., Gona, J. K., & Newton, C. R. (2013). *Socio-Cultural Determinants of Health-Seeking Behaviour on the Kenyan Coast: A Qualitative Study*. In N. Jenkins (Ed.), *PLoS ONE* (Vol. 8, Issue 11, p. e71998). Public Library of Science (PLoS). <https://doi.org/10.1371/journal.pone.0071998>
- [2] Altisent, R., Jaeger, S. R., Johnston, J. W., & Harker, F. R. (2013). *Injection of Flavor Essences into Fruit Pieces: A New Approach for Exploring Consumer Preferences for Novel Flavors of Apple Fruit*. In *Journal of Sensory Studies* (Vol. 28, Issue 5, pp. 405-413). Wiley. <https://doi.org/10.1111/joss.12066>
- [3] Arbit, N., Ruby, M., & Rozin, P. (2017). *Development and validation of the meaning of food in life questionnaire (MFLQ): Evidence for a new construct to explain eating behavior*. In *Food Quality and Preference* (Vol. 59, pp. 35-45). Elsevier BV. <https://doi.org/10.1016/j.foodqual.2017.02.002>
- [4] Arnawa, I. K., Sapanca, P. L. Y., Martini, L. K. B., Udayana, I. G. B., Suryasa, W., & Bali, S. T. I. K. O. M. (2019). *Food security program towards community food consumption*. *Journal of Advanced Research in Dynamical and Control Systems*, 11(2), 1198-1210.
- [5] Asi, L. N., Teri, D. T., & Meyer-Rochow, V. B. (2018). *Influence of food taboos on nutritional patterns in rural communities in Cameroon*. In *International Review of Social Research* (Vol. 8, Issue 1, pp. 2-6). University of Bucharest, Faculty of Sociology and Social Work. <https://doi.org/10.2478/irsr-2018-0013>
- [6] Badari SA, Arcot J, Sulaiman N. (2013). *Food Consumption Patterns of Lower-Income Households in Rural Areas of Peninsular Malaysia*. *Jurnal Pengguna Malaysia*.;21:122-41
- [7] Brown, C. (2006). *Social Psychology*. SAGE Publications Ltd. <https://doi.org/10.4135/9781446247198>
- [8] Chakrabarti, S., & Chakrabarti, A. (2019). *Food taboos in pregnancy and early lactation among women living in a rural area of West Bengal*. In *Journal of Family Medicine and Primary Care* (Vol. 8, Issue 1, p. 86). Medknow. <https://doi.org/10.4103/jfmprc.jfmprc.53.17>
- [9] Chakona, G., & Shackleton, C. (2019). *Food Taboos and Cultural Beliefs Influence Food Choice and Dietary Preferences among Pregnant Women in the Eastern Cape, South Africa*. In *Nutrients* (Vol. 11, Issue 11, p. 2668). MDPI AG. <https://doi.org/10.3390/nu11112668>
- [10] Department of Statistics, Malaysia, (2020). *Key Findings Report 2019*. Putrajaya: Department of Statistics, Malaysia
- [11] Department of Statistic Malaysia. (2017). *Household Income and Basic Amenities survey report 2016*. Putrajaya: Department of Statistics, Malaysia
- [12] Diana R, Rachmayanti RD, Anwar F, Khomsan A, Christianti DF, Kusuma R. (2018). *Food taboos and suggestions among Madurese pregnant women: a qualitative study*. *Journal of Ethnic Foods*. Dec 1;5(4):246-53.
- [13] Diehl, J., Oviatt, K., Chandra, A., & Kaur, H. (2019). *Household Food Consumption Patterns and Food Security among Low-Income Migrant Urban Farmers in Delhi, Jakarta, and Quito*. In *Sustainability* (Vol. 11, Issue 5, p. 1378). MDPI AG. <https://doi.org/10.3390/su11051378>
- [14] Djunaidah, I. S. (2017). *Tingkat Konsumsi Ikan di Indonesia: Ironi di Negeri Bahari*. In *Jurnal Penyuluhan Perikanan dan Kelautan* (Vol. 11, Issue 1, pp. 12-24). Jurusan Penyuluhan Perikanan Sekolah Tinggi Perikanan. <https://doi.org/10.33378/jppik.v11i1.82>
- [15] Economic Planning Unit .2015. *Strategy Paper Elevating B40 Households Towards a Middle-Class Society*. Putrajaya:Prime Minister's Department
- [16] Eertmans, A., Victoir, A., Vansant, G., & Van den Bergh, O. (2005). *Food-related personality traits, food choice motives and food intake: Mediator and moderator relationships*. In *Food Quality and Preference* (Vol. 16, Issue 8, pp. 714-726). Elsevier BV. <https://doi.org/10.1016/j.foodqual.2005.04.007>

- [17] Ekwochi U., Osuorah C.D., Ndu I.K., Ifediora C., Asinobi I.N., Eke C.B. (2016). Food taboos and myths in South Eastern Nigeria: The belief and practice of mothers in the region. *J. Ethnobiol. Ethnomed.*;12:7 <https://doi.org/10.1186/s13002-016-0079-x>
- [18] Elias, M. (2016). Distinct, shared and complementary: gendered agroecological knowledge in review. In *CABI Reviews* (Vol. 2016, pp. 1-16). CABI Publishing. <https://doi.org/10.1079/pavsnr201611040>
- [19] Esping-Andersen, G., & Standing, G. (1991). Book Reviews : The Three Worlds of Welfare Capitalism. In *Journal of European Social Policy* (Vol. 1, Issue 1, pp. 71-75). SAGE Publications. <https://doi.org/10.1177/095892879100100108>
- [20] Goswami, R. G., & Thakur, M. B. (2019). Folk beliefs of food avoidance and prescription among menstruating and pregnant Karbi women of Kamrup district, Assam. In *Journal of Ethnic Foods* (Vol. 6, Issue 1). Springer Science and Business Media LLC. <https://doi.org/10.1186/s42779-019-0013-7>
- [21] Husemann, K. C., & Eckhardt, G. M. (2019). Consumer spirituality. In *Journal of Marketing Management* (Vol. 35, Issues 5-6, pp. 391-406). Informa UK Limited. <https://doi.org/10.1080/0267257x.2019.1588558>
- [22] Iradukunda, F. (2019). Food taboos during pregnancy. In *Health Care for Women International* (Vol. 41, Issue 2, pp. 159-168). Informa UK Limited. <https://doi.org/10.1080/07399332.2019.1574799>
- [23] Keller, C., & Siegrist, M. (2015). Does personality influence eating styles and food choices? Direct and indirect effects. In *Appetite* (Vol. 84, pp. 128-138). Elsevier BV. <https://doi.org/10.1016/j.appet.2014.10.003>
- [24] Lam YL, Khor GL. Risk Factors among Coronary Heart Disease Patients in the National Heart Institute, Kuala Lumpur. *Malaysian Journal of Nutrition*. 1997;3(2):103-16.
- [25] Lee, Y. Y., & Wan Muda, W. A. M. (2019). Dietary intakes and obesity of Malaysian adults. In *Nutrition Research and Practice* (Vol. 13, Issue 2, p. 159). The Korean Nutrition Society and The Korean Society of Community Nutrition. <https://doi.org/10.4162/nrp.2019.13.2.159>
- [26] Lepkowska-White, E., & Chang, C. L. (2017). Meanings of Food among Polish and American Young Women. In *Journal of East-West Business* (Vol. 23, Issue 3, pp. 238-259). Informa UK Limited. <https://doi.org/10.1080/10669868.2017.1313351>
- [27] McNamara, K., & Wood, E. (2019). Food taboos, health beliefs, and gender: understanding household food choice and nutrition in rural Tajikistan. In *Journal of Health, Population and Nutrition* (Vol. 38, Issue 1). Springer Science and Business Media LLC. <https://doi.org/10.1186/s41043-019-0170-8>
- [28] Meyer-Rochow, V. B. (2009). Food taboos: their origins and purposes. *Journal of ethnobiology and ethnomedicine*, 5(1), 1-10. <https://doi.org/10.1186/1746-4269-5-18>
- [29] Ministry of Health (MOH) Malaysia, (2005). National Nutrition Policy of Malaysia. Putrajaya: Ministry of Health
- [30] Mohammed, S. H., Taye, H., Larijani, B., & Esmailzadeh, A. (2019). Food taboo among pregnant Ethiopian women: magnitude, drivers, and association with anemia. In *Nutrition Journal* (Vol. 18, Issue 1). Springer Science and Business Media LLC. <https://doi.org/10.1186/s12937-019-0444-4>
- [31] Nanua, J. N., & Mbogoh, P. M. (2022). Influence Of Food Taboos Of The Mijikenda On The Nutritional Status Of Under-Five-Year-Old Children.
- [32] Norimah Jr AK, Safiah M, Jamal K, Haslinda S, Zuhaida H, Rohida S, Fatimah S, Norazlin S, Poh BK, Kandiah M, Zalilah MS. (2008). Food Consumption Patterns: Findings from the Malaysian Adult Nutrition Survey (MANS). *Malaysian Journal of Nutrition*. Mar 15;14(1):25-39.
- [33] Onuorah, C. E., & Ayo, J. A. (2003). Food taboos and their nutritional implications on developing nations like Nigeria-a review. *Nutrition & Food Science*. <https://doi.org/10.1108/00346650310499767>
- [34] Oni, O. A., & Tukur, J. (2012). Identifying pregnant women who would adhere to food taboos in a rural community: a community-based study. *African journal of reproductive health*, 16(3).
- [35] Rozin, P., Markwith, M., & Stoess, C. (1997). Moralization and Becoming a Vegetarian: The Transformation of Preferences Into Values and the Recruitment of Disgust. In *Psychological Science* (Vol. 8, Issue 2, pp. 67-73). SAGE Publications. <https://doi.org/10.1111/j.1467-9280.1997.tb00685.x>
- [36] Rozin, P. (2007). Food and eating. In S. Kitayama, & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 391-416). New York, NY, US: Guilford Press.
- [37] Sawalludin, A. F., Jia Min, C. L., & Mohd Ishar, M. I. (2020). The Struggle of Orang Asli in Education: Quality of Education. In *Malaysian Journal of Social Sciences and Humanities (MJSSH)* (Vol. 5, Issue 1, pp. 46-51). Secholian Publication. <https://doi.org/10.47405/mjssh.v5i1.346>
- [38] Shahar, S., Earland, J., & Rahman, S. A. (2000). Food intakes and habits of rural elderly Malays. In *Asia Pacific Journal of Clinical Nutrition* (Vol. 9, Issue 2, pp. 122-129). Wiley. <https://doi.org/10.1046/j.1440-6047.2000.00147.x>

- 
- [39] Teo, C. H., Chin, Y. S., Lim, P. Y., Masrom, S. A. H., & Shariff, Z. M. (2019). School-based intervention that integrates nutrition education and supportive healthy school food environment among Malaysian primary school children: a study protocol. In *BMC Public Health* (Vol. 19, Issue 1). Springer Science and Business Media LLC. <https://doi.org/10.1186/s12889-019-7708-y>
- [40] Tilahun, R., Aregawi, S., & Molla, W. (2022). Food Taboo and Myth Among Pregnant Mothers in Gedeo Zone, South Ethiopia: a Qualitative Study. Research Square Platform LLC. <https://doi.org/10.21203/rs.3.rs-1556900/v1>
- [41] United States Department of Agriculture, Food and Nutrition Services. (2017). Food Desert Locator: Release No. 0191.11. Retrieved from <https://www.fns.usda.gov/tags/food-desert-locator>
- [42] Wahab, N. A., Zainol, Z., Bakar, M. A., Ibrahim, A. Z., & Minhaj, N. (2016). Developing service quality index for zakat institutions. *International Journal of Economics and Financial Issues*, 6(7), 249-258.
- [43] Wardle, J., Parmenter, K., & Waller, J. (2000). Nutrition knowledge and food intake. In *Appetite* (Vol. 34, Issue 3, pp. 269-275). Elsevier BV. <https://doi.org/10.1006/appe.1999.0311>
- [44] Woolley, K., & Fishbach, A. (2017). A recipe for friendship: Similar food consumption promotes trust and cooperation. In *Journal of Consumer Psychology* (Vol. 27, Issue 1, pp. 1-10). Wiley. <https://doi.org/10.1016/j.jcps.2016.06.003>
- [45] Ver Ploeg, M., Breneman, V., Farrigan, T., Hamrick, K., Hopkins, D., Kaufman, P., & Tuckermanty, E. (2009). Access to affordable and nutritious food: measuring and understanding food deserts and their consequences: Report To Congress (No. 2238-2019-2924).
- [46] Verneau, F., Caracciolo, F., Coppola, A., & Lombardi, P. (2014). Consumer fears and familiarity of processed food. The value of information provided by the FTNS. In *Appetite* (Vol. 73, pp. 140-146). Elsevier BV. <https://doi.org/10.1016/j.appet.2013.11.004>