

Food Consumption and Food Belief Among Paddy Farmers Households in Rural Area, Kedah, Malaysia

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Research Article

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Abstract

Background

Food consumption influences food security household level, particularly among paddy farmers households especially in the rural area. At the same time food taboo or food belief among paddy farmers people in a rural area in certain food still exist until now. Therefore, this study aims to explore the food consumption and food belief among low-income households in the rural area, Kedah Malaysia

Methods

This qualitative study was carried out in Kubang Pasu, Alor Setar, Pendang, Kuala Muda and Baling district in Kedah, Malaysia. A total of 225 respondents were involved in this study. Data were collected from heads of households involve directly in paddy crops.

Results

The study found out, that paddy farmers households in a rural area of Kedah Malaysia consumed less food with a score of less than 30.0. This group uses chub mackerel fish as a protein resource because the price is low when compared to other saltwater fish (e.g. pomfret, king mackerel, grouper fish, mangrove red snapper, snapper, and barramundi), and also uses freshwater fish as a protein resource. Furthermore, food beliefs also influenced food consumption among the rural paddy farmers households in Kedah.

Conclusion

The findings reveal the food consumption patterns of low-income families especially, particularly in rural areas, and point to the need for more targeted and planned programmes within the low-income group to improve food security, particularly in food consumption households. However, food belief inseparable in their daily routine.

Introduction

Food security happens when all people have physical and economic access to safe and nutritious food that satisfies their nutritional needs and desires for an active and balanced life at all times [1]. In 2019, two billion individuals, or 25.9 per cent of the worldwide population, were hungry or lacked regular access to nutritious and sufficient food [2].

Food security related to poverty status. Poverty is fundamentally a denial of choices and opportunities, as well as a violation of human dignity. It denotes a fundamental inability to contribute effectively to society.

...ing to feed and clothe a family, not having access to a

school or clinic, not having land to grow food or work to earn a living, and not having access to credit. Individuals, households, and communities face insecurity, powerlessness, and marginalisation. It refers to a person's vulnerability to violence, and it frequently entails living in a marginal or vulnerable setting with no access to clean water or sanitation" [3] Since 1990, the number of people living in extreme poverty has decreased by more than half. However, in 2015, 10 per cent of the world's population or 734 million people lived on less than \$1.90 a day [4].

Malaysia has a very low poverty rate, less than one per cent in 2016. The figures were questioned because the previous Poverty Line Income (PLI) per household of MYR 980 (USD 238.56) was thought to be too low. In 2020, the PLI was changed, increasing the household income from MYR 980 (USD 238.56) to MYR 2499 (USD 608.33). According to the latest PLI, Malaysia's poverty rate would rise to 5.6 per cent in 2019, with the number of poor people rising to 405,441 in 2019 compared to 24,700 in 2016 [5]. As shown in Table 1, the Malaysian government categorised the population's income into Decile groups in 2019. The goal of this classification is to allow for more focused planning, monitoring, and programme implementation to close the income gap between households [5].

Table 1 Income Share, Median, Mean Household Income and Income Threshold by Household Decile Group, 2019

Decile Group		Income Share (per cent)	Mean Household Income (RM)	Income Threshold (RM)
T20 (T20 Group is the household that earns the highest 20 per cent of the total income of Malaysians.)	T2	19,781	24,293	More than 15,039
	T1	12,586	12,720	10,960 – 15,039
M40 (M40 group is the households that earn 41 per cent to 80 per cent of the total income of Malaysians)	M4	9,695	9,730	8,700 – 10,959
	M3	7,828	7,841	7,110– 8,699
	M2	6,471	6,477	5,880– 7,099
	M1	5,336	5,346	4,850– 5,879
B40 (B40 Group is the lowest 40 per cent income household)	B4	4,387	4,395	3,970– 4,849
	B3	3,556	3,556	3,170– 3,969
	B2	2,786	2,803	2,500– 3,169
	B1	1,929	1,849	Less than 2,499
Source: Department of Statistic Malaysia [5–6]				

Malaysia's poverty remains a major challenge especially in B40 groups. Low monthly household incomes, with the minimum pay of MYR 1100, may not be enough to maintain a sustainable living when food and other essential prices continue to grow. According to the Household Income and Basic Amenities Survey, the B40 category received only 16.0 per cent of overall income. The proportion was significantly lower when compared to 46.8 per cent among the T20 group (the top 20 per cent of earners) and 37.2 per cent among the M40 group (the middle 40 per cent of earners) [6].

Poverty is concentrated mostly in rural areas, where indigenous peoples predominate live especially paddy farmers for example. Based on Khazanah Research Institute [7] reported around 200,000 people are paddy farmers and the majority age average 60 years old. The monthly household income for paddy farmers in the region was RM2,527. This includes income from both agricultural and non-agricultural-
 Loading [MathJax]/jax/output/CommonHTML/jax.js onal median household income (RM5,228) and means

household income (RM6,958) in 2016, with paddy farmers falling within the B40 income group. This situation will affect food security among this group and food intake indirectly.

In 2019, close to 750 million or nearly one in ten people in the world were exposed to severe levels of food insecurity. These figures represent the impact of poverty on food security, either because the quality or amount of the food they always consume has reduced, or because they have gone a whole day without eating due to insufficient funds [8]. Poverty is also a significant contributor to poor nutritional status and food consumption [9–10]. Cannon [11] explain poverty also caused less food intake, low-nutrient and an increased risk of chronic diseases. Even though this group people spent a greater amount on food, and choosing the cheaper food in households. In addition, the quality of food does not emphasize by lower-income people because they are more focused on the quantity of food with lower price to full fill food consumption in households.

This situation will affect the food security level in households. The problem of maintaining food security for all entails not just maintaining the overall availability of adequate food, but also ensuring that all people have access to safe, nutritious food at all times. Household nutrition is influenced by interactions between food security and local knowledge negotiated along multiple axes of power. McNamara & Wood [12]. Poverty reduction is a critical component of a food security policy because poor people spend three-quarters of their income on staple foods, making them vulnerable to high food prices, and many poor people rely on farming for a significant portion of their income, making them vulnerable to drops in agricultural output. As a result, the primary goal of this article was to evaluate the food intake or consumption among paddy farmers family in rural Kedah, Malaysia.

LITERATURE REVIEWS

A variety of factors, including unhealthy lifestyles, poor eating habits, and poor food consumption, have all contributed to the population's nutritional status [13, 14]. Furthermore, the nutritional status and food consumption of the population are influenced by socioeconomic circumstances. Adult lifestyle changes result in poor eating habits, greater socioeconomic pressure, smoking and decreased physical activity, all of which raise the risk factors for chronic diseases [15].

Malaysians' improper eating habits and lack of physical activity may aggravate an unhealthy lifestyle. Malaysia's national food policies and way of life are insufficient (Lee et al, 2019). Malaysians consume an uneven amount of energy, which leads to poor nutritional quality and an increased risk of medical diseases [16]. Dietary practices that are both healthy and balanced are the answer [17].

This situation caused by purchasing power and affected food consumption in households. Based on the Department of Statistic Malaysia [5] reported 30.4 per cent of households in Malaysia still earn below RM4,000 with the bulk of 24.8 per cent being in the middle-income class RM2,000 to RM3,999. This indicates that household purchasing power is still low, at 56.2 per cent of households only spend less than RM4,000 a month. In the rural area, household consumption expenditure in urban areas increased at

Loading [MathJax]/jax/output/CommonHTML/jax.js 25 to RM3,038 for the period 2016 to 2019. Compare in

urban from RM4,402 to RM4,916. In addition, resident in the rural area spend 24.4 % of income for food and beverage expenses compare to the urban area spend 16.1% for this purpose. Indirectly, this reflects the average household consumption expenditure in rural areas higher than household spending in an urban area and will cause limited food consumption in households.

According to Ahmad [18], the cooked rice was the most widely consumed food by Malaysian adults (89.8 per cent), with an average of 2 ½ plates consumed per day. Sugar (55.9 per cent), leafy green vegetables (43.2 per cent), marine seafood (29.4 per cent), and chillies (29.4 per cent) rounded out the top five dietary products taken regularly (24.2 per cent). Adults in rural areas consume significantly more cooked rice per day, whereas adults in urban areas consume much more sugar and marine seafood per day. Men consume far more cooked rice and sugar per day than women. Approximately 98.2 per cent of persons reported drinking plain water regularly, on average 8 glasses per day, while 98.6 per cent reported drinking sugar-sweetened beverages daily, on average 2 glasses per day. The most popular beverages was tea (70.3 per cent), followed by a malted drink (59.1 per cent), coffee (53.2 per cent), soy milk (51.4 per cent), and carbonated drink (51.4 per cent). (45.6 per cent). Males drink 7.8 glasses of plain water per day and 1.9 glasses of sugar-sweetened beverages per day more than their female counterparts.

According to Shahar et al. [19], around 27 and 11 per cent of senior Malay in rural regions reported consuming biscuits and traditional cakes (or *kuih*) regularly. These are commonly consumed as snacks in between meals. Fresh fish was the most commonly consumed animal protein (87.4 per cent), followed by seafood and associated goods such as dried salted fish, dried anchovies, and fish chips. When it comes to dairy products, only 10.3 per cent and 3.8 per cent of people routinely consumed full cream milk or reduced-fat milk powder, respectively. Condensed milk, on the other hand, was consumed daily by around 38 per cent of the participants. Tofu, tempeh, almonds, and beans were consumed regularly by 21–40 per cent of the participants, with tofu being the most popular. Only 18 per cent of those polled indicated they ate fruits daily.

Food taboos or beliefs, on the other hand, are influenced by household food habits and are passed down from generation to generation. Food taboos exist in all communities, and traditional values, customs, and taboos govern each cultural society, with repercussions if ignored or disregarded. Food taboo has a long history, and it is a tradition and norm that is accepted and accepted by members of society [20]. Food taboos or beliefs might signify specialized knowledge among family members, as well as the obligations and obligations that come with different subjectivities [12]. Food taboos are classified as either permanent or transient. The permanent food taboo stems from religious prohibitions, but the transitory food taboo stems from life's circumstances [21].

Asi and Teri [20] explained taboo is a rule, unwritten command, or statement by the community's leader and his entourage that declares some items sacrosanct or forbidden to its members. Communities have a collection of cultural and religious beliefs and laws that purport to be instructions from a higher-ranking being who will protect them from sickness and evil. Thus, Food is important in any culture, especially during physiological changes that occur during life. People choose culturally acceptable foods. Not only

does culture impact the utility of food, but it also prescribes meals for certain life stages such as menstruation, pregnancy, delivery, and death [22].

McNamara and Wood [12] also identify many food taboos that restrict family members' eating of important staple foods and nutrient-rich fruits and vegetables. According to research by Asi,, and Teri [20], certain customs in the North West Region, Cameroon forbid children from consuming kola nuts. It is regarded to be a source of knowledge and is ingested by the elderly. It's also used as an aperitif for strong drinks, and youngsters aren't allowed to drink them. Adult males, according to this society's beliefs, do not consume sweet potatoes. It is good for children and women due to the sweet character of the meal and the fact that it is regarded as weak. It is also thought to impair men's producing organs, perhaps leading to infertility.

Food behaviours during menstruation among women are impacted by how it is regarded in the culture they live in, according to research by Goswami, and Thakur [21]. Meat, eggs, and chicken, for example, were shunned in the Karbi tribe district of Assam, India since it was thought that these meals were hot and would bring stomach discomfort and increased bleeding during menstruation. Dry fish is avoided during the full duration of menstruation since it is believed that the menstrual blood would stink. Curd, bananas, and pineapple should also be avoided if you have a lot of bleeding. Meanwhile, sour foods such as tamarind and pickles were avoided to avoid severe bleeding and stomach soreness. Spices, chilli, and pepper were also suggested to be avoided by menstruation girls since these foods are thought to trigger stomach cramps [21].

At the same time, a survey conducted by Diana et al [22] among Madurese pregnant women discovered that squid, shrimp, pineapple, cabbage, and cold water/ice were the items that were most commonly deemed forbidden for pregnant women. Squid, shrimp, stingray, and octopus were all deemed off-limits to pregnant women of all gestational ages. These types of seafood were thought to be dangerous during pregnancy and delivery. For many generations, the majority of people believed in and obeyed the dietary taboos. Fruits including *kedondong*, pineapple, snake fruit, watermelon, durian, and rambutan were not permitted to be consumed by pregnant women. The explanation stated was a concern of miscarriage and the heat produced in the stomach by eating certain fruits. Pregnant women were advised to avoid *kedondong* and pineapple. Particularly at certain gestational ages, "hot" and "cold" meals were avoided and advised, respectively. Foods that are "hot," such as pineapple, snake fruit, and durian, should be avoided since they might create heat in the womb and lead to miscarriage. Meanwhile, "cold" meals like fruits and vegetables are recommended since they are beneficial for pregnancy and can help the baby's skin stay clean.

Shahar et al. [19] observed that the Malay elderly in Mersing, Johor, avoided specific foods because they were harmful to their health. As an example. cucumber, pumpkin, long beans, aubergine, mustard, leaf, swamp cabbage, coconut shoot, and okra are considered "cooling foods", and these individuals tend to avoid them since they induce joint numbness/pain, poor blood circulation, stomach-ache, knee-ache, asthma and cough. Vegetables (e.g. pumpkins, starfruit, sweet potatoes, cassava leaves, watercress,

aubergine), milk, and fruit (e.g. jackfruit) are also classified as “windy foods” since they create nausea and a windy stomach. Vinegar, chicken liver, vegetables (e.g. bamboo shoots, chillies, lemongrass), and fruits (e.g. mangosteen, sugarcane, pineapple, mango, lime, coconut juice, star fruit, sugar cane juice) are all foods that these people should avoid since they trigger heartburn and stomach discomfort.” Sharp food” is what this dish is classified as.

Furthermore, socio-economic issues health, food and poverty continue to be issued for the B40 group of people [23]. Shahar et al. [24] also emphasize poor people's socioeconomic status attenuated poor nutrition knowledge and purchasing choices, poor dietary pattern with less consumption of nutritious, high-fiber foods, especially fresh fruits and vegetables, in both urban and rural areas, [25,27,27]. USDA [28] explain elderly people have reduced fibre intake due to a failure to ingest the necessary daily portions of fruits and vegetables) Furthermore, when compared to other developing and developed countries, a higher proportion of Malaysian older people did not meet the World Health Organization (WHO) recommendation for fruit and vegetable intake [29]. Food taboos such as cold, hot, sharp, and gassy meals may also contribute to reduced dietary fibre consumption among the elderly, particularly in rural settings.

Those in rural regions also eat less fruits than adults in urban cities. Older people's fruit purchasing options are limited in rural parts since there are fewer retail supermarkets and larger grocery shops. Aside from that, fruits are frequently more expensive than vegetables, and not everyone in rural regions grows their own fruits, limiting their usage. Furthermore, gum disease, tooth decay, dentures, and mouth or tongue infection are also prevalent oral health problems (Shahar et al.[24].

Methodologies

Location of the study and sample size

The food consumption survey was carried out in a rural area of Kedah, Malaysia. As shown in Fig. 1, the area was divided into five districts for this study. Every district was chosen because it had a larger population. Each district's, one area was chosen using stratified random sampling. The sample of this study comprises 225 low-people in rural Kedah. The questionnaire was divided into three sections of A, B and C. Section A consists of details of the demographic characteristics of the respondents such as gender, age, marital status, occupation, household size etc. Section B consists of information relating to the livelihood assets ownership among vulnerable people. Finally, section C contains information about the food consumption to supported food security among respondent based on the Malaysian food pyramid.

Various types of question, such as continuous data, a five-point Likert-type scale, open-ended questions included in the questionnaire. The questionnaire developed in the national language of Malaysia (Malay) and the survey conducted with the help of local research assistants under the supervision of the

researchers. The study conducted through a face-to-face interview with the selected samples of paddy farmers in Kedah state.

The food consumption pattern was then approximated using Badari, Arcot, and Sulaiman's approach [13]. Food consumption data were classified based on scale as below.

1 = being never/never intake.

2 = being 1–3 times per month,

3 = being once a week,

4 = being 4–6 times per week and

5 = being everyday

Using the following calculation, a score was assigned to each food item.:

$$Score = \frac{R1S1 + R2S2 + R3S3 + R4S4 + R5S5}{5}$$

Where:

R1– R5: Per cent respondents selecting a rating

S1 – S5: Scale point

5: Maximum scale point

The food intake was divided into three categories:

Score	Explanation
80.0-100	most consumed foods
30.0-79.9	moderately consumed foods
≤ 10. 0-29.9	less consumed food

Results

Respondent Demographics

Most of the respondents were a man (100 per cent) and aged between 48–52 years. (17.3 per cent) and 58–62 year. (16 per cent), respectively, with a mean age of 54 years. Overall respondent works as paddy farmers and depend on paddy production as the main income.

The average income monthly was MYR2162.70, where 48.9 per cent of them had monthly household incomes between MYR1000-2000. In sum, overall respondent in the study categorised as poor people because income below MYR2499 as a Table 1. Meanwhile, the mean monthly household expenditure RM1232.49 and RM 465.64 or 37.78 per cent were allocated for food and drink expenses. In 2019, the mean monthly household expenditure RM4,534 at the national level and the median monthly household expenditure totalled RM3,654. From this amount, 17.3 per cent (RM632.14) was allocated to food and non-alcohol beverages. Department of Statistic Malaysia [5]. Regarding the education level, 28 per cent of respondent finished primary school level and 35.1 per cent finished secondary school.

Food Intake Patterns

Furthermore, this study discovered that rice is the primary source of energy among respondents who received a perfect score. Figure 2 shows that plain water was one of the greatest daily intakes, with a score of 93.51 among the respondents. With a score of 92.0, the majority of the respondents consumed a lot of sugar every week. Protein was primarily obtained from saltwater and freshwater fish. After fish, chicken eggs and chicken were an additional source of protein.

Additionally, coffee and tea were the most commonly eaten foods, with scores of 84.18 and 89.43 among respondents, respectively. Sweetened condensed milk was the most moderately consumed item, with a score of 36.63. In tea or coffee, sweetened condensed milk was utilised. However, because it contains more sugar than milk and effected to health. The higher cost of fresh milk and reduced-fat milk is most likely the main reason why people prefer sweetened condensed milk as part of their diet. At the same time, respondents with a score of 21.07 chose a carbonated drink as a weekly drink (less consumed).

The responders can get a lot of protein from the fish). Chub mackerels, hardtail scad, slender sprat, and black skipjack appear to be popular among moderately consumed saltwater fish (Fig. 3), with scores ranging from 32.89 to 78.48. Freshwater fish (Fig. 4) likewise give protein to the response while requiring less consumption. As a type of freshwater fish, respondents chose tinfoil barb, catfish, gourami fish, climbing perch, and channa striata. Seafood such as prawns, squid, and shellfish have also become a monthly choice among respondents who consume moderate amounts of food (score 35.32). Mutton, beef, seasonal fruit (*durian, rambutan, cempedak*), low-fat milk, and full cream milk were also shown to be less popular among the respondents.

Vegetables (Fig. 5) and fruits were the suppliers of vitamins and minerals. Cassava shoots, water spinach, star gooseberry, fiddlehead, and bamboo shoot green appear to be the least consumed veggies, with a score of less than 30.0. Herbs (*ulam*) are fresh veggies that respondents eat every week, usually at lunch and dinner, and are served with a spicy sauce with a score of 41.87 (moderated consume food). Yardlong bean, sprouts, spinach, cabbage, and choy sum, on the other hand, were moderately consumed and scored between 38.92 and 51.64. Fruits (banana, apple, orange, mango,) to show moderately consumed by low-income people in study (38.04). Beans and grains, with a score of 29.36, likewise contribute carbohydrates to respondents who eat less. Bean curd (26.66), groundnut (27.55), and green

The study also discovered that respondents' food views are one factor that contributes to low food consumption in rural areas. 40.5 per cent said they had specific health opinions about certain foods, believing they were either helpful or dangerous for health. Table 3 demonstrates the diversity of meals thought to have a particular impact on the health of respondents, as discovered by the study. According to the classification employed in research on food bans among respondents, the foods were classified as "cooling," "windy," "hot," "sharp," or "itchy." A range of items, particularly fruits and vegetables, were frequently avoided because they were thought to be 'cool' (26 per cent), 'windy' (5.33 per cent), 'hot' (18.66 per cent), 'sharp' (1.33 per cent), and 'itchy' (5.34 per cent). These foods were said to induce health problems such as numbness and soreness in joints, hurting knees, heartburn, stomach aches, and skin disorders (eczema). A total of 37.11 per cent of respondents thought that beverages like coffee and carbonated beverages, fresh milk, and reduced-fat milk could cause headaches, stomachaches, indigestion, and nausea.

Meanwhile, rising food prices, particularly for saltwater seafood, contributed to less food consumption. According to the study, high prices of saltwater fish, particularly pomfret, king mackerel, grouper fish, mangrove red snapper, snapper, and barramundi, prompted 22.2 per cent of respondents to consume fewer of such seafood. It's not unexpected that chub mackerels, hardtail scad, yellowtail scad, and black skipjack are preferred protein sources in rural areas because they are less expensive than other fish.

Table 3
Food belief among paddy farmers in a rural area, Kedah

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

Conclusion

Overall, this study discovered that food consumption among paddy farmers in a rural area in Kedah, Malaysia is low. The food intake in homes was influenced by socioeconomic factors such as low income, a larger number of households, less livelihood asset, low education, and a lack of ability and training. Simultaneously, some respondents were locked into a monthly instalment plan to purchase furniture and electrical equipment, consumption in homes. Some people spend an average amount of RM3,612 as a commitment to repayment of home purchase debt, motor vehicle, personal debt, and investment debt [5] and resulting in lower food consumption in households.

Furthermore, as shown in Table 3, food belief among rural people influenced food intake at the individual and family level. At the same time, most respondents spent a larger portion of their monthly food budget on high-calorie and high-protein foods, owing to reduced costs and family preferences. Rice, sugar, and green leafy vegetables were the most popular foods, with vegetables, fruits, and dairy products falling in second and the third. The respondents do not appear to prefer healthy food, which might be due to the higher price on the market, which they cannot afford. Appropriate dietary education should be encouraged and implemented in lower-income homes to ensure that nutritional needs are addressed.

The findings of the study have several implications for creating effective food-related initiatives. It is consumed the most important factor influencing the desire to eat healthy foods is just the attitude. Marketers and government agencies must enhance healthy food awareness and promotion [16]. It supports the improvement of general consumer information and understanding, as well as the promotion of healthy eating habits [30] as government intervention can ensure lower costs for healthy foods. The Ministry of Health should continue to promote a healthy lifestyle, as well as raise community awareness and provide nutrition education. However, basic yet effective dietary techniques must be discovered and implemented with care. These approaches might also be used to increase nutrition knowledge and awareness while also motivating people to modify their eating habits [25].

Declarations

Availability of data and materials

Not applicable

Competing interests

The authors declare that they have no competing interests.

Funding

Not applicable

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Figures



Figure 1

Study location

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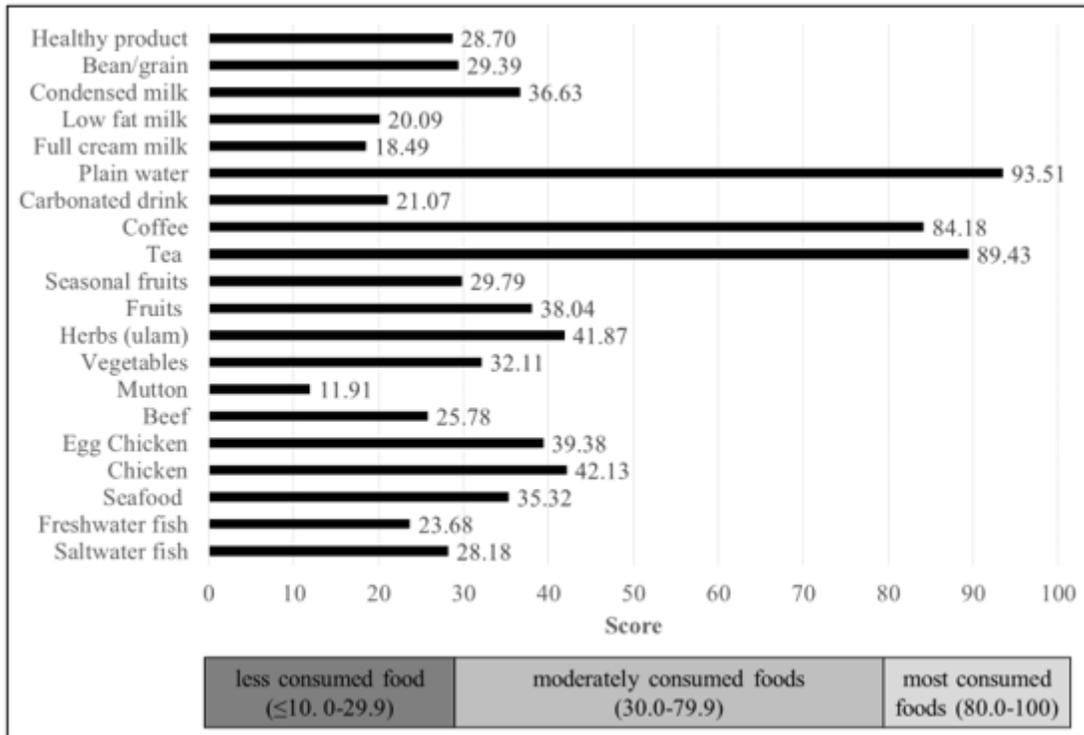


Figure 2

Type of food consumption among paddy farmer in rural, Kedah

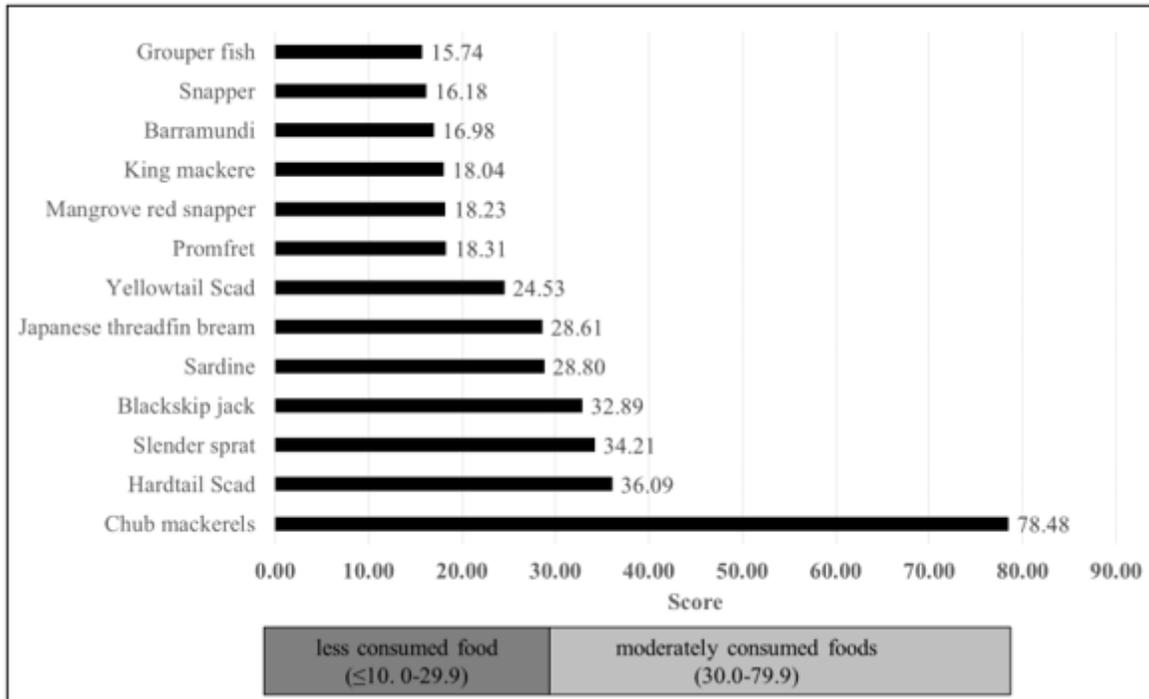


Figure 3

Type of saltwater fish

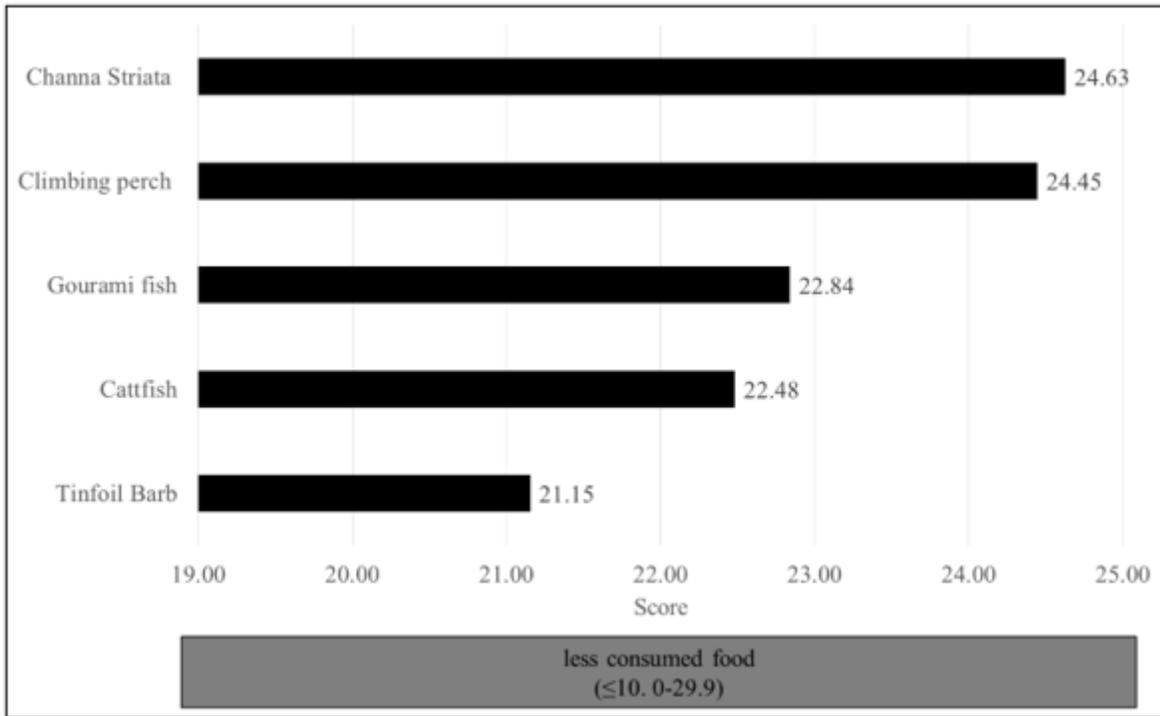


Figure 4

Type of freshwater fish

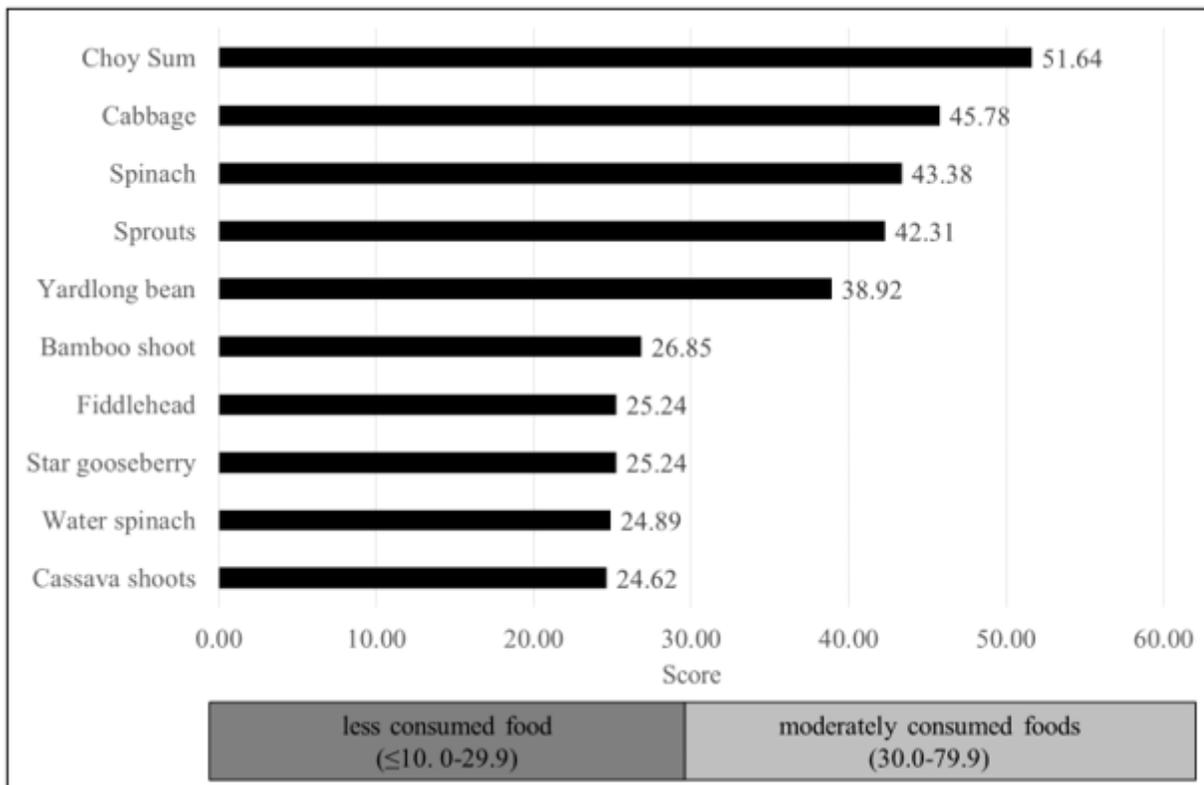


Figure 5

Type of vegetables