

# Healthy Eating: The Preventive Factors among Malaysians

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**Abstract**—The paper investigates the factors perceived to be important barriers to healthy eating among Malaysian adults. Data were collected from a random sample of 1719 adults throughout Malaysia via a self-administered questionnaire. Findings show that the most important perceived barriers to healthy eating were unavailability and limited choice of healthy food away from home, time constraints and busy lifestyle. Exploratory factor analysis of 22-item in perceived barriers domain revealed four factors that accounted for 76% of the variance in perceived barriers to healthy eating, namely: physical; knowledge and social; lack of time; and unavailable healthy choices. The findings of this study implied the needs for provision of wide selection and availability of healthy food to the consumers as well as promoting the nutrition and healthy eating messages effectively.

**Index Terms**—Food choice, healthy eating, Malaysia, perceived barriers.

## I. INTRODUCTION

Healthy eating is currently the growing concern of many countries due to the rises of overweight and obesity rates worldwide. The countries around the globe are currently facing the ‘nutrition transition’ which refers to the change in the diet’s structure, sedentary lifestyle and rapid increase in obesity rate. Malaysia is not an exception. Modern lifestyles such as more families eating out and younger generations rely heavily on fast food are common nowadays [1]. Eating late supper at nights has been a trend, with growing number of food eateries operating around the clock offering places for hanging out at nights. The increased popularity and availability of food away from home (FAFH) in Malaysia is evidenced by approximately 28,610 food service outlets operating in 2009 to cater the wide range of the populations’ tastes and preferences. The fast food sector was the leader in new outlets of food service sector, predominantly recording an absolute growth of 67% in the period of 2004 to 2009 [2].

The populations’ unhealthy eating habit has prompted the government via the Ministry of Health (MOH) to implement various policies and campaigns to promote a healthier eating behavior among the public. For example, the National Plan of Action for Nutrition of Malaysia, NPANM II (2006-2015) has been developed to tackle the issues of unhealthy eating practices in Malaysia. With regard to the campaigns launched at national level, some of the campaigns include “Healthy Lifestyle Campaign”, “Reduce Sugar Intake Campaign”, and “Guidelines on the Implementation of Healthy Eating in the Public Sector”. In addition, a revised Malaysian Dietary

Guidelines (MDG) was launched in 2010 which consists of 14 messages and 55 recommendations to healthy diet. In general, the guideline’s objectives were to promote Malaysians to eat healthily, exercise regularly and make effective use of nutrition information on food labels [3].

Although there seems a growing concern on the importance of healthy eating among the general public, this may not be translated into practice. Despite the proliferation of healthy eating campaigns, it seems have not produced any success at achieving the desired behavior among the general population. The MOH concerns on the population’s health state and realizes a wide gap between Malaysians’ knowledge and their behavior [4]. The gap is illustrated by a rise in the prevalence of obesity and overweight. In 2010, the country ranked top in both the prevalence of obesity and overweight in south-east Asia, placed sixth in the prevalence of obesity (seventh in the prevalence of overweight) in Asia, and ranked 39<sup>th</sup> in the prevalence of obesity (44<sup>th</sup> in overweight prevalence) worldwide. In addition to this, the latest report of the National Health and Morbidity Survey (NHMS 2011) revealed that the prevalence of non-communicable disease (NCD) risk factors continued to rise. It is estimated about more than 17 million Malaysians or 60.7% of the populations are living with NCD, not to mention many more are still undiagnosed. Currently, it is estimated that 6.2 million adults with hypercholesterolemia, 5.8 million with hypertension, 2.6 million with diabetes, and 2.5 million Malaysian adults with obesity [5].

These alarming statistics posits that the health problems are far more serious in Malaysia than any other countries in the region. An understanding of the factors that prevent Malaysians from eating healthily is crucial in achieving desired healthy lifestyle changes. Therefore, the objective of this study is to investigate the factors perceived to be important barriers to healthy eating behavior among Malaysians.

## II. BARRIERS TO HEALTHY EATING

A plethora of studies have examined the possible barriers to healthy eating perceived by specific target groups of interest. For example, the perceived barriers to healthy eating were tested to low-income communities in Minnesota [6], obese, treatment-seeking adults in the U.S. [7], disadvantaged community in south Wales [8], young women in Australia [9], and men in U.K. [10].

Lappalainen *et al.* [11] presented the barriers into nine categories including; lack of time; self-control; resistance to change; food preparation; cost of food; unpleasant foods; influence of other people; lack of knowledge/expert consensus; and selection influences. Other researchers classified the barriers into two distinct categories such as physical (external) and psychological (internal) barriers [12].

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[13]. Some of the examples of physical barriers are time costs, unavailability and prices, while eating habits and willpower are examples of psychological barriers.

Lack of time was one of the major perceived barriers to healthy eating which was well documented in the literatures [6]-[9], [11], [13]-[20]. Other major barriers to eating healthfully were self control or lack of motivation, for example as in [7]-[9], [11], [13], [17]-[19], and also costs or price of healthy food [6], [9], [17], [18].

Other than the aforementioned barriers, a number of studies identified the sensory appeal of healthy food including taste as reported in [14], [18], [20], [21], and perishable nature of healthy food [18]; lack of healthy eating knowledge [7], [19]; giving up favorite food [11]; social influence from family and friends [19]; the ability to satisfy hunger [21], [22]; and conflicting advice from health professionals [8].

To the best of our knowledge, there is no known studies has been conducted in Malaysia in examining the possible barriers to healthy eating. A number of studies carried out in the country focused on healthy eating attitudes or habits, for example, factors affecting eating habit among medical students [23], eating habits among undergraduate students [24], and health behaviors of women living in urban community [25].

### III. METHODOLOGY

#### A. Participants

Data were collected from throughout Malaysia via a self-administered questionnaire carried out between November 2012 and March 2013. Target respondents were adults 18 years old above and were randomly approached at major shopping malls in 14 capital cities and Federal Territory of Kuala Lumpur. Shopping malls can be regarded as the most appropriate place to collect data because there is a high probability of getting people from all walks of life to participate in the survey. The malls were chosen randomly from the list of Malaysian business directory. Respondents were asked whether they would like to participate in the survey. Non-monetary incentive was given to each respondent upon completion of the questionnaire.

#### B. Instruments and Measurements

Structured questionnaire was designed to capture the importance of perceived barriers to healthy eating among the Malaysian adults. The respondents were asked to complete the demographic questions on gender, age and marital status. In the next section, they were requested to indicate the degree of importance for each barrier of the 22-item in perceived barriers to healthy eating adopted from [11]. The questionnaire using a 7-point scale and the response ranging from 1 = strongly disagree to 7 = strongly agree as attitudinal measurement of respondents' perceived barriers to eating healthily.

#### C. Statistical Analysis

Statistical analyses were conducted using SPSS version 20.0 software, and included descriptive and factor analysis analyses. Descriptive analyses were performed to describe the proportion of respondents based on gender, age, marital

status as well as the importance of perceived barriers to them. Factor analysis was conducted to identify underlying dimensions or factors perceived to be possible barriers to healthy eating among the respondents.

TABLE I: DEMOGRAPHIC PROFILE OF RESPONDENTS (N = 1719)

Variables		Frequency	Valid %
Gender	Male	710	41.3
	Female	1009	58.7
Age group	18-20	150	8.7
	21-30	768	44.7
	31-40	436	25.4
	41-50	217	12.6
	Over 50	148	8.6
Marital status	Single	802	46.8
	Married	858	50.1
	Divorced/Widowed	52	3.0

## IV. ANALYSIS AND FINDINGS

### A. Demographic Profile

A total of 1719 responded to the survey. The total sample was sufficient to represent total populations of 28.7 millions, in which a sample of 1500-2500 was suggested by [26]. Table I highlights demographic profile of the respondents. The gender distribution was consisted of 58.7% female and 41.3% male. Majority of the respondents were younger adults below 30 years old (53.4%), followed by the 31-40 year old group (25.4%), and older adults aged 41 years old and above (21.2%). Slightly over half of the respondents were married (50.1%), 46.8% were single while the remaining were either divorced or widowed (3.0%).

### B. Perceived Barriers to Healthy Eating

Cronbach's alpha was used to test all measures in the perceived barriers concerning the scale's internal consistency with cut-off value of 0.7 as acceptable level of reliability or internal consistency [27], [28]. The overall score of measure of perceived barriers is 0.96, which indicated that all items were good in measuring the same underlying construct.

The study carried out exploratory factor analysis (EFA) with the 22-item pertaining perceived barriers to healthy eating, to identify underlying structure of relationships among individual items. Principal component analysis (PCA) with varimax rotation was employed. Using scree test criterion, four factors were suggested to be retained. Items which were cross-loaded were eliminated and only items with a factor loading greater than 0.5 were included in the analysis. Thirteen items were retained in the final analysis.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.92, exceeding the recommended value of 0.6 as the minimum value for a good factor analysis [29]. The overall significance of the correlation matrix was 0.000 with the value of Bartlett's test of sphericity at 13549.24.

Table II presents perceived barriers to healthy eating together with the factor loadings of each item, and the importance of each listed item perceived by the respondents. The four interpretable factors explained 53.1%, 8.5%, 7.7% and 6.7% of the variance respectively. Overall, these factors explained 76% of the total variance, which was satisfactory as it is common to consider the percentage of variance

explained at 60% or less in the social science disciplines [30].

The four-factored solution demonstrated acceptable factor loadings on all factors. Factor 1 consisted of six items with factor loadings ranged from 0.66 to 0.80. This factor was labeled as ‘physical’ which included items associated with the physical aspects of healthy food such as price, length of preparation, as well as sensory appeal. Factor 2 was made up of three items with factor loadings of 0.71 to 0.80, and was named as ‘knowledge and social’. The items included in this factor were related to lack of knowledge on healthy eating and social influence from expert consensus and other people. Factor 3 was related to time factor due to the working hours and lifestyle. The two-item factor was labeled as ‘lack of time’ with factor loadings of 0.88 and 0.86 respectively. Finally, factor 4 included two items associated with the unavailability and limited choice of healthy food away from home with factor loadings of 0.86 for unavailability options of healthy food and 0.82 for limited choice when eating out. This factor was named as ‘unavailable healthy choice’.

The four-factored scale was further checked individually to examine overall internal consistency of each factor using cronbach’s alpha. The cronbach’s  $\alpha$  coefficients for the four factors ranged from 0.80 to 0.91, indicating a good internal reliability.

TABLE II: PERCEIVED BARRIERS TO HEALTHY EATING

Barriers to healthy eating	Factor loadings	An important barrier (%)
<b>Factor 1: Physical (53.1% variance, Cronbach’s <math>\alpha = 0.91</math>)</b>		
Price of healthy foods	0.80	42.2
Lengthy preparation	0.77	41.0
Unappealing food	0.77	39.3
Healthy food is more perishable	0.74	43.3
Not enough to satisfy hunger	0.69	35.3
Strange or unusual food	0.66	33.8
<b>Factor 2: Knowledge and social (8.5% variance, Cronbach’s <math>\alpha = 0.80</math>)</b>		
Experts keep changing their minds	0.80	47.7
Not knowing enough about healthy eating	0.75	44.6
Feeling conspicuous amongst others	0.71	40.9
<b>Factor 3: Lack of time (7.7% variance, Cronbach’s <math>\alpha = 0.86</math>)</b>		
Irregular working hours	0.88	52.1
Busy lifestyle	0.86	51.1
<b>Factor 4: Unavailable healthy choice (6.7% variance, Cronbach’s <math>\alpha = 0.81</math>)</b>		
Healthy options not available in restaurants	0.86	55.8
Limited choice when I eat out	0.82	55.1

In order to summarize the importance of each barrier perceived by the respondents, responses from strongly agree to tend to agree were combined for analyses. Overall, 55.8% of respondents agreed with the statement “It is difficult for me to eat healthy foods at shops/restaurants”; 55.1% agreed that “There is not much choice of healthy food available when I eat out”, and more than 50% of respondents agreed to the following statements: “It is hard for me to eat healthily because of irregular working hours” (52.1%) and “I don’t have time to prepare and eat healthy food” (51.1%). Other statements such as “Experts keep changing their minds on healthy eating subjects”, “Not knowing enough about healthy eating”, and “Healthy food is more perishable” were of lesser

importance to the respondents.

## V. DISCUSSION

The study suggested that physical aspects of the healthy food such as price, food preparation time, and sensory appeal of the food including taste, perishability and the ability to satisfy hunger were the perceived barriers in preventing Malaysians from eating healthily. These barriers were in accordance with other findings from previous studies [6], [10], [14], [18], [20], [22]. The price concern may become the major motivating factor to low income populations in eating healthily as reported in [6]. On the contrary, a study by [8] revealed that the respondents perceived the food preparation time has more pressing issues than price factor as it was time consuming in purchasing and preparation of healthy foods. The taste concern was cited more frequently than other sensory appeal attributes including perishability and the ability to satisfy hunger. Some people perceived healthy foods as tasteless, boring, bland [10] and unappealing [14]. Although all the listed barriers of physical factor in the current study were not as important as other barriers that will be discussed further, it reflects the needs for the food marketers to improvise the physical aspects of the healthy and nutritious foods in motivating the public to practice a healthy diet. The people demanded food that is not only healthy, but also tasty, filling, imperishable, and easy to prepare. These considerations were expected to be gained at affordable costs.

Regarding the knowledge and social barriers which were consisted of expert consensus, lack of knowledge on healthy eating and feeling conspicuous amongst others, a number of studies discussed these particular concerns. The experts in healthy diet might give some conflicting opinion to the people, for example the consumption of milk was originally considered as ‘healthy’. Over time, it was regarded as ‘unhealthy’ due to the fat content and back to ‘healthy’ again because of its calcium content [8]. Another study on obese adults seeking treatment revealed lack of knowledge factor was made up of four items associating with lack of knowledge in estimating the food’s calorie and content; in estimating portion sizes; in eating food to lose weight; and in preparing healthful food [7]. The social influence also plays the crucial part in supporting the people to eat healthily, not only in adolescents, but also in adults’ populations [21]. Some people desire the needs for sense of belonging to specific group or community. The findings from [8] drew attention regarding the perceived attributes of ‘healthy people’. Despite the fact that healthy people were perceived by the respondents as more energetic, live longer and look better, the negative implication was, these ‘healthy people’ were seen as not being part of the community. A study conducted in Malaysia on adults’ level of understanding of five key messages in the updated MDG 2010 revealed that the respondents’ understanding of the five key messages was moderate with 52% to 93% of them did not understand key words in the dietary guidelines such as serving size, sedentary habits, blended vegetable oil and shortenings [31]. This reflects the low success rate in promoting the MDG to the public despite the integrated efforts involving the Health Ministry, professional bodies and the private sector through a

variety of programs and channels. It should be noted that the aforementioned study was carried out among respondents living in Kuala Lumpur, an urban agglomeration. Populations from other states particularly from rural areas most probably have much lower level of awareness due to limited access and low level of nutritional and healthy eating knowledge. Therefore, the MOH and other health care professionals should come up with definite consensus regarding some aspects of the nutrition and dietary practices to eliminate any confusing and conflicting messages in the healthy eating campaigns. They should communicate consistent, sound and easily understood nutrition messages to the public because some parts of the populations may not be knowledgeable in nutrition and healthy eating practices. In addition, the role of social influences should be strengthened to motivate people to change their diet into a healthier one with the support from family, friends, peers, and societies.

Similar to other previous findings, healthy eating barriers perceived to be important were associated with time factor due to irregular working hours and busy lifestyle [9], [13], [15], [16]. As one of the most developed countries in south-east Asia, Malaysia is following the similar trend. The economic growth has led to major shifts in lifestyle changes, including demand across different types of food. As a result, traditional diets which were rich in grains, vegetables and plant-based were substituted to meals high in fat, sugar and animal-based. In addition, dual-earner families are on the rise in the country. Working women are struggling to balance time between families and works. Due to stressing time constraints, modern families might substitute time-saving options such as eating out and prepare instant or convenience food for their own time with family. Due to this, the populations are relying more on the food away from home as well as processed and convenient foods to cater their nutritional needs. This implied the needs of regulating the food industry to supply not only convenient and nutritious foods, but also tasty options in order to encourage people to improve on their diets. As indicated by [32], people should get the important message that eating healthily doesn't mean that they have to compromise on time and taste factors, and similar message should be applied to the Malaysians accordingly.

Most importantly, the findings of this study suggest that the availability and wide selection of healthy food away from home plays an important role in promoting Malaysians to eat healthily. Interestingly, this particular barrier was not listed as the most important barriers perceived by the respondents in previous literatures in other populations. For example, a study by [32] in the EU populations reported that the percentage of respondents perceived selection influences as important barrier to healthy eating ranged from only 9% to 35%. In contrast, more than 55% of respondents in the current study cited the availability and selection factor as the most important barrier in eating healthily. Despite the growing number of food service outlets in the country, healthy or nutritious options are either unavailable or limited in comparison with other countries. This scenario demonstrated the fact that in Malaysia, the food industry in general and fast food operators in particular has not being fully supportive in offering healthy options in their menus or product lines. This might be the plausible explanation on the

difficulties facing by people in the country in practicing healthy eating behavior. The growing number of food service entities most notably fast food restaurants, has brought about negative impacts to the health state of the populations. To date, there is no specific regulation in the country concerning the nutritious menu options that should be offered, particularly by the fast food operators. However, all fast food restaurants are required to present the nutrition information on the wrapper or on brochures, pamphlets or posters. In addition, guidelines for the advertising of fast food on children were implemented. The guidelines stipulated that the fast food industry is prohibited from sponsoring children programs on television. The similar practice has been implemented in other countries such as in U.K. and Canada [33]. Other than this initiative, the government via the Health Ministry should take proactive actions in ensuring the general public has greater access to healthy eating habits. One of the stringent actions that should be considered is to introduce a law or regulation enforcing the food operators to provide healthier options in their menus.

## VI. CONCLUSION

The findings of this study highlight the needs for providing not only healthy options of food away from home and healthy convenience foods to cater to the busy lifestyle of Malaysians, but also communicating healthy eating messages effectively to the general public. It implied the needs of concerted efforts involving Health Ministry, other health educators and the food industry to collaborate in providing wide selection and availability of healthy food to the consumers as well as communicating the nutrition and healthy eating messages effectively. All the initiatives by the ministry to curb the obesity and its comorbidities would never achieve the desirable success rate if they are not supported by the food industry.

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