

Socio-demographic Perspective on the Intention to Use Malaysian Dietary Guidelines among Young Adults

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Abstract

Malaysia is facing an obesity crisis, which calls for immediate actions. One of the ways is to encourage the use of the Malaysian Dietary Guideline (MDG) to guide the population to eat healthily. However, empirical evidence suggested that the majority of Malaysians, including young adults, were not meeting the recommended dietary requirements. In light of this issue, this article sought to examine the intention to use the MDG as a reference for healthy eating among young adults in Malaysia from a socio-demographic perspective. In particular, this study examined the differences between/ among gender, age, ethnic groups, levels of education, levels of income, and living accommodations on young adults' intention to use the MDG. The study was carried out on university students of various institutions of higher learning in Malaysia using a questionnaire. A total of 204 valid responses were obtained and they were analysed using t-test and one-way analysis of variance (ANOVA). The results showed that all six demographic factors did not have any significant differences toward young adults' intention to use MDG as a source of reference for eating healthily. As an implication, the study recommended for stakeholders (such as policymakers, health professionals, and nutrition educators) to focus on factors other than the demographic profile of users in ensuring greater use of the MDG.

Keywords: Malaysian Dietary Guidelines; demographic profile; user behaviour

1.0 Introduction

Obesity is a common health problem in many countries around the world. According to the World Health Organization (WHO) 2017, the worldwide prevalence of obesity has reached epidemic proportions. The statistics published by WHO indicated that there were more than two billion people classified as overweight/obese adults. Meanwhile, in the Asia and Pacific region, a report by the Asian Development Bank found that two out of every five adults in the region were either overweight or obese (Helble & Francisco, 2017).

Among the ASEAN countries, Malaysia holds the dubious record of being the “fattest” country in the region (Economist Intelligence Unit, 2017). The report indicated that Malaysia's prevalence of obesity was at 13.3 percent, while overweight was at 38.5 percent. This is equivalent to 51.8 percent. Overall, the prevalence of obesity in Malaysia, as reported by the Ministry of Health via successive National Health and Morbidity Surveys, has been on an increasing trend over the past decade; from 43.1 percent in 2006 to 44.5 percent in 2011 and, the latest, 47.7 percent in 2015 (Lim, 2016). As the number is not expected to shrink, the trend is worrying as obesity reduces productivity and has a direct impact on the country's competitiveness over the long run (Economic Planning Unit, 2013). Malaysia's total cost for obesity as a percentage of nominal GDP is estimated between 0.4% and 0.8% (Economist Intelligence Unit, 2017). In terms of budget, according to the Economist Intelligence Unit's (2017) report, Malaysia suffers the highest overall cost for obesity as a percentage of the

country's healthcare spending among ASEAN countries; which is about 10-20% of the country's annual healthcare expenditure. Besides genetic and other environmental factors, obesity has a behavioural underpinning (Walley et al., 2006). One common cause of obesity is poor food consumption and diet behaviour (e.g. Barlow et al., 2016). To fight the prevalence of obesity, WHO (2017) recommended many preventive actions, including policy interventions by the national government. One key area of intervention is through targeting food intake (Andrade & Andrade, 2016). This is based on the scientific evidences that suggested the risks of developing obesity are low if the guideline with respect to food intake are followed.

Adhering to WHO's call, the Malaysian Government in 1999 introduced the Malaysian Dietary Guidelines (MDG) as part of the initiatives to promote healthy diet practices and lifestyles among the population (Norimah et al., 2010). The MDG is essentially a "compilation of the latest science-based nutrition and physical activity recommendations" (Ministry of Health Malaysia, 2010: i). It is intended to be an "authoritative guide on the dietary needs of every Malaysian" over two years of age (Ministry of Health Malaysia, 2010: iii). The MDG contains a set of scientifically-proven advisory statements that provides recommendations on the types and quantity of foods that members of the public should be consuming for a healthy diet (Norimah et al., 2010; Tee, 2011).

The MDG was thoroughly reviewed and subsequently re-launched on 25 March 2010. Compared to only eight key messages in the 1999 MDG version, the revised 2010 MDG version has fourteen key messages, with 55 recommendations that cover "the whole range of food and nutrition issues, from the importance of consuming a variety of foods to guidance on specific food groups, messages to encourage physical activities, consuming safe food and beverages and making effective use of nutrition information on food labels" (Tee, 2011: 455). The recommendations specified in the MDG are mostly generic and non-specific (e.g. "eat a variety of foods", "maintain body weight in a healthy range", "be physically active every day" and "eat plenty of fruits and vegetables every day"). In a scheme of things, the MDG is a useful tool to educate members of the public in terms of nutritional intake, promote good diets, and desirable eating behaviours.

The MDG has also benefits for other users (Norimah et al., 2010; Tee, 2011). For government and policymakers, the dietary guidelines are used to help plan nutritional programs; nutritionists and health professionals use it for dietary intake assessment and planning; food manufacturers use it to manufacture food products and marketers use it as a marketing tool (Wohl, 2016). For example, the dietary guidelines may be used by marketers to promote products by referencing usage of the product to the recommendations for daily consumption or encourage intake levels of certain nutrients (e.g. calcium, fibers, and vitamin A) in reference to the recommendations under the guidelines (Krasny, 2006).

However, the rising prevalence of obesity in Malaysia has cast doubt on the effectiveness of the MDG as one of the tools to promote healthy eating (Ismawati, Zainalabidin, & Rezai, 2014). Supporting this is the various studies that have shown that the Malaysian populations are generally not eating properly in accordance with the recommendations of the MDG (Hui et al., 2016; Kar et al., 2016). Whereas, studies conducted elsewhere have demonstrated that effective use of the dietary guideline is beneficial (dos Santos, Paiva, Pedrosa, & Viana, 2014). Effective use of the dietary guideline has enabled individuals to make informed choices about their daily dietary intakes (Kandiah & Jones, 2002) and, thus, become "better eaters" (Illich et al., 1999). Following the right diet that complies with the dietary guidelines has also been shown to reduce the risks for obesity and chronic diet-related diseases (So, McLaren, & Currie, 2017), enhance the quality of life (Bonaccio et al., 2013) and increase life expectancy (Voortman et al., 2017).

Surprisingly, there exists a research gap in the current body of knowledge with respect to the intention to use the MDG as a reference for healthy eating among young adults in

Malaysia. Young adults, defined for the purpose of the present study as those between the ages of 18 and 30 (Gardiner, Kemper, Legedza & Phillips, 2007), tended to be involved in various risky behaviours (Raffoul, Leatherdale & Kirkpatrick, 2018), have poor nutritional knowledge (Booth et al., 2013) and, oftentimes, make poor food choice decisions (Alsaffar, 2014). Young adulthood is also a period associated with weight-gain (Malhotra, Østbye, Riley & Finkelstein, 2013) as a result of them engaging in specific behaviours known to contribute to weight gain including eating fast food, drinking sugar-sweetened beverages and living a sedentary lifestyle (Peterson et al., 2017).

More importantly, young adults are at a critical period of their life. It is the period when appropriate diet practices and eating behaviours can be developed or reinforced (Coklin et al., 2005) and will continue to become lifelong habits (Peterson et al., 1994). Healthy diet practices and eating behaviour adopted during these formative years may facilitate healthier food consumption and eating behaviour later in adulthood. In contrast, poor diet practices and eating behaviours will continue in adulthood and they may be difficult to break once acquired (Coklin et al., 2005). Thus, it is highly important to examine the underlying factors that might influence the intention of this high-risk group (Booth et al., 2013) to use the MDG as one of the tools to guide them in eating a healthy diet.

While the MDG may be useful to guide and promote a desirable eating behaviour, a review of the literature indicated that there is a lack of study presently that examines how demographic differences account for the heterogeneity on the intention to use the MDG. With the rising prevalence of obesity and chronic diet-related diseases in Malaysia (Economist Intelligence Unit, 2017; Lim, 2016), it is imperative to take corrective steps now. As such, an understanding of the characteristics of the high-risk group within the target population is necessary as it would allow for more effective and targeted intervention actions. Thus, given the importance of the topic, the present study is conducted to examine the influences of gender, age, ethnic group, level of education, income and living accommodation on young adults' intention to use the MDG as a reference for eating healthily.

2.0 Demographic Factors and Intention

According to Fishbein and Ajzen (1975: 288), an intention is an individual's "subjective probability that he will perform some behaviour". Thus, the intention may be described as an individual's decision to enact a given behaviour (Armitage & Conner, 2001) or, alternatively, his or her readiness or likelihood to perform the behaviour (Ajzen, 1991, 2006). Therefore, intention can be a strong indicator of the actual behaviour: the greater the intention, the greater the likelihood of the individuals performing the behaviour in question (Ajzen, 1991).

Guided by past studies which had demonstrated the varying associations between demographic factors and intention (Houle-Johnson & Kakinami, 2018), it was assumed that young adults would display a similar behaviour response toward intention to use MDG as a reference for healthy eating. For the present study, the following demographic factors - namely gender, age, ethnic group, level of education, level of income, and living accommodation – were studied.

2.1 Gender and Intention to use MDG

The influence of gender on intention has been extensively examined in previous studies, with the results vary between the groups. Between the two gender groups, women showed higher purchase intention for healthy foods (Hardin-Fanning & Gokun, 2015), organic food products (Wee et al., 2014) and tropical food products (Sabbe, Verbeke & Van Damme, 2008). Gender is also said to influence food preference. Past studies found that females showed a greater preference for healthy foods, such as fruits and vegetables; while males showed greater

preference for meat and other products of animal origin, such as eggs and milk. In terms of quality of diet, women were found to have better diet quality than men (Hiza et al., 2013). Similarly, girls had better diet quality than boys (Feskanich, Rockett & Colditz, 2004). When it concerns to physical activities, male college students showed greater intention to participate in physical activities than their female colleagues (Beville et al., 2014) because past studies have revealed that gender may have influenced intention, it was, therefore, important to identify whether gender influence the use of MDG. Therefore, the present study hypothesized the following:

H₁: There is a difference in the Intention to use MDG between male and female young adults' gender

2.2 Age and Intention to use MDG

Age is another demographic factor that influences intention. Wang and Chen (2011) also found a positive association between age and healthy eating. Supporting this view is Hiza et al. (2013) who saw a link between age and quality diet: as age increased, the quality of diet improved. Their study suggested that older adults had better diet quality than younger adults. However, the same study also showed younger children were likely to have a better-quality diet than younger adults since the children were eating in a supervised environment. Nu et al. (1996) offered two reasons to explain why children eat a better diet as compared to young adults. First, the increased influence of social factors, especially peer pressures, and the desire of the young adults to be integrated into a group causing young adults to follow their peers, including in food selection (Ellison, 2014), in order not to be *too* different. Second, young adulthood is the period at which parents start to lose control of their child's food choices.

Among the young adults, a study conducted in Germany showed that university students aged 21 years old and below demonstrated significantly higher attitude towards healthy eating as compared to their colleagues aged 21 years old and above (Harker, Sharma, Harker & Reinhard, 2010). According to a 2010 study on the MDG conducted by Norimah et al. (2010), younger respondents had a better understanding of the MDG compared to the older age group. In other disciplines, age has been considered as a key factor in the intention to engage in physical activities (Alley, Schoeppe, Rebar & Hayman, 2018), involved in risky ventures (Nordlund & Westin, 2013), use of the new "Internet of Things" devices (Maçik, 2017), act entrepreneurially (Hatak, Harms & Fink, 2014) and purchase from e-commerce (Mohd Isa & Wong, 2015). Given the variability in the previous results in respect to the two variables, it is suggested that:

H₂: There is a difference in Intention to use MDG among the account of the young adults' age

2.3 Ethnic group and Intention to use MDG

An ethnic group can also have an impact on intention. The influence of the ethnic group was found a significant predictor in previous studies that examined intention, such as, to adopt a healthy lifestyle (Gavin, Fox & Grandy, 2011), quit smoking (Soulakova, Li & Crockett, 2017), donate organs (Park, Smith & Yun, 2009), engage infertility consultancy (Khanna, Chandra, Singh & Mehra, 2018) as well as the purchase of foreign (Muposhi, Dhurup, & Shanhuyenhanzva, 2018) and counterfeit (Kwong, Yu, Leung & Wang, 2009) products. In terms of diet quality, the study by Hiza et al. (2013) noted the differences in diet quality among the major ethnic groups in the US. According to the study, Hispanics had better quality diets

than blacks and whites. Similarly, the study by McCabe-Sellers et al. (2007: 697), also in the US, concluded that “African Americans had lower grain, vegetable, milk, and variety scores than did whites. The consumption of grains and vegetables was associated with lower odds ratios for being overweight”. Between the three major ethnic groups in Malaysia, Norimah et al.’s (2010) study on the level of understanding of the MDG key messages showed that the Chinese respondents had a better understanding of the key messages than Malays and Indians. Norimah et al. (2010) attributed this ability to a higher level of education of the respondents. Hence, it is suggested that:

H₃: There is a difference in Intention to use MDG among the account of the young adults’ ethnic group

2.4 Level of education and Intention to use MDG

In their study, Wang and Chen (2011) showed that education can be a factor contributing to diet disparities among adults in the US. Hiza et al. (2013: 304) saw the value of the level of education as it is “associated with increased nutrition knowledge, as well as an indicator of the ability to translate nutrition knowledge into better dietary practices”. Respondents with better educational background had better diet quality (McCabe-Sellers et al., 2007). They had a significantly higher amount of healthy and nutritious foods. The McCabe-Sellers et al.’s (2007: 701) study concluded with an observation suggesting that “adults having less than a college-level education, as compared with adults having a college education, were only half as likely to eat a good diet but were twice as likely to eat a poor diet”.

This may be because knowledge about how to eat a healthy diet and the availability of healthful foods are more salient with the more educated group of respondents (Backman et al., 2002). Hassan et al. (2015) associated with the ability to practice healthy eating among university students in Malaysia was partly due to the respondents’ level of education. In respect of the MDG, Norimah et al.’s (2010) study confirmed that the understanding of the messages was more associated with the level of education of the respondents. The study reported that a “higher percentage of adults with primary school qualification categorized as having a poor level of understanding, while those with tertiary education showed a good level of understanding” (Norimah et al., 2010: 119). Similarly, professionals showed a higher understanding of the MDG than the non-professional respondents. Based on the earlier discussion, the present study hypothesized that:

H₄: There is a difference in Intention to use MDG among the account of the young adults’ level of education

2.5 Individual’s monthly income and Intention to use MDG

Hiza et al. (2013) found the quality of diet improved with the income level. In a Malaysian study, Zalilah et al.’s study (2015) on the relationship between household income and dietary intake showed that children of low-income families had comparatively the lowest intake of nutrients and they did not meet the recommended energy intakes. Consumption of healthy foods, such as vegetables and fruits from this low-income group was low (Hiza et al., 2013) but, on the other hand, reported a much high prevalence of obesity (Robles, Smith, Ponce, Piron & Kuo, 2014). In contrast, Lea and Worsley (2005) found that with rising income levels, the demand for organic food products increases. Wee et al. (2014) concurred, where the study showed that wealthy Malaysian households showed a higher intention to purchase organic food products. Wee et al. (2014: 391) reported that “respondents who have income

level higher than RM3,000 per month had statistically significant higher score on purchase intention of organic food products than respondents from those lower than RM3,000 per month". Herbs and dietary supplementary usage by young adults in the US were demonstrated to have a strong link with income level (Gardiner et al., 2007).

However, one key reason why university students tended to grab the easiest on-the-go foods as their meal simply because the foods are convenient for busy students, easy to prepare and cheaper than healthy foods (Deliens et al., 2014). The comparatively higher cost of meeting the recommended requirements as prescribed by the dietary guidelines may pull young adults away from the MDG. After all, without prescribing to the MDG, already one-third of the Malaysian young adults' disposable incomes were spent on food (Abas & Ooi, 2016). Even Malaysian households from the lower-income bracket have already spent a significant proportion of their income on foods – that, alone, without complying fully to the MDG's requirements (Khazanah Research Institute, 2016). All in, it can be assumed that the income level of an individual can play an important role in the intention to use MDG. On this basis, the present study hypothesized that:

H₅: There is a difference in Intention to use MDG among the account of the young adults' level of income

2.6 Accommodation and Intention to use MDG

While living at home with family, the young adults' dietary habits are shaped by the eating habits of their family (Lupi et al., 2015). However, when young adults left home and moved into an independent living arrangement, their lifestyle starts to change as they are living independently. They may also experience greater peer pressure on eating and physical activity (Hu et al., 2016). With the liberty to choose what to eat and when to eat, young adults' eating habits may change dramatically (Deliens et al., 2014). They start to eat outside (Hu et al., 2016), eat more on-the-go than healthy foods (Cefai & Camilleri, 2011), skip breakfast, consume fewer fruits and drink less than two litres of water daily (Ganasegeran, Al-Dubai, Qureshi, Al-Abed & Aljunid, 2012). In contrast, young adults who stayed at home with families during their studies, "got more physical exercise and consumed higher quantities of cooked vegetables, fish, meat products, chips, pulses, cooked meals and sandwiches" (Serio, Idolo & Donno, 2013: 164). They eat a better quality diet (Harker et al., 2010). On the other hand, students living away from home had larger body mass and exposed to higher risks of illnesses (Serio et al., 2013).

Therefore, it is assumed that young adults would more likely engage in behaviours that would decrease the likelihood of the known risks (Glanz, Rimer & Lewis, 2002). The response is consistent with previous literature that suggested perceived risk produces risk aversion that can lead to a variety of risk handling and reduction behaviours (Ouimet et al., 2008). The perception of risks is assumed to drive young adults to be more responsible for their diets, food consumption, and lifestyles. When individuals have higher perceived risks of getting diet-related health problems, they are more likely to be engaging in risk-reducing strategies to minimize the risks. This may include using the MDG as a source of reference for healthy eating. Following Piggford et al. (2008), it is suspected that intention to use MDG varied by the place of residence. Therefore, the hypothesis to be examined in the present study is as follows:

H₆: There is a difference in Intention to use MDG among the account of the young adults' living accommodation

3.0 Methodology

3.1 Sample and procedures

The target population of the present study is young adults, between the ages of 18 and 30 (Gardiner et al., 2007), living in Malaysia. Due to the lack of a sampling frame, the present study used a convenience sampling technique. A questionnaire was prepared to collect the data and it was pilot-tested. The final questionnaires were distributed to university students based on voluntary participation. According to Singhapakdi et al. (1996) using university students to represent the target population, which in this case is young adults, is considered acceptable when the items in the questionnaires are relevant and pertinent to the respondents who answer them.

3.2 Measurement

Intention to use MDG is the dependent variable and five items were used to measure this construct. The measurements items, such as “I intend to use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months” and “I am determined to use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months”, were adapted from previous studies (Ajzen, 1991; Ilham & Nik Kamariah, 2012). The items were measured based on a 5- point Likert scale, from “Strongly disagree” to “Strongly agree”. The questionnaire also requires the respondents to provide their demographic profile pertinent to the present study, including age, gender, ethnicity group, level of education, level of income, and living accommodation. The categorization of the demographic profile information was straightforward.

3.3 Data Analysis

Data analysis was performed using IBM SPSS Statistics 23. Pearson’s Moment coefficient analysis, an independent sample t-test and one-way analysis of variance (ANOVA) were used to examine the differences between the demographic factors and intention to use MDG.

4.0 Results

4.1 Profile of respondents

A total of 218 respondents participated in the survey. However, only 204 questionnaires were usable and 14 questionnaires were excluded as they were completed by individuals who were outside the target population (aged 18 to 30). Based on the demographic data as shown in Table 1, 56.4 percent of respondents were female; 54.4 percent were Malay and 77.9 percent of respondents were aged between 20 to 30 years old. The majority of respondents (54.9 percent) were living on the university accommodation, while 35.3 percent were living alone or sharing a house outside of the university and 9.8 stayed at home with their families. With respect to educational level, most respondents (73.5 percent) were pursuing a first degree, with the remaining 22.5 percent for diploma and 3.9 percent postgraduate qualification. Regarding monthly income, the majority of respondents reported receiving a monthly income of between RM500 to RM1,000 represented 54.9 percent of the total respondents.

Table 1: Profile of respondents

Variable		Frequency	%
Gender	Male	89	43.6
	Female	115	56.4
Ethnic group	Malay	111	54.4
	Chinese	58	28.4
	Indian	25	12.3
	Others	10	4.9
Age (years)	18 to 20	45	22.1
	20 to 30	159	77.9
Current academic qualification	Diploma	46	22.5
	Degree	150	73.5
	Postgraduate	8	3.9
Monthly income (individual, RM)	Below RM500	27	13.2
	RM500 to RM1,000	112	54.9
	RM1,001 to RM2,000	57	27.9
	RM2,001 to RM3,000	6	2.9
	More than RM3,000	2	1.0
Living accommodation	On campus	112	54.9
	Alone/share house outside	72	35.3
	Family house	20	9.8

4.2 Level of response

Table 2 provides an overview of the respondents' level of response on the intention to use the MDG construct, with respect to mean and standard deviation scores. Overall, the scores for all five items were moderate, with the mean ranging from 3.36 to 3.75.

Table 2: Level of response on measurement items for intention to use MDG

Statements	Mean ¹	SD
I intend to use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months	3.39	.98
I will try to use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months	3.49	.96

I might not use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months (<i>reverse</i>)	3.42	.95
I am determined to use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months	3.36	.91
I intent to seek more information about the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months	3.75	1.01

¹ 1 = Strongly disagree; 5 = Strongly agree

4.3 Hypotheses testing

4.3.1 Differences between gender towards the intention to use MDG

The study consisted of 89 male and 115 female respondents. The result of an independent t-test, which was carried out to compare the intention to use MDG mean scores for male and female, showed that there was no significance difference in scores for males ($M = 17.09$; $SD = 3.94$) and females ($M = 17.65$; $SD = 4.06$); $t(202) = -.99$; $p = .32$, two tailed. According to Cohen (1988), the magnitude of difference in the means (mean difference = $-.56$; 95% CI = -1.67 to $.55$) can be classified as moderate (eta squared = $.11$). Therefore, H_1 is rejected.

4.3.2 Differences between age group toward intention to use MDG

The study grouped the respondents into two age brackets, namely from 18 to 20 and from 21 to 30. The result of an independent t-test showed that there was no significance difference in scores for 18 to 20 ($M = 16.76$; $SD = 4.51$) and 21 to 30 ($M = 17.59$; $SD = 3.85$); $t(202) = -1.23$; $p = .21$, two tailed between the two age group. However, analysis of the magnitude of difference in the means (mean difference = $-.83$; 95% CI = -2.17 to $.49$) indicated that the effect size was large (eta squared = $.21$) (Cohen, 1988). Notwithstanding the effect size, H_2 is still rejected.

4.3.3 Differences among ethnic groups towards the intention to use MDG

Ethnic groups in the present study reflect the diversity of the major ethnic groups of the Malaysian population: Malay, Chinese, Indian, and Others. Respondents were asked to choose one ethnic group that they belong to. A one-way ANOVA was conducted to examine the influence of the ethnic group on the intention to use MDG among young adults. The result revealed no statistically difference between the four groups at the $p < .05$ level: $F(3, 200) = 1.18$; $p = .31$. The effect size, calculated using eta squared, was $.02$. Cohen (1988) considered the value of eta squared of $.02$ to be a small effect size. Therefore, H_3 is rejected.

4.3.4 Differences among levels of education towards the intention to use MDG

The respondents were required to select one from the following three options that best represent their level of education: diploma or equivalent, degree or equivalent, and postgraduate. The result of a one-way ANOVA indicated that there was no statistical difference between the respondents with a diploma, degree, or postgraduate qualifications in respect of their intention to use the MDG: $F(2, 201) = .88$; $p = .41$. The effect size was $.01$ and considered small (Cohen, 1988). Therefore, H_4 is rejected.

4.3.5 Differences among individual’s monthly income towards the intention to use MDG

The respondents were classified into five group income groups. To examine the influence of an individual’s income on the intention to use MDG, a one-way ANOVA was conducted. The result showed that there was no significant relationship between individuals’ monthly income and intention to use MDG: $F(4, 199) = 1.59; p = .17$. The effect size of the relationship was small (eta squared = .03) (Cohen, 1988). Therefore, H5 is rejected.

4.3.6 Differences among living accommodation towards the intention to use MDG

The respondents were asked to select any one of the following three choices to describe their living arrangement during the academic semester – living on campus in accommodation provided by the university, living alone or sharing a house outside of the university, or staying at home with family. A one-way ANOVA was carried out to examine the relationship between living accommodation and intention to use MDG. The results for ANOVA showed that there was no significant relationship between young adults’ living accommodation and intention to use MDG, $F(2, 201) = 1.46; p = .23$. The effect size was small (eta squared = .01) (Cohen, 1988). Therefore, H6 is rejected.

5.0 Summary of findings

The respondents were asked to select any one of the following three choices to describe their living arrangement during the academic semester – living on campus in accommodation provided by the university, living alone or sharing a house outside of the university, or staying at home with family. A one-way ANOVA was carried out to examine the relationship between living accommodation and intention to use MDG. The results for ANOVA showed that there was no significant relationship between young adults’ living accommodation and intention to use MDG, $F(2, 201) = 1.46; p = .23$. The effect size was small (eta squared = .01) (Cohen, 1988). Therefore, H6 is rejected.

Table 4: Summary of findings

	Relationship	Statistical test	Result	Decision
H ₁	Gender → Intention to use MDG	<i>t</i> -test	$t(202) = -.99; p = .32$	Not supported
H ₂	Age → Intention to use MDG	<i>t</i> -test	$t(202) = -1.23; p = .21$	Not supported
H ₃	Ethnic group → Intention to use MDG	ANOVA	$F(3, 200) = 1.18; p = .31$	Not supported
H ₄	Level of education → Intention to use MDG	ANOVA	$F(2, 201) = .88; p = .41$	Not supported
H ₅	Level of income → Intention to use MDG	ANOVA	$F(4, 199) = 1.59; p = .17$	Not supported
H ₆	Living arrangement → Intention to use MDG	ANOVA	$F(2, 201) = 1.46; p = .23$	Not supported

* $p < .05$; ** $p < .01$

6.0 Discussion

The present study examined the differences among six demographic factors - gender, age, ethnic group, level of education, level of income, and living accommodation - on young adults' intention to use the MDG as a source of reference for healthy eating. Prior research has been very limited in this aspect. The present study is a response to the call by a recent work (Sanusi, 2018) which had highlighted the critical need to understand the influences of demographic factors on intention to use MDG, on the back of abundant findings in recent studies (Hui et al., 2016; Kar et al., 2016) which had clearly shown that a significant majority of the Malaysian population did not eat properly following the recommendations of the MDG.

All six demographic factors were not found statistically significant differences concerning intention to use MDG. The present study's findings contradicted with some of the results in previous literature which suggested the presence of variability differences in the variable concerning intention (Houle-Johnson & Kakinami, 2018). A likely explanation on this may be due to the lack of awareness and knowledge about the MDG generally (Ismawati et al., 2014; Norimah et al., 2010). Respondents may not yet see the value of using the MDG as an important step to stem the rising tide of obesity and obesity-related diseases in Malaysia. In line with the suggestion of Tee (2011: 458) who recognised that it requires "continuous efforts and a great deal of determination" to convince the Malaysian public to adopt the MDG as a primary tool to guide them eating a healthy diet and solving their nutritional problems, this study, based on the findings, supports wholeheartedly the calls for more aggressive awareness and education campaigns to be conducted to convince more Malaysian public to adopt the MDG. It is also imperative to learn from the experiences of Turkey, where a majority of the respondents in the study conducted by Alsaffar (2014) were not aware of local dietary guideline due to low public awareness about the existence of it.

A low level of health literacy among Malaysian population may be another reason to explain why demographic differences failed account for the heterogeneity on intention to use the MDG (Cheong et al., 2018). Health literacy, defined as "the capacity of individuals to obtain, process and understand basic health information and services needed to make appropriate health decisions" (Ratzan & Parker, 2000), requires individuals to have a more active role on decisions relating to their health. Individuals with low level of health literacy are less likely to use the necessary preventive measures, which thus explained an inverse relationship between health literacy and obesity (Lassetter et al., 2015). The fact that a significant majority of the Malaysian population exhibited a low health information seeking behaviour, which is a manifestation of self-health management, is also aiding to surface a potential cause of the non-significant findings of the present study (Hamzah, Mohamad, Abdullah & Ayub, 2015). This may plausibly indicate that the MDG is not be the preferred tool when individuals experiencing obesity issues (Dawood, Jasim, Saleem & Ibrahim, 2017). The high preference is to seek consultation directly from medical professionals.

The presence of barriers – such as additional time, cost, efforts and resources – on the use of MDG may explain the non-significant findings. In the Theory of Planned Behaviour, one important construct of the classic TPB model is perceived behavioural control which refers to "perceived ease or difficulty of performing the behaviour" (Ajzen, 1991: 1988). Individuals are more likely engaging in a given behaviour when he or she feels confident in his or her ability to enact the behaviour and believes that he or she possesses the necessary skills and resources to overcome the barriers. Past experiences or the belief of the presence of barriers may outweigh the individual's ability leading him or her to not feel motivated to perform or adopt the behaviour (Maue, Segal, Kimberlin & Liposwki, 2004). Given high preference for

quick, easy and cheaper meals (Deliens et al., 2014), it is logical to suggest that young adults across demographic profiles become indifferent on the use of the MDG.

6.1 Managerial implications

The results of the present study showed that demographic factors did not have any differences towards the intention of young adults to use the MDG as a reference for healthy eating. Moreover, correlations between the demographic factors and intention to use the MDG were very small. As an implication of this finding, it is suggested for stakeholders, such as policy makers, health professionals and nutrition educators, to focus on factors other than demographic profile in ensuring greater use of the MDG. Using the widely-accepted Theory of Planned Behaviour, it has been shown that attitude and subjective norms are two influential factors toward the intention to use MDG as source of reference for healthy eating among university students in Malaysia. Additionally, perceived risks of obesity and obesity-related diseases has also been shown to be motivating factor to use the MDG among university students.

6.2 Conclusion and future research direction

The study examined the intention to use Malaysian Dietary Guidelines (MDG) as a reference for healthy eating among young adults in Malaysia from a demographic perspective. The present study measured intention as a proxy of behaviour (Ajzen, 1991; 2006) and, based on past literature, assumed that certain demographic factors may differ towards the intention. However, none of the six demographic factors that were examined in the present study has statistically differences towards the intention to use MDG as a source of reference for eating healthily. In other words, there were no meaningful differences among gender, age, ethnic group, level of education, level of income and living accommodation can be observed on young adults' intention to use the MDG.

Further research should consider examining aspects other than demographic factors, given the present study yielded no statistically significant differences among the demographic variables towards intention to use MDG. There is also potential research opportunity involving broader and more representative samples to provide more generalizable result, which is currently a limitation under the design of the present study.

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