International Journal of Economics, Management and Accounting 28, no. 2 (2020): 517-543

FACTORS INFLUENCING THE INTENTION TO USE MALAYSIAN DIETARY GUIDELINES AMONG UNIVERSITY STUDENTS

Ghazari Amri Sanusi

Department of Business Administration, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia. (Email: ghazari.sanusi@gmail.com)

ABSTRACT

The prevalence of obesity, partly due to poor diet and eating behaviors among the population in Malaysia, is on the rise. Not much has been written currently on using the Malaysian Dietary Guidelines (MDG) as a tool for Malaysians to plan an appropriate and balanced diet and to help reduce the risks of obesity and lifestyle-related diseases. Thus, this article seeks to identify the factors influencing intention to use the MDG as a reference for healthy eating among university students in Malaysia. This study is primarily motivated by the fact that university students are known to be in the "at-risk" population due to their low-quality diet and poor eating behaviors. Data for this study were collected from a total of 218 university students who participated in a questionnaire survey. To examine a set of hypotheses drawn from the Theory of Planned Behavior, a multiple linear regression method was applied in this study. The results show that attitude ($\beta = 0.35$; $p < 0.01$) and subjective norm ($\beta = 0.31$; $p < 0.01$) have a direct, positive and significant relationship with intention to use MDG. Contrary to expectations, perceived behavioral control ($\beta = -0.08$; $p > 0.05$) was not supported in this study. On closer examination, attitude toward behavior was found to be the more influential predictor of intention to use MDG. The findings from this study provide vital information on factors influencing intention to use MDG, and could serve as a basis by stakeholders, such as policymakers and health professionals, to formulate better and more targeted communication and engagement strategies in dealing with obesity among the university students in Malaysia.

JEL Classifications: I120, M310

Key words: Malaysian Dietary Guidelines, Theory of Planned Behavior, Obesity, Attitude

1. INTRODUCTION

Obesity has become one of the serious public health concerns in Malaysia (Institute for Public Health Malaysia, 2015). The official figure derived from the National Health and Morbidity Survey, issued by the Ministry of Health Malaysia (2019), reported the national prevalence of obesity among the adult population as at 17.7 percent. The same report also ranked Malaysia the highest among six Southeast Asian countries for obesity.

In fact, obesity is also rife among university students. According to a recent study carried out by Wan Mohamed Radzi et al. (2019), the prevalence of overweight and obesity among university students in Malaysia are at 21.2 percent and 16.3 percent, respectively, way beyond the national average (Ministry of Health Malaysia, 2019). Other studies reported obesity prevalence among university students in Malaysia, range from 14 percent (Sugathan and Bagh, 2014) to 32 percent (Kabir, Salmiah, and Suriani, 2014). By comparison, the Malaysian numbers are worryingly higher than their counterparts in other countries (Du, Zhu, and Jiao, 2017; Peltzer et al., 2014).

Many factors have contributed to the above-ideal weight situation. Beside genetics, rising income and lifestyles (Kim, Shon, and Yi, 2017; Walley, Blakemore, and Froguel, 2006; Ismail et al., 2002), a poor pattern of dietary behavior could also trigger obesity (Rush and Yan, 2017). In the case of university students, the review of the extant literature showed that a significant majority of them did not eat well (Kabir, Miah and Islam, 2018; Sogari et al., 2018; Sprake et al., 2018; Tanton et al., 2015). Students are commonly exposed to the sub-optimal eating environment, such as buffet style café, larger food portion and fast foods (Gerson et al., 2013; Barzegari et al., 2011). They also consume a high quantity of snack foods, soft drinks, high-calorie food, but eat fewer fruits, vegetables and dairy products than the recommended quantity (Al-Khamees, 2009). In sum, Kolodinsky et al. (2007) and Holben, Hassel, and Holcomb (1998) concluded that a typical diet for most university students does not meet the recommended dietary requirements. This is in contrast to the expectations that students should have proper and healthy meals in order to maintain energy in their daily activities to meet the rigor of academic programs (van den Berg et al., 2012).

Obesity cases, especially those caused by low-quality diet and poor dietary behaviors, are preventable and treatable (de Lorenzo et al., 2020). The mounting concern over obesity in the country has led the Ministry of Health Malaysia (2016: 14) to make it a priority to

"halt the rise" of obesity in Malaysia by 2025. To this end, various programs and campaigns aimed at promoting healthy eating and active lifestyle among the population have been implemented (Ministry of Health Malaysia, 2003). Chief among this was the introduction of diet-based guidelines.

The Malaysian Dietary Guidelines (MDG) were first introduced in 1999 to provide an authoritative guide on the dietary needs of every Malaysian (Ministry of Health Malaysia, 2010). It was aimed at providing Malaysians with an appropriate tool to enhance their health through sound dietary practices. In 2010, the MDG contents were revised; however, the key objective of the MDG has remained. This paper will elaborate on the MDG but, at this point, suffice to highlight that there have been many cases of non-adherence to the MDG recommendations across generations, from toddlers (Zalilah et al., 2015) to the adult population (Sia et al., 2013), documented in the literature.

In the context of university students, the dietary guideline usage has been found as an effective tool for students to make healthy food choice decisions (Kolodinsky et al., 2007; Kandiah and Jones, 2002). However, a number of studies involving university students in Malaysia so far have shown a pattern of low diet quality and poor dietary behavior (Thu et al., 2019; Sundaram, Ghazi, and Elnajeh, 2018; Omar et al., 2015), indicating non-compliance with the MDG recommendations. Many potential reasons exist for such non-compliance, such as low awareness of the MDG (Norimah et al., 2010), poor nutritional knowledge (Zarei et al., 2013) or low level of health literacy (Emma Mirza Wati et al., 2015).

However, literature review shows very limited work carried out to understand the behavioral aspects relating to MDG usage which could otherwise provide better insight and explain the non-compliance among the intended users. Existing studies have not identified the factors influencing university students to use the MDG although they have been identified as "at-risk" population due to their unhealthy diet and poor eating behaviors (Booth et al., 2013). Therefore, the need to predict the behavioral intention of university students in using the MDG has increased. Against this background, this study seeks to identify the factors influencing intention to use the current version of the MDG (2010) as a source of reference for healthy eating among university students in Malaysia.

2. LITERATURE REVIEW

2.1 MALAYSIAN DIETARY GUIDELINES

Generally, dietary guidelines can be defined as the "sets of advisory statements that give dietary advice and promote nutritional well-being" among a population (Usfar and Fahmida, 2011; 484). It is a set of government issued guidelines providing suggestions about the types and quantity of foods that should be consumed by the public to achieve a healthy diet (Andrade and Andrade, 2016). A dietary guideline is essentially a science-based recommendation of food consumption and is usually culture- and country-specific (Gomber, 2007). Malaysia's own version of the dietary guideline is known simply as the Malaysian Dietary Guidelines (MDG), first introduced in 1999.

The current version of the MDG was produced from a revision carried out by the Ministry of Health Malaysia in 2010 to account for the changing eating habits among Malaysians (Ministry of Health Malaysia, 2010) and to reflect "a better understanding of the origins of obesity and lifestyle-related diseases in Malaysia" (Lee et al., 2020: 34). One major change in the 2010 version is the addition of new guidelines to the existing eight, making it a total of fourteen key messages (Table 1). Further, there are fifty-five recommendations that cover "the whole range of food and nutrition issues, from the importance of consuming a variety of foods to detailed guidelines on specific food groups, messages to encourage physical activities, consumption of safe food and beverages, and ways to make effective use of nutrition information on food labels" (Tee, 2011: 455).

Another strand of the healthy eating campaign is carried out through the pictorial representation of the types, combinations and amount of foods to eat as a balanced and healthy diet, known in the Malaysian context as the Malaysian Food Pyramid (MFP). The MFP is made up of a triangular structure and is divided into four tiers (Tee, 2011). The key idea of the food pyramid is to eat more from the bottom-most tier (comprising the carbohydrate groups, e.g. cereals, tubers and grains) and to eat less from the topmost tier (consisting of fats, oil, sugar and salt). The food pyramid is not a rigid prescription but merely a guide to help individuals make healthy food choices daily. Accordingly, the best way to meet the daily food intake requirements is to eat a variety of choices while combining foods from all of the different tiers (Ministry of Health Malaysia, 2010).

TABLE 1
Key Messages of the Malaysian Dietary Guidelines

1999 MDG	2010 MDG
1. Eat a balanced diet by enjoying a variety of foods. 2. Maintain a healthy body weight by balancing food intake with regular physical activities. 3. Minimise fat in food preparation and choose foods low in fat. 4. Reduce sugar intake and choose foods low in sugar. 5. Adhere to a regular mealtime. 6. Choose healthier foods and smaller portion size when eating out. 7. Promote and practice breastfeeding. 8. Avoid alcohol intake.	1. Eat a variety of foods within your recommended intake. 2. Maintain body weight in a healthy range. 3. Be physically active every day. 4. Eat an adequate amount of rice, other cereal products (preferably whole grain) and tubers. 5. Eat plenty of fruits and vegetables every day. 6. Consume a moderate amount of fish, meat, poultry, egg, legumes and nuts. 7. Consume adequate amounts of milk and milk products. 8. Limit intake of foods high in fats, and minimise fats and oils in food preparation. 9. Choose and prepare foods with less salt and sauces. 10. Consume foods and beverages with low in sugar. 11. Drink plenty of water daily. 12. Practice exclusive breastfeeding from birth until six months, and continue to breastfeed until the child is two years of age. 13. Consume safe and clean foods and beverages. 14. Make effective use of nutrition information on food labels.

Source: Author. Compiled from the Ministry of Health Malaysia (2010)

In 2016, the Ministry of Health Malaysia launched a "Quarter-Quarter-Half" campaign to further encourage the habit of daily consumption of a balanced and healthy diet. Based on a quarter-quarter-half principle, whereby a portion of a plate is divided into a quarter for meat and fish; a quarter for grains and nuts; and a half for

fruits and vegetables, the Malaysian Healthy Plate (MHP) concept was created as a medium to easily translate the MDG messages. In a way, the MHP acts as a supplement to the MFP (Lee et al., 2020).

2.2 THEORY OF PLANNED BEHAVIOR

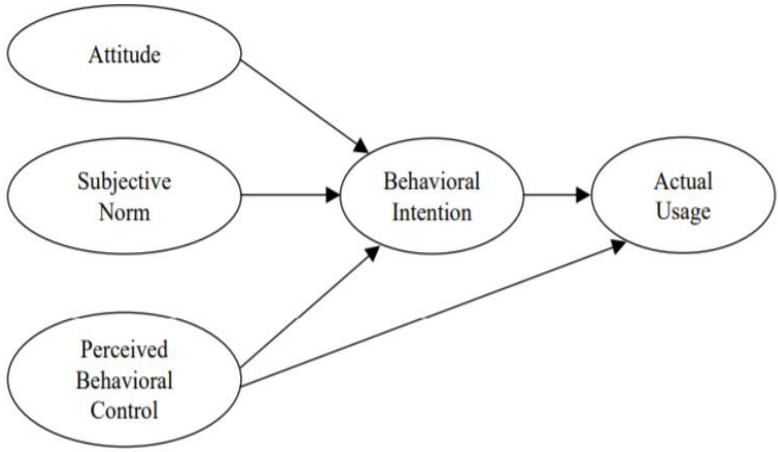
This study used the Theory of Planned Behavior (TPB), which was developed to predict and explain individuals' behaviors (Ajzen, 1991) as its theoretical framework. TPB theorizes that an individual's behavioral performance can be determined by his or her intention to engage in a given behavior (Ajzen, 1991, 2015). Although TPB is considered as an extension of the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), unlike TRA, it recognizes the ability of individuals to have complete control over their behaviors (Ajzen, 1991). Essentially, TPB operates on the basis that human actions can be planned and are deliberative.

In TPB, three major factors determine behavioral intentions, namely, attitude toward behavior, subjective norm and perceived behavioral control. Conceptually, a behavioral intention can be described as a likelihood that an individual will behave or engage in a particular way in a given situation (Armitage and Conner, 2001). This intention, in turn, is assumed to be determined by the individual's attitude toward the behavior, by the opinions of influential people in the social environment towards the said behavior (which is called subjective norm) and perceived behavioral control. Perceived behavioral control, a new construct added into TPB, which immediately differentiates TPB from TRA, refers to an individual's confidence in his or her own capability to perform a behavior. The combined effect of attitude, subjective norm and perceived behavioral control is considered as the best measure of a behavioral intention, which may lead to performance of a particular behavior. The classic TPB model is shown in Figure 1.

TPB, considered as a robust theory (Ang et al., 2015; Armitage and Conner, 2001), has been applied widely in many prior studies to predict human behaviors (Sniehotta, Presseau, and Araujo-Soares, 2014). In past studies related to the current research, TPB was used as the theoretical framework in predicting eating intentions (Psouni et al., 2016), eating behavior (Deliens et al., 2014; Gronhoj et al., 2012; Fila and Smith, 2006), dietary habits (Cefai and Camilleri, 2011), dietary interventions (White et al., 2012) and food consumption (Ajzen, 2015). However, the literature review presents very limited evidence to suggest that TPB has been used to measure the intention

to use a food-based guideline as a source of reference for healthy eating.

FIGURE 1
Theory of Planned Behavior (Ajzen, 1991)



2.3 HYPOTHESES DEVELOPMENT

According to Fishbein and Ajzen (1975: 216), attitude toward a behavior can be described as an individual's "positive or negative evaluation of performing the behavior". Attitude reflects an individual's overall judgement according to his or her beliefs about carrying out a given behavior (Ajzen, 1991). An individual with positive views about the outcome of engaging in a particular behavior can be thought of as having a positive attitude about that behavior. Parallel to that, an individual with negative views about the outcome of a given behavior is considered as having a negative attitude about that behavior.

In the context of healthy eating, Babicz-zielińska (2006) showed that attitude could have a strong influence on individual food choice decisions. In a similar vein, prior studies that linked attitude to the intention to buy healthy food products (Tarkianinen and Sundqvist, 2005) and act healthily (Simsekoglu and Lajunen, 2008) showed a positive relationship between attitude and the behavioral intention under investigation. In two separate studies on dietary practices of college athletes, Hornstrom et al. (2011) and Webb and Beckford (2014) showed that positive attitude had a strong influence on

consumption of a healthy diet among the respondents. Meanwhile, Sogari et al. (2018) revealed that attitude toward healthy eating could be either a barrier or an enabler to healthy diet consumption among university students. In Malaysia, Hassan et al. (2015) reported a positive association between attitude and healthy eating habits among a sample of university students. Therefore, the present study hypothesized the following:

H1: Attitude has a positive and significant influence on the intention to use MDG

Subjective norm refers to the perceived social pressure toward performing a particular behavior (Ajzen, 1991). Fishbein and Ajzen (1975: 302) explained the concept of subjective norm as "the person's perception that most people who are important to him or her think he should or should not perform the behavior in question". As such, a favorable subjective norm toward engaging in a particular behavior is assumed to positively influence the individual's intentions to perform the behavior in question.

The relationship between subjective norm and intention to perform a given behavior has been widely explored in prior studies. The results have shown that subjective norm is a significant factor in performing the behavior under investigation. The societal pressures and the intention to consume green food products (Ham et al., 2015), organic food products (Al-Swidi et al., 2014), halal food products (Abdul Khalek and Sharifah Hayaati, 2015) and fruits and vegetables (Sjoberg, Kim, and Reicks, 2004) were shown to be significantly correlated. In the context of healthy eating, Fila and Smith (2006) found that subjective norm had a significant positive influence on the intention to eat healthily among Native American youths. The study found that the roles of family, after-school programs and friends were very instrumental in influencing the respondents' healthy eating behavior. In a study of healthy eating habits among adolescents in Hong Kong, Chan et al. (2016) found subjective norm to be positively related to healthy eating intention. Similarly, Backman et al. (2002) examined healthy dietary behaviors in a sample of 14 to 19-year-old adolescents. The results of both studies provided strong empirical support on the significant influence of the subjective norm on healthy eating intention. The studies identified the roles of mothers, siblings and friends as important predictors of the subjective norm. Based on the theoretical postulation and the results from previous studies, the

current study hypothesized that subjective norm has a positive and significant influence on the intention to use MDG.

H2: Subjective norm has a positive and significant influence on the intention to use MDG

Perceived behavioral control is the third construct of TPB. In TPB, perceived behavioral control has been conceptualized as the "perceived ease or difficulty of performing the behavior" (Ajzen, 1991: 188). Broadly speaking, the notion of the perceived behavioral control construct represents the extent to which the individual feels he or she has the ability to enact a particular behavior. Essentially, this construct captures the perceived confidence or self-efficacy of the individual to overcome barriers to performing the behavior. When individuals feel confident in their ability to enact the behavior and believe that they possess the necessary skills and resources to overcome the barriers, they can be regarded as having the requisite behavioral control. Thus, the higher the perceived behavioral control, the stronger the individual's intention to perform the behavior (Ajzen, 1991).

In a study examining the intention toward consuming organic foods in Iran, Sadati and Mohammadi (2012) found that perceived behavioral control was one of the three determinants influencing the intention to consume organic foods. Similarly, Abdul Khalek and Sharifah Hayaati (2015) demonstrated through their study that perceived behavioral control played a significant role in predicting Generation Y's intention to consume halal foods. In the context of healthy eating, Psouni et al. (2016) concluded that the perceived behavioral control construct is a significant factor in explaining healthy eating intentions. The Gronhoj et al. (2012) study in Denmark, Chan et al. (2016) study in Hong Kong and Backman et al. (2002) study in the US reported a positive relationship between perceived behavioral control and intention toward healthy eating. On the contrary, Fila and Smith (2006) reported the presence of a negative association between perceived behavioral control and the intention to eat healthily among female Native American youths. Likewise, perceived behavioral control was not found to be a significant determinant of the intention to select healthy foods among elderly residents from assisted-living facilities in the US (Liu and Kwon, 2013). The study found that while the elderly may desire healthy foods, they lack control over their food choices. On balance, the

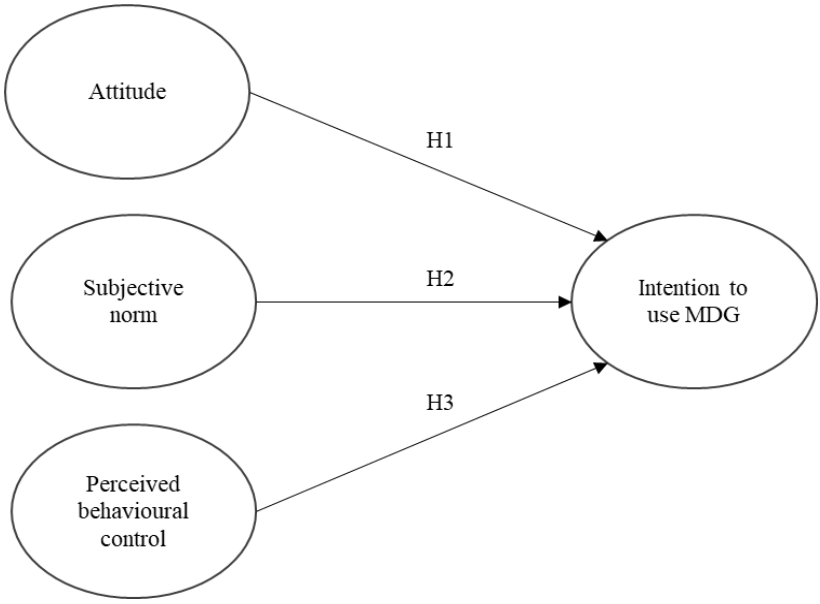
present study hypothesized that perceived behavioral control has a positive and significant influence on intention to use the MDG.

H3: Perceived behavioral control has a positive and significant influence on the intention to use MDG.

2.4 RESEARCH MODEL

Based on the above discussion, the research model of this study is shown in Figure 2. Consistent with TPB (Ajzen, 1991), the model asserts that the individual students' attitude, subjective norm and perceived behavioral control will determine the intention to use MDG as a reference for healthy eating.

FIGURE 2
Research Model and Hypotheses of This Study



3. METHODOLOGY

3.1 SAMPLE AND PROCEDURE

This study targeted university students because they are known to be in the "at-risk" population group as a result of their unhealthy diet and

poor eating behaviors (Booth et al., 2013). This creates concern because university students in Malaysia showed low adherence to the MDG recommendations (Thu et al., 2019; Sundaram et al., 2018; Omar et al., 2015), which is supposed to help them make informed decisions on healthy choice of food consumption.

Data for this study were collected using a paper-based survey questionnaire method. Because there was no specific population frame available for use, the study adopted a convenience sampling technique. Recognizing that the MDG is primarily targeted at only Malaysians, the researcher limited the sample for this study only to Malaysians, aged 18 and above, who were pursuing a tertiary qualification at any local public and private universities in Malaysia. Following this, the questionnaires were distributed to and collected from willing and accessible university students of various academic backgrounds who fulfilled the criteria.

This study used the G*Power software (Erdfelder, Faul, and Buchner, 1996) to determine the sample size. Based on the parameters suggested for a social science study (i.e., an alpha value of 0.05, the power value of 0.80 and effect size set at moderate) (Cunningham and McCrum-Gardner, 2007), a minimum sample size of 77 was needed in order to achieve the required power for a model with three predictors. The present study managed to collect 218 questionnaires. As such, it can be said that there was sufficient power for testing of hypotheses.

3.2 MEASURES

All measurement items were designed based on the TPB items. They were adapted from the past literature, mostly from Ajzen (1991), and modified to suit the current study context. Supporting literature (e.g., Ilham and Nik Kamariah, 2012; Korttesito et al., 2010) were also referred to in the process of developing the measurement items. This approach was adopted as recommended by Straub (1989), who suggested that researchers reuse previously validated instruments when using the survey as the data collection method. Examples of the measurement items are given in Table 2. Responses were measured using a five-point Likert scale, anchored by strongly disagree (1) to strongly agree (5).

The questionnaire was composed of five sections. Three sections were intended to measure each of the independent variables

(i.e., attitude, subjective norm and perceived behavioral control), one section was intended to measure the dependent variable (i.e., the intention to use MDG), and the remaining one section focused on respondent demographic information. Following the recommendations by Creswell and Miller (2000), the questionnaire also included a brief description of the MDG which was placed on the first page of the questionnaire to address the concern that the subject of the investigation, i.e. the MDG, may not be readily familiar to the respondents (Norimah et al., 2010). It explained the background, purpose and content of the MDG in general.

TABLE 2
Measurement Items of This Study

Code	Sample item	Total items	References
AT	To me, using the Malaysian Dietary Guidelines as a source of reference for eating healthily is beneficial	5	Ajzen (1991); Ilham and Nik Kamariah (2012); Korttesito et al. (2010)
SN	Most people who are important in my life do encourage me to use the Malaysian Dietary Guidelines as a source of eating healthily.	4	
PCB	I am capable of using the Malaysian Dietary Guidelines as a source of reference for eating healthily.	4	
INT	I intend to use the Malaysian Dietary Guidelines as a source of reference for eating healthily in the next three months.	5	

Note: Attitude (AT), Subjective Norm (SN), Perceived Behavioral Control (PCB), Intention to use (INT) MDG

3.3 STATISTICAL ANALYSIS

The statistical analysis was carried out using the Statistical Packages for the Social Sciences (SPSS), version 23.0. Descriptive analysis (frequencies, means and standard deviations) was used to describe the respondent characteristics. Internal consistency of the measurement items was assessed using the Cronbach's α reliability analysis (Pallant, 2016). Then, all the items were subjected to factor analysis. Consistent

with established procedures, factor retention was based on eigenvalues and the visual inspection of the Scree plot (Pallant, 2016). Analysis of the hypotheses involved multiple regression.

4. RESULTS

4.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total of 218 university students participated in the present study. As shown in Table 3, the majority of the respondents were Malay (54.6 percent), aged between 21 and 30 (72.9 percent) and single (91.3 percent). There were a slightly higher number of female (55.5 percent) respondents, compared to male (44.5 percent). More than half of the respondents (62.9 percent) were pursuing a first degree, while the others were pursuing either a diploma (21.1 percent) or a postgraduate (9.2 percent) qualification. About 55.5 percent of the total respondents were studying at private universities.

TABLE 3
Profile of Respondents

Variable		Frequency	Percent
Gender	Male	97	44.5
	Female	121	55.5
Race	Malay	119	54.6
	Indian	27	12.4
	Chinese	62	28.4
	Others	10	4.6
Age (years)	20 and below	45	20.6
	21 to 30	159	72.9
	31 to 40	11	5.0
	41 and above	3	1.4
Marital status	Single	199	91.3
	Married	19	8.7
University	Public university	97	44.5
	Private university	121	55.5
Academic qualification currently pursuing	Diploma	46	21.1
	Degree	152	69.7
	Postgraduate	20	9.2

4.2 GOODNESS OF MEASURE

Cronbach's α reliability analysis was used to establish the internal consistency among the measurement items in the survey instrument. Based on the results shown in Table 4, the Cronbach's α values for all measurement items scored above the recommended value of 0.70 (Nunnally, 1978), and therefore were deemed as having very good reliability (Zikmund et al., 2010). In other words, the measurement items used in the present study were homogeneous (Nunnally, 1978). As such, it can be concluded that the variables were reliable measures.

TABLE 4
Results of the Reliability Analysis

Variables	Mean	Cronbach's-α	Assessment[1]
AT (Attitude)	3.78	0.84	Very good
SN (Subjective norm)	3.37	0.86	Very good
PCB (Perceived behavioral control)	3.82	0.81	Very good
INT (Intention to use MDG)	3.46	0.89	Very good

Note: [1] Very good (0.80 to 0.95); Good (0.71 to 0.80); Fair (0.61 to 0.70) and Poor (<0.60) (Zikmund et al., 2010)

Factor analysis was carried out to validate whether the variables used in this study were distinct. Procedurally, the study undertook factor analysis using Principal Component Analysis with Varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.81, which exceeded the recommended value of 0.60 (Pallant, 2016), and Bartlett's Test of Sphericity was significant at $p < 0.001$. As summarized in Table 5, these results (Chi square = 1,691; $p < 0.001$) indicated that the data were salient and good for factor analysis.

The present study retained factors with eigenvalues of more than 1. An initial assessment indicated that three factors had eigenvalues greater than 1, which explained 67.97 percent of the total variance. Similarly, visual inspections of the Scree plot revealed a three-component solution. The loadings for all items were above 0.50 (Field, 2009) and loaded on their appropriate factors as intended. There was also no significant cross-loading between factors, indicating that the measurement items were unidimensional and factorially distinct (Tabachnick and Fidell, 2013). Consistent with the

original TPB constructs, this study retained the three-component solution.

TABLE 5
Results of the KMO Measure and Bartlett's Test for Items

KMO Measure of Sampling Adequacy		0.81
Bartlett's Test of Sphericity	Approx. Chi-square	1,691
	df	78
	Significance	0.00

4.3 HYPOTHESES TESTING

Multiple linear regression was carried out to determine the relationship between attitude, subjective norm and perceived behavioral control toward students' behavioral intention in using the MDG. The first-stage multiple regression was used to test H1, H2 and H3 of the present study.

Table 6 shows the overall results which indicated a fit and significant model (F (3, 214) = 19.26; $p < 0.001$). The coefficient of determination R^2 value of the model was 0.213, and the adjusted R^2 value was 0.202. Consistent with Tabachnick and Fidell (2013) who suggested reporting of the adjusted R^2 value for studies involving a small sample size, the current study found that 20.2 percent of the variance in the intention to use MDG can be explained by the three independent variables, namely, attitude, subjective norm and perceived behavioral control.

The standardized coefficient β values for each of the independent variables were as follows: attitude (β = 0.35), subjective norm (β = 0.31) and perceived behavioral control (β = -0.08). These values indicated that only attitude and subjective norm are positively related to the intention to use MDG, and this is consistent with the hypothesized relationship. Meanwhile, the results showed a negative relationship between perceived behavioral control and intention to use MDG.

In the context of the present study, a closer examination of the β values showed that attitude is a stronger predictor of an intention to use MDG, compared to the subjective norm and perceived behavioral control.

TABLE 6
Results of the Regression Analysis against the Intention to Use MDG

	β	SE	Std. β	Sig.
Constant	6.263	1.794		0.001
AT (Attitude)	0.358	0.070	0.344	0.000
SN (Subjective norm)	0.317	0.091	0.241	0.001
PCB (Perceived behavioral control)	-0.088	0.111	-0.056	0.427
$F(3, 214) = 19.26$	$R^2 = 0.213$		Adjusted $R^2 = 0.202$	

As widely applied in typical social and behavioral science studies, the findings will be considered to be statistically significant when the *p*-value < 0.05. Again, only two factors tested in the model, namely attitude ($\beta = 0.35$; $p < 0.01$) and subjective norm ($\beta = 0.31$; $p < 0.01$), achieved statistical significance. However, the *p*-value for perceived behavioral control was above the 0.05 threshold, and therefore not statistically significant.

From the results, it can be clearly concluded that both H1 (Attitude has a positive and significant influence on the intention to use MDG) and H2 (Subjective norm has a positive and significant influence on the intention to use MDG) of the present study are supported. However, H3 (Perceived behavioral control has a positive and significant influence on the intention to use MDG) of the present study is rejected in view that the results from the analysis were contrary to the hypothesis.

5. DISCUSSION

The results showed that attitude and subjective norm had a direct significant positive relationship with the intention to use MDG as a source of reference for healthy eating among university students in Malaysia. The findings of the present study are in agreement with earlier studies related to healthy eating behaviors such as by Hornstrom et al. (2011), Webb and Beckford (2014), Fila and Smith (2006), Chan et al. (2016) and Backman et al. (2002).

In this present study, attitude toward behavior was found to be a more influential predictor of an intention. According to the TPB theory, an individual's attitude is developed from the individual's

beliefs about a given behavior (Ajzen, 1991). Consequently, the more favorable an individual's attitude toward a particular behavior, the more likely he or she will perform the behavior. In the context of the MDG usage in this study, individuals who have positive feelings toward the MDG are more likely to use it as a source of reference for eating healthily, compared to those who have an indifferent or negative attitude as the latter are likely to demonstrate low behavioral intention. As such, greater use of the MDG among university students is achievable when a favorable attitude toward the behavior is formed. This can be made possible by changing the respondents' attitudes towards the MDG. One way to achieve this is by highlighting the benefits associated with complying with the requirements of diet-based guidelines, such as helping to reduce the obesity risk (So et al., 2017), enhancing the quality of life (Bonaccio et al., 2013) and increasing life expectancy (Voortman et al., 2017). Another way is by engaging in persuasive communication and education campaigns based on fear appeal aimed at increasing negative perceptions of obesity (Batchelder and Matusitz, 2014). In the process, attitude toward obesity can be changed when the fear motivation is exploited. As such, the fearful content of the message may drive individuals to think of ways to reduce or remove the threats (Glanz, Rimer, and Lewis, 2002), which could potentially lead to using the MDG.

The present study also supported the significance of social influence as the students perceived that people's opinions about MDG use were important. The results of the present study were congruent with previous studies that showed the intention to consume organic food products (Al-Swidi et al., 2014), halal food products (Abdul Khalek and Sharifah Hayaati, 2015) and fruits and vegetables (Sjoberg et al., 2004) is likely to be high if the social influence on the behavior is positive. Additionally, students' dietary behaviors (Pelletier, Graham, and Laska, 2014) and food choice decisions (Ellison, 2014) were heavily influenced by their peers. Before moving into an independent living arrangement, students' dietary habits were shaped based on the eating habits of their family (Lupi et al., 2015). However, staying away from the family unit, such as living on campus, could radically influence the students' lifestyle as well as eating habits (Deliens et al., 2014). Results of the present study could also be interpreted as supporting the significance of societal pressures to comply in a collectivist society, such as Malaysia, where the views and acceptance of others are important (Ting and Cheah, 2013). This indicates a strong possibility that university students' decisions to use

the MDG were socially motivated. Thus, it is logical to suggest that the recommendations of and influence from the students' peers could have a significant effect on their decisions.

Unlike the findings of Armitage and Conner (2001) which found that perceived behavioral control accounted for significant amounts of variance in the intentions, the present study did not find support on the relationship between perceived behavioral control and intention to use MDG. The negative association between perceived behavioral control and intention to use MDG may be attributed to the additional time, cost, efforts and resources that the students were expected to invest in adherence to the MDG requirements. Because of this, it was possible that the students did not feel motivated to use the MDG. Evidently, previous analysis of the university student diet (e.g. Al-Khamees, 2009) was consistent with this perspective. Students tend to grab the easiest on-the-go foods as their meal simply because the foods are convenient, easy to prepare and cheaper than healthy foods (Deliens et al., 2014; Cefai and Camilleri, 2011).

5.1 MANAGERIAL IMPLICATIONS

Despite the straight forward nature of this study, there are a few key takeaways. First, the study provided insights, from the university student perspectives into factors influencing intention to use MDG. Currently, very limited literature focuses on the behavioral aspects of MDG adoption. Second, the results of this study provide stakeholders, such as policymakers and health professionals, with useful input about how to orient their communication and engagement strategies to university students. The present study suggests tapping into their attitude toward behavior. One way is to highlight the benefits of using the MDG and the other way is to use fear appeal relating to obesity and obesity-related diseases as a key message in the communication and engagement materials. Third, the study indicates that greater MDG use among university students is achievable through positive and effective manipulation of societal pressures. The results of this study imply that university students' decision to use the MDG is likely to be socially motivated. In a collectivist society such as of Malaysia where others' views and acceptance are considered as important (Ting and Cheah, 2013), it is possible to maximize the use of network of peers, internet and social media influencer strategies to shape student attitudes (Khalid et al., 2018), which could potentially lead to a higher MDG adoption.

5.2 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study has a few limitations. First, it was conducted on a limited sample which involved Malaysian students who were recruited using convenience sampling. Because of this limitation, the results of this study may not be generalizable to the entire student population in Malaysia. Future studies should include a wider student population from all universities in Malaysia, using a more structured sampling approach in order to generalize the results.

Second, the present study was conducted within the classic TPB framework; thus, it only examined three variables and ignored the possibility of other factors that could have influenced student intention to use the MDG. As the three predictors tested explained only 20.2 percent of the total variance, the results imply that many other factors were not captured in the present model. Future studies could examine these additional factors, such as perceived risks, perceived difficulties, motives, and emotions, to achieve a more comprehensive understanding of factors influencing intention to use MDG.

Finally, unlike the full TPB model shown in Figure 1, the present study focused on measuring the behavioral intention, such that it did not measure the actual usage of the MDG. This is not an entirely restrictive condition, as many previous empirical studies have used intention as a proxy for actual usage (e.g., Abdul Khalek and Sharifah Hayaati, 2015). This is also consistent with the view of Ajzen (1991) who argued that intention is a good proxy of actual behavior. Researchers who wish to overcome the identified limitation can carry out a longitudinal study to track the changes from an intention to the actual usage.

6. CONCLUSION

This study aimed at examining factors influencing the intention to use MDG as a source of reference for healthy eating among university students in Malaysia. Using TPB as the theoretical framework, this study indicated that its findings supported two of the three hypothesized relationships. Specifically, the findings revealed that attitude and subjective norms are two factors significantly influencing respondents' intention toward using the MDG.

It is recognized that greater use of the MDG among university students is possible when they form a favorable attitude toward the

MDG; thus, it is imperative for stakeholders, such as policymakers and health professionals, to formulate better and more targeted communication and engagement strategies with university students by appealing to their attitude toward the behavior. This is consistent with Fishbein and Ajzen's (1975) view that communications targeting on beliefs about the salient outcomes of a behavior (e.g., preventing/reducing obesity) are the best way to change attitudes. Additionally, the importance of societal pressures on the individual students' choices and decisions must also be recognized and incorporated as part of the effective communication and engagement strategies.

ACKNOWLEDGMENT

The author is an alumnus of the Department of Business Administration, Kulliyyah of Economics and Management Sciences (KENMS), Islamic International University Malaysia. This article is part of the author's thesis in fulfilment of the requirement for an MSc degree in marketing at the university. The author wishes to thank his supervisors, Associate Professor Dr Wan Jamaliah Wan Abdullah and Associate Professor Dr Kalthom Abdullah for their encouragement and support. The author would also like to thank the two anonymous reviewers who have helped improve this article.

REFERENCES

Abdul Khalek, A., and S.I. Sharifah Hayaati. "Why Are We Eating Halal: Using the Theory of Planned Behavior in Predicting Halal Food Consumption among Generation Y in Malaysia." *International Journal of Social Science and Humanity* 5, no. 7 (2015): 608-12.

Ajzen, I. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision* 50 (1991): 179-211.

_____. "Consumer Attitudes and Behavior: The Theory of Planned Behavior Applied to Food Consumption Decisions." *Rivista Di Economia Agraria* 70, no. 2 (2015): 121-38.

Al-Khamees, N.A. "Food Habits of University Nutrition Students: Pilot Study." *Nutrition and Food Science* 39, no. 5 (2009): 499-502.

Al-Swidi, A., S.M.R. Huque, M.G. Hafeed and M.S. Mohd Noor. "The Role Subjective Norms in Theory of Planned Behavior in the Context of Organic Food Consumption." *British Food Journal* 116, no. 10 (2014): 1561-80.

Andrade, J., and J. Andrade. *Food-based Dietary Guidelines: An Overview*. US Aid, 2016.

Ang, M.C.H., T. Ramayah, and H. Amin. "A Theory of Planned Behavior Perspective on Hiring Malaysians with Disabilities." *Equality, Diversity and Inclusion: An International Journal* 34, no. 3 (2015): 186-200.

Armitage, C. J., and M. Conner. "Efficacy of the Theory of Planned Behaviour: A Meta-analytic Review." *British Journal of Social Psychology* 40, no. 4 (2001): 471-99.

Babicz-zielińska, E. "Role of Psychological Factors in Food Choice: A Review." *Agris* 15, no. 4 (2006): 379-84.

Backman, D.R., E.H. Haddad, J.W. Lee, P.K. Johnston, and G.E. Hogdkin. "Psychosocial Predictors of Healthful Dietary Behavior in Adolescents." *Journal of Nutritional Education Behavior* 34 (2002): 184-93.

Barzegari, A., M. Ebrahimi, M. Azizi, and K. Ranjbar. "A Study of Nutrition Knowledge, Attitude and Food Habits of College Students." *World Applied Sciences Journal* 15, no. 7, (2011): 1012-7.

Batchelder, A., and J. Matusitz. "'Let's Move' Campaign: Applying the Extended Parallel Process Model." *Social Work and Public Health* 29, no. 5 (2014): 462-72.

Bonaccio, M., A. Di Castelnuovo, A. Bonanni, S. Costanzo, F. De Lucia, G. Pounis, F. Zito, M.B. Donati, G. de Gaetano, and L. Iacoviello. "Adherence to a Mediterranean Diet is Associated with a Better Health-Related Quality of Life: A Possible Role of High Dietary Antioxidant Content." *BMJ Open* 3, no. 8 (2013): 1-11.

Booth, R., M. Hernandez, E.L. Baker, T. Grajales, and P. Pribis. "Food Safety Attitudes in College Students: A Structural Equation Modeling Analysis of a Conceptual Model." *Nutrients* 5, no. 2, (2013): 328-39.

Cefai, C., and Camilleri, L. "The Dietary Habits of Maltese University Students." *Malta Medical Journal* 23, no. 2 (2011): 7-12.

Chan, K., G. Prendergast, and Y.L. Ng. "Using an Expanded Theory of Planned Behavior to Predict Adolescents' Intention to Engage in Healthy Eating." *Journal of International Consumer Marketing* 28, no. 1 (2016): 16-27.

Creswell, J.W., and D.L. Miller. "Determining Validity in Qualitative Inquiry." *Theory into Practice* 39, no. 3 (2000): 124-30.

Cunningham, J.B., and E. McCrum-Gardner. "Power, Effect and

Sample Size using G*Power: Practical Issues for Researchers and Members of Research Ethics Committees." *Evidence Based Midwifery* 5, no. 4 (2007): 132-6.

de Lorenzo, A., L. Romano, L. di Renzo, N. di Lorenzo, G. Cenname, and P. Gualtieri. "Obesity: A Preventable, Treatable, but Relapsing Disease." *Nutrition* 71 (2020).

Deliens, T., P. Clarys, I. De Bourdeaudhuij, B. Deforche, I. De. Bourdeaudhuij, and B. Deforche. "Determinants of Eating Behaviour in University Students: A Qualitative Study Using Focus Group Discussions." *BMC Public Health* 14, no. 1 (2014). 1-12.

Du, T., E. Zhu, and S. Jiao. "Poor Physical Performance is Associated with Obesity among University Students in China." *Medical Science Monitor Basic Research* 23 (2017): 173-8.

Ellison, B. "'I'll have What He's Having': Group Ordering Behavior in Food Choice Decisions." *Food Quality and Preference* 37 (2014): 79-86.

Emma Mirza Wati, M., H. Mohammad Rezal, and A. Mohd Yusof. "Health Literacy among Malaysian University Students." *Persidangan Antarabangsa Dwitahun Media Dan Komunikasi*, 2015.

Erdfelder, E., F. Faul, and A. Buchner. "GPOWER: A General Power Analysis Program." *Behavior Research Methods, Instruments and Computer* 28 (1996): 1-11.

Field, A. *Discovering Statistics using SPSS*. UK: SAGE Publications, Inc. 2009.

Fila, S.A., and C. Smith. "Applying the Theory of Planned Behavior to Healthy Eating Behaviors in Urban Native American Youth." *International Journal of Behavioral Nutrition and Physical Activity* 10, no. 11 (2006): 1–10.

Fishbein, M., and I. Ajzen. *Belief, Attitudes, Intention and Behavior: An Introduction to Theory and Research*. New York: Addisson Wesley Publishing Co. 1975.

Gerson, A., K. Goto, C. Wolff, and M. Giovanni. "Food, Health and Values: The Effects of Attitudes and Behaviors Regarding Sustainable Food Practices on Overall Diet Quality among College Students." *Californian Journal of Health Promotion* 11, no. 2 (2013): 53-60.

Glanz, K., B.L. Rimer, and F.M. Lewis. *Health Behavior and Health Education*. San Francisco, USA: Jossey-Bass, 2002.

Gomber, A.O. *Dietary Guide*. Nova Science Publishers, Inc. 2007.

Gronhoj, A., T. Bech-Larsen, K. Chan, and L. Tsang. "Using Theory

of Planned Behavior to Predict Healthy Eating among Danish Adolescents." *Health Education* 113, no. 1 (2012): 4-17.

Ham, M., Jeger, and A.F. Ivkovic. "The Role of Subjective Norms in Forming Intention to Purchase Green Food." *Economic Research*, 28, no. 1 (2015): 738-48.

Hassan, M.R., H.F. Ghazi, N.S. Umar, N. Masri, S.M. Jamil, Z.M. Isa, N. Safian, H. Faisal, and G. Management. "Knowledge, Attitude and Practice of Healthy Eating and Associated Factors among University Students in Selangor, Malaysia." *Pakistan Journal of Nutrition* 14, no. 12 (2015): 892-7.

Holben, D.H., J.T. Hassel, and J.P. Holcomb. "College Freshmen Do Not Eat within Food Pyramid Guidelines." *Journal of the American Dietetic Association* 98, no. 9 (1998): A51.

Hornstrom, G.R., C.A. Friesen, J.E. Ellery, and K. Pike. "Nutrition Knowledge, Practices, Attitudes, and Information Sources of Mid-American Conference College Softball Players." *Food and Nutrition Sciences* 2 (2011): 109-17.

Ilham, S., and N.M. Nik Kamariah. "Examining a Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) in Internet Purchasing Using Structural Equation Modeling." *Journal of Arts, Science and Commerce* 2, no. 2 (2012): 62-77.

Institute for Public Health Malaysia. *National Health and Morbidity Survey 2015: Non-communicable Disease, Risk Factors and Other Health Problems*. (2015).

Ismail, M.N., S.S. Chee, H. Nawawi, K. Yusoff, T.O. Lim, and W.P.T.T. James. "Obesity in Malaysia." *Obesity Reviews* 3, no. 3 (2002): 203-8.

Kabir, A., S. Miah, and A. Islam. "Factors Influencing Eating Behavior and Dietary Intake among Resident Students in A Public University in Bangladesh: A Qualitative Study." *PLoS ONE* 13, no. 6 (2018) 1-17.

Kabir, S., M.S. Salmiah, and I. Suriani. "Prevalence and Factors Associated with Overweight and Obesity among Malaysian Post Graduate Students in a Public University." *International Journal of Public Health and Clinical Sciences* 1, no. 1 (2014): 131-40.

Kandiah, J., and C. Jones. "Nutrition Knowledge and Food Choices of Elementary School Children." *Early Child Development and Care* 172, no. 3 (2002): 269-73.

Khalid, N.L., S.Y. Jayasainan, and N. Hassim. "Social Media Influencers - Shaping Consumption Culture among Malaysian Youth." *SHS Web of Conferences* 53 (2018): 1-12.

Kim, J., C. Shon, and S. Yi. "The Relationship Between Obesity and Urban Environment in Seoul." *International Journal of Environmental Research and Public Health* 14, no. 8 (2017) 898-9.

Kolodinsky, J., J.R. Harvey-Berino, R.K. Johnson, and T.W. Reynolds. "Knowledge of Current Dietary Guidelines and Food Choice by College Students: Better Eaters Have Higher Knowledge of Dietary Guidance." *Journal of American Diet Association* 107, no. 18 (2007): 1409-13.

Korttesito, T., M., Kaila, J. Komulainen, T. Mytyranta, and O. Rissanen. "Healthcare Professionals' Intention to Use Clinical Guidelines: A Survey Using the Theory of Planned Behavior." *Implementation Science* 5, no. 51 (2010): 1-10.

Lee, Y.Y., D. Tan, J. Siri, B. Newell, Y. Gong, K. Proust, and T. Marsden. "The Role of Public Health Dietary Messages and Guidelines in Tackling Overweight and Obesity Issues." *Malaysian Journal of Nutrition* 26, no. 1 (2020): 31-50.

Liu, P., and J. Kwon. "Perceived Availability of and Attitudes Toward Health Food Choices in Assisted-Living Facilities in Kansas." *Journal of Foodservice Business Research* 16, no. 2 (2013): 183-97.

Lupi, S., D. Bagordo, A. Stefani, T. Grassi, M. Bergamini, and A. Donno. "Assessment of Lifestyle and Eating Habits Among Undergraduate Students in Northern Italy." *Annali dell'Istituto Superiore Di Sanità* 51, no. 2 (2015): 154-61.

Ministry of Health Malaysia. *Healthy Lifestyle Campaign* (2003).

Ministry of Health Malaysia. *Malaysian Dietary Guidelines* (2010).

Ministry of Health Malaysia. *National Strategic Plan for Non-Communicable Disease (NSP-NCD): Medium Term Strategic Plan to Further Strengthen the NCD Prevention and Control Program in Malaysia (2016-2025)* 2016.

Ministry of Health Malaysia. *Malaysian Health at a Glance 2018*. (2019).

Norimah, A.K., C.S. Hwong, W.C. Liew, A.T. Ruzita, H.N. Sitti Sa'adiah, and M.N. Ismail. "Messages of the Newly Proposed Malaysian Dietary Guidelines (MDG): Do Adults in Kuala Lumpur Understand Them?" *Malaysian Journal of Nutrition* 16, no. 1 (2010): 113-23.

Nunnally, J. *Psymoteric theory*. McGraw-Hill. 1978.

Omar, N.H., T.P. Ping, L.S. Joe, and K. Ramaya. "Dietary Intake and Physical Lifestyle of Residential College Students in Universiti Kebangsaan Malaysia." *Jurnal Personalia Pelajar* 18, no. 2

(2015): 75-85.

Pallant, J. *SPSS Survival Manual* (6th ed.). Open University Press, 2016.

Pelletier, J.E., D.J. Graham, and M.N. Laska. "Social Norms and Dietary Behaviors among Young Adults." *American Journal of Health Behavior* 38, no. 1 (2014): 144-52.

Peltzer, K., S. Pengpid, T. Alafia Samuels, N.K. Özcan, C. Mantilla, O.H. Rahamefy, M.L. Wong, and A. Gasparishvili. "Prevalence of Overweight/Obesity and its Associated Factors among University Students from 22 Countries." *International Journal of Environmental Research and Public Health* 11, no. 7 (2014): 7425-41.

Psouni, S., Hassandra, M., and Theodorakis, Y. "Exercise and Healthy Eating Intentions and Behaviors among Normal Weight and Overweight/Obese Adults." *Psychology* 7, no. 4 (2016): 598-611.

Rush, E. C., and M.R. Yan. "Evolution Not Revolution: Nutrition and Obesity." *Nutrients* 9, no. 5 (2017): 519-26.

Sadati, S. A., and Y. Mohammadi. "Key Values Influence Consumer Intention towards Organic Food in Iran." *Research Journal of Applied Sciences, Engineering and Technology* 4, no. 14 (2012): 2055-60.

Sia, B. T., S.Y. Low, W.C. Foong, M. Pramasivah, C.Z. Khor, and Y.H. Say. "Demographic Differences of Preference, Intake Frequency and Craving Hedonic Ratings of Sweet Foods among Malaysian Subjects in Kuala Lumpur." *Malaysian Journal of Medicine and Health Sciences* 9, no. 1 (2013): 55-64.

Simsekoglu, O., and T. Lajunen. "Social Psychology of Seat Belt Use: A Comparison of Theory of Planned Behavior and Health Belief Model." *Traffic Psychology and Behavior* 11, no. 3 (2008):181-91.

Sjoberg, S., K. Kim, and M. Reicks. "Applying the Theory of Planned Behavior to Fruit and Vegetable Consumption by Older Adults." *Journal of Nutrition for the Elderly* 23, no. 4 (2004): 35-46.

Sniehotta, F. R., J. Presseau, and V. Araujo-Soares. "Time to Retire the Theory of Planned Behavior." *Health Psychology Review* 8, no. 1 (2014): 1-7.

So, H., L. McLaren, and G.C. Currie. "The Relationship between Health Eating and Overweight/Obesity in Canada: Cross-Sectional Study Using the CCHS." *Obesity Science and Practice* 2 (2017): 1-8.

Sogari, G., C. Velez-Argumedo, M.I. Gómez, and C. Mora. "College Students and Eating Habits: A Study Using an Ecological Model for Healthy Behavior." *Nutrients* 10, no. 12 (2018): 1-16.

Sprake, E.F., J.M. Russell, J.E. Cecil, R.J. Cooper, P. Grabowski, L.K. Pourshahidi, and M.E. Barker. "Dietary Patterns of University Students in the UK: A Cross-sectional Study." *Nutrition Journal* 17, no. 1 (2018): 1-17.

Straub, D.W. "Validating Instruments in MIS Research." *MIS Quarterly* 13, no. 2 (1989): 147-69.

Sugathan, S., and D.S. Bagh. "Prevalence and Correlates of Overweight and Obesity among Medical Students in Ipoh." *Academic Medical Journal of India* 12, no. 1 (2014): 22-4.

Sundaram, D., H.F. Ghazi, and M. Elnajeh. "Breakfast, Food Consumption Pattern and Nutritional Status among Private University Students in Shah Alam, Malaysia." *International Journal of Advanced Community Medicine* 1, no. 1 (2018): 19-22.

Tabachnick, B.G., and L.S. Fidell. *Using Multivariate Statistics* (6th ed.). New York: Pearson Education Limited, 2013.

Tanton, J., L.J. Dodd, L. Woodfield, M. and Mabhala. "Eating Behaviours of British University Students: A Cluster Analysis on a Neglected Issue." *Advances in Preventive Medicine* 1 (2015): 1–8.

Tarkianinen, A., and S. Sundqvist. "Subjective Norms, Attitudes and Intentions of Finnish Consumers in Buying Organic Food." *British Food Journal* 107, no. 10/11 (2005): 808-19.

Tee, E. "Development and Promotion of Malaysian Dietary Guidelines." *Asia Pacific Journal of Clinical Nutrition* 20, no. 3 (2011): 455-61.

Thu, Y. H., B.N. Mohd Yusof, C.Y. Siew, E. Kiung, R. Abdul Ghani, A. Mottablib, and O. Hamdy. "Nutrition-related Factors and Binge Eating Behaviour in a Sample of Malaysian University Students." *Jurnal Sains Kesihatan Malaysia* 17, no. 1 (2019): 57-65.

Ting, S.K.T., and Y.Y. Cheah. "Cultural Dimensions Comparison: A Study of Malaysia and South Korea." *Review of Integrative Business and Economics* 2, no. 1 (2013): 535-45.

Usfar, A.A., and U. Fahmida. "Do Indonesians Follow its Dietary Guidelines? Evidence Related to Food Consumption, Healthy Lifestyle, and Nutritional Status within the Period 2000-2010." *Asia Pacific Journal of Clinical Nutrition* 20, no. 13 (2011): 484-94.

Van Den Berg, V.L., A.P. Okeyo, A. Dannhauser, M. Nel, C. Oriental, and A. Sud. "Body Weight, Eating Practices and Nutritional Knowledge amongst University Nursing Students, Eastern Cape, South Africa." *African Journal of Primary Health Care and Family Medicine* 4, no. 1 (2012): 1-9.

Voortman, T., J.C. Kiefte-de Jong, M.A. Ikram, B.H. Stricker, F.J.A. van Rooij, L. Lahousse, H. Tiemeier, G.G. Brusselle, O.H. Franco, and J.D. Schoufour. "Adherence to the 2015 Dutch Dietary Guidelines and Risk of Non-Communicable Diseases and Mortality in the Rotterdam Study." *European Journal of Epidemiology* 32, no. 11 (2017): 993-1005.

Walley, A.J., A.I.F. Blakemore, and P. Froguel. "Genetics of Obesity and the Predict of Risk for Health." *Human Molecular Genetics* 15, no. 2 (2006): 124-30.

Wan Mohamed Radzi, C.W.J., H.S. Jenatabadi, A.R.A. Alanzi, M.I. Mokhtar, M.Z. Mamat, and N.A. Abdullah. "Analysis of Obesity Among Malaysian University Students: A Combination Study with the Application of Bayesian Structural Equation Modelling and Pearson Correlation." *International Journal of Environmental Research and Public Health* 16, no. 3 (2019): 1-17.

Webb, M.C., and S. Beckford. "Nutritional Knowledge and Attitudes of Adolescent Swimmers in Trinidad and Tobago." *Journal of Nutrition and Metabolism* 7 (2014): 25–31.

White, K.M., D.J. Terry, C. Troup, L.A. Rempel, P. Norman, K. Mummery, M. Riley, N. Posner, and J. Kenardy. "An Extended Theory of Planned Behavior Intervention for Older Adults with Type 2 Diabetes and Cardiovascular Disease." *Journal of Aging and Physical Activity* 20 (2012): 281-99.

Zalilah, M.S., G.L. Khor, S. Sarina, and M. Maznorila. "The Relationship Between Household Income and Dietary Intakes of 1-10-Year-Old Urban Malaysian." *Nutrition Research and Practice* 9, no. 3 (2015): 278-7.

Zarei, M., M.N. Mohd Taib, F. Zarei, and H. Abu Saad. "Factors Associated with Body Weight Status of Iranian Postgraduate Students in Universiti Putra Malaysia." *Nursing and Midwifery Studies* 2, no. 2 (2013): 97-102.

Zikmund, W.G., B.J. Babin, J.C. Carr, and M. Griffin. *Business Research Methods* (8th Edition). USA: Cengage Learning, 2010.