KNOWLEDGE, ATTITUDE, AND PRACTICE ON FOOD LABEL USE AMONG UNIVERSITY STUDENTS

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Abstract

Introduction: Choosing the right food product suitable for consumers are important to control the intake of additional and altered ingredients to avoid the risk of Non-Communicable Diseases (NCDs). Food labels guide consumers in deciding on healthy food products by providing accurate information regarding specific product characteristics including the nutritional contents. The main objective of this study was to assess the knowledge, attitude, and practice regarding food labelling among students of IIUM. **Method:** Cross-sectional study was conducted on 418 students from Gombak, Kuantan, Gambang and Pagoh campuses. A set of questionnaires was designed consisting of five sections: sociodemographic, knowledge on food label, attitude towards food labels, practice of food label and, factor influencing food label use. **Result:** Only one significant correlation was found between scores of attitudes and practice of food label ($p < 0.01$). Respondents showed positive attitude level obtained by 82.3% of respondents (n = 344) and 56.2% (n = 235) were good users of food label, while 61.5% (n = 257) had high knowledge level of food label. However, no significant differences were found in KAP food label across gender and education level. **Conclusion:** Findings could be useful in the promotion and awareness of food label use among tertiary students in the future.

Keywords: Food label, Nutrition label, Knowledge, Attitude, Practices, University Students.

Introduction

Growth of population, urbanization, and globalization, as well as economic forces has changed the food consumption across the world (Vitale et al., 2021). However, the food consumption system adapted nowadays has risked human's health with numerous adverse effects due to changes in lifestyle and eating behavior negatively. Ready-made food consumption, such as packaged meals and fast food, has risen during this recent fast-paced era. Though processed food is timely and convenient, the control of additional ingredients and altered nutritional content is unachievable as compared to home-cooked meals. This increases the risk of fat deposition and central obesity (Alkerwi, Crichton & Hébert, 2015).

It is found that food label reading can help consumer plan healthy food choices as the information given on the food packages will influence consumer's purchasing decisions (Latiff, Ruslee & Ayob, 2016). The main role of the food label is to provide information regarding the food products to assist consumers in making purchasing decision. Such information like nutrition label displayed on the food packages enable achievement of the public health objective, which is to protect and improve community health through promoting healthy lifestyle and disease prevention (Hawkes, 2004).

Use of food label refers to consumers' label reading, and utilization of the information provided to make an informed decision in respective to their healthstatus and special dietary needs (Oluwasheun, 2016). Using food label usually depends on knowledge, attitudes, and practices of an individual. Educated and knowledgeable consumers are more likely to read labels before making the best food selection during shopping (Latiff, Ruslee & Ayob, 2016). Great understanding leads to great purchasing behavior as it enhances the evaluation of labels to decide the most suitable dietary food products. Attitude in food label use is reflected from one's belief in terms of its accuracy, honesty, and usefulness (Vijayumar et al., 2013). Hence, encouragement or discouragement in its use depends on the individual's attitude.

Beside KAP on food label use, the relationships across those variables also show some significant effects on food label use. Studies found that there were significant relationships between knowledge and practice as well as attitude and practice (Hazali et al., 2013 & Wahab, 2018). Education and gender were found to be significant factors that influence the KAP on use of food label. People with higher educational level tend to use nutrition label due to high understanding level which then assist towards healthy dietary pattern (Hazali et al., 2013). Additionally, many studies documented that females use of food labels more often than males due to their better performance in nutrition knowledge and practice of the label use (Kim et al., 2016; Monye et al., 2020). Thus, this study was designed to assess the KAP on food label use among students of IIUM and factors associated with its utilization.

Methods

Subjects

A total of 418 of students from variety academic disciplines, years of study, and level of study including students of foundations, undergraduates, and post-graduates were enrolled in the study.

Study design

This study used quantitative with cross-sectional design applying descriptive and inferential statistics to assess the prevalence and associations of KAP on food label use.

Sampling method

Simple random sampling was used. A random number was generated for all students in Microsoft Excel without differentiating students by their academic discipline, year of study, and level of study. Selection was done using a random number table until the target number of respondents was achieved.

Data Collection

A set of questionnaires was created through adopt and adapt from previous studies with some modifications. There are five sections in the questionnaire: Section 1 (Sociodemographic), Section2 (Knowledge on food label), Section 3 (Attitude towards food label), Section 4 (Practice of foodlabel) and, Section 5 (Factor influencing food label use). Sociodemographic items consist of gender, race, age group, marital status, religion, academic level (foundation, degree, post-graduate), campus, year of study, kulliyyah's name, height, weight, health status, family's monthly income, and academic sponsorship. Knowledge of food label consists of six items on a 3-point nominal scale with response options "False", "Not Sure", and "True" adapted from Kaur & Singh (2012). Scoring was done according to correct answer and reliability index was 0.802. Scores less than ten was grouped as "Low Knowledge", 10 to 13 as "Moderate Knowledge", and 14 to 18 as "High Knowledge". Attitude towards food label consists of seven items on a 5-point interval scale with each extreme defined as "Strongly disagree" and "Strongly agree", respectively and was adapted from Nurliyana et al. (2011). Scores range from seven to 35 with scores less than 20 was grouped as "negative attitude", 20 to 27 as "Neutral attitude", and 28 to 35 as "positive attitude". The reliability index for attitude towards food label was 0.734. Practice of food label consists of 22 items on a 3-point ordinal scale defined as "Never", "Seldom", and "Always" which was adapted from Oluwasheun (2016). Scores range from 22 to 66 with scores less than 38 was grouped as "poor use", 38 to 51 as "fair use", and 52 to 66 as "good use". The reliability index for practice of food label was 0.898. Factors influencing food label use consists of items related to internal or external factors adapted from Nurliyana et al. (2011). There was no scoring method as each item is an independent reason to use food label. An online survey was created by using a Google Form and distributed to selected students via email, WhatsApp, and Telegram.

Statistical analysis

The analysis used included independent T-test, one-way analysis of variance (ANOVA), Spearman-rank correlation test and descriptive analysis which conducted through Statistical Package for the Social Sciences (SPSS) version 25.0 software.

Results

Sociodemographic factors of respondents

As shown in Table 1 most of the respondents were female students with 73.2% (n = 306) while male with 26.8% (n = 112) and almost all of them were non-married (n = 417, 99.8%) and Malay (98.1%, n = 410). More than half of respondents (55%, n = 230) were between the ages of 20 – 22 and all respondents were Muslim. In term of educational background of respondents, the majority of the respondents were degree students with 70.1% (n = 293) and only 28.7% (n = 120) were foundation students while few others (1.2%, n = 5) were post-graduate students. More than half (59.1%, n = 247) of the respondents had normal BMI status, while underweight and overweight with 18.9% (n = 79) and 12.9% (n = 54) respectively, and only 9.1% (n=38) were obese. Most respondents have no disease (79.7 %, n = 333) compared those hose who reported suffering from disease.

Table 1: Sociodemographic factors of respondents

Sociodemographic factors	Categories	Frequency	Percentage (%)
Gender	Male	112	26.8
	Female	306	73.2
Race	Malay	410	98.1
	Chinese	2	0.5
	Indian	1	0.2
	East Malaysian	5	1.2
Age	17 – 19	114	27.3
	20 – 22	230	55.0
	23 – 25	67	16.0
	26 – above	7	1.7
Marital status	Single	417	99.8
	Married	1	2
Academic level	Foundation	120	28.7
	Degree	293	70.1
	Post-graduate	5	1.2
Campus	Gombak	137	32.8
	Kuantan	67	16.0
	Pagoh	94	22.5

	Gambang	120	28.7
Year of study	1	39	9.3
	2	87	20.8
	3	122	29.8
	4	48	11.5
	5 and above	2	0.5
	CFS	120	28.7
Kulliyyah	Laws	56	13.4
	Economics & Management Sciences	24	5.7
	ICT	5	1.2
	Engineering	80	19.1
	Education	6	1.4
	Architectural & Environmental Design	6	1.4
	Islamic Revealed Knowledge & Human Sciences	29	6.9
	Medicine	19	4.5
	Nursing	7	1.7
	Dentistry	1	0.2
	Allied Health Sciences	54	12.9
	Science	13	3.1
	Pharmacy	12	2.9
	Language & Management	106	25.4
BMI status	Underweight	79	18.9
	Normal	247	59.1
	Overweight	54	12.9
	Obese	38	9.1
Health status	Presence of disease	85	20.3
	Absence of disease	333	79.7
Family's monthlyincome	Below than RM 1500	67	16.0
	RM 1500 – RM 2500	55	13.2
	RM 2500 – RM 4000	60	14.4
	Above than RM 4000	236	56.5
Academic sponsorship	Sponsored by program	204	48.8
	Self-sponsored	214	51.2
	Total	418	100

Knowledge level of respondents

Table 2 shows a large proportion of the respondents obtained high level of knowledge on

foodlabel use which was 61.5% (n = 257) while small proportions obtained moderate level of knowledge and low level of knowledge which were 21% (n = 88) and 17.5% (n = 73) of respondents, respectively.

Table 2: Knowledge level of respondents

Level	Frequency	Percentage (%)
High knowledge	257	61.5
Moderate knowledge	88	21
Low knowledge	73	17.5
Total	418	100

Attitude level of respondents

Result in Table 3 shows a very satisfied score among the respondents as more than three quarter of respondents had positive attitude with 344 of them (82.3%), while less than quarter of respondents had neutral and negative attitude with 17.2% and 0.5% of them respectively.

Table 3: Attitude level of respondents

Level	Frequency	Percentage (%)
Positive attitude	344	82.3
Neutral attitude	72	17.2
Negative attitude	2	0.5
Total	418	100

Practice level of respondents

From Table 4, half of respondents had good use of food label with 235 of them (56.2%) while quarter of respondents had fair use of food label with 165 of them (39.5%). Whereas the remaining of respondents had poor use which was only 18 of them (4.3%).

Table 4 : Practice level of respondents

Level	Frequency	Percentage (%)
Good use	235	56.2
Fair use	165	39.5
Poor use	18	4.3
Total	418	100

The differences in KAP regarding food label according to gender

Results in Table 5 shows that there was no significant difference found in the KAP on food label use according to gender. However, females had higher mean score than males in all sections of knowledge, attitude, and practice on food label.

Table 5: The differences in KAP regarding food label according to gender

Variables	Gender	Mean	Standard Deviation	*p*-value
Knowledge	Male	13.5	2.8	0.613
	Female	13.7	2.9	
Attitude	Male	30.6	3.4	0.775
	Female	30.7	3.3	
Practice	Male	52.6	7.5	0.475
	Female	53.2	7.5	

The differences in KAP regarding food label according to education level

Results in Table 6 illustrates that there was no significant difference found in KAP on food label according to education level (foundation, degree, and post-graduate).

Table 6: The differences in KAP scores according to education level

Variables	Variance	SS	*df*	MS	*F*-statistic	*p*-value
Knowledge	Between	38.4	2	19.2	2.278	0.104
	Within	3497.2	415	8.4		
	Total	3535.6	417			
Attitude	Between	6.7	2	3.4	0.304	0.738
	Within	4596.6	415	11.1		
	Total	4603.3	417			
Practice	Between	30.5	2	15.2	0.271	0.763
	Within	23307.5	415	56.2		
	Total	23338.0	417			

Correlation between scores of knowledge, attitude, and practice

There was a significant positive correlation was found between scores of attitude and practice [rs(416) = 0.29, p < 0.001]. In contrast, there were no significant correlation of knowledge neither with attitude [rs(416) = 0.027, p = 0.582] nor practice of food label [rs(416) = 0.0.052, p = 0.290].

Factors affecting food label use

Table 7 shows that healthy eating consciousness was the most prominent reason of food label use among over half of the respondents which was 63.2% (n = 264) and the proportion was almost similar with the factor of food curiosity which was 61.7% (n = 258). In addition, few of the respondents had other personal reasons on food label usage such as to gain more weight and to build up body muscle.

Table 7: Reasons of respondents to use food label

Reasons to use food label	Frequency	Percentage (%)
Trying to lose weight	203	48.6
Religious belief	238	56.9
Curious towards characteristics of food	258	61.7
Health problem	139	33.3
Healthy eating consciousness	264	63.2
Others	4	1.0

From Table 8, the majority of respondents (73.9%, n = 309) agreed that product familiarity was the main reason for not using food label while over half of them (55.3%, n = 231) also agreed that limited time was another hinder factor. However, few of the respondents believed that there was no reason and did not mind on the food products characteristics during purchase.

Table 8: Reasons of respondents to not use food label

Reasons to not use food label	Frequency	Percentage (%)
Limited time	231	55.3
Familiarity with the product	309	73.9
Do not know how to use food labels	90	21.5
Absence health problem	109	26.1
Confusion with the information	166	39.7
Others	6	1.4

In Table 9, the majority of the respondents found it difficult to use food label due to its small font size and too many technical terms in similar proportion. This is followed by unfamiliar language, too little information, poor layout, and bad contrast between text and background in decreasing order of frequency.

Table 9: Difficulties encountered by respondents when using food label

Difficulties	Frequency	Percentage (%)
Small font	267	63.9
Too much technical terms	259	62.0
Bad contrast between text and background	130	31.1
Poor layout	136	32.5
Unfamiliar with language	180	43.1
Too little information	170	40.7
Others	3	0.7

Discussion

Current research found that 61.5% of respondents had high knowledge, 21% had moderate knowledge and 17.5% had low knowledge. Findings were similar in a previous study on KAP regarding nutritional information and food label use among students of UiTM in Puncak Alam where the respondents had high level of knowledge (Nurliyana, 2011). Study

among food label readers in Malaysian's adult population revealed high proportion of them claimed to understand the information on the food label, especially the readers who had secondary and tertiary education (Ambak et al., 2014; Ambak et al., 2018). However, some studies discovered poor knowledge in food label (Norazmir et al., 2012; Andrias, 2016; Evelyn, 2020)

In this study, most of the respondents had excellent score in attitude of food label use. This may reflect their high trust on the authenticity information of food label as well as the accuracy depicted in nutritional label (Mahdavi et al., 2012). Similarly, other studies also found positive attitudes were shown among university students, particularly among science-based students (Mahdavi et al., 2012; Hazali et al., 2013).

Current study also revealed that over half of the respondents were categorized as good user of food label. Many studies previously discovered only few of respondents were categorized as the top level of label users compared to lower categories (Hazaliet al., 2013; Cheah et al., 2015; Andrias, 2016). This were commonly attributed to difficulty in interpreting the label's terminology.

There were no significant differences found in KAP according to gender or education level and was consistent with other studies (Cannoosamy et al., 2014; Andrias, 2016). However, previous findings in relation to gender are mixed. A study by Hazali et al. (2013) found that most females were moderate users while males were excellent users of label and other studies attributed this gender difference due to body dissatisfaction and food-related conflicts experienced by females more often than males (Grunert et al., 2012 & Hoteit et al., 2022). In the latter studies, it is expected that females are the better user of food labels. More research into other variables that may explain the relation of gender to food label use is needed. This study's finding regarding education was in contrast to previous studies. Hoteit et al. (2022) revealed that university achievers were two-times more likely to score in KAP of food labelling as opposed to lower education achievers. Furthermore, postgraduates showed to have higher tendency in KAP score by two-fold as compared to undergraduates. Significant positive correlation was also found between education level and knowledge (Arfaoui et al., 2021). Education level is the most prominent factor in food label use due to direct relationship between education with knowledge level and use of food labelling. Therefore, the analysis result of this study may have been influenced by lower participation of postgraduate students as respondents to the study.

Most readers were aware of the health benefits obtained from food label engagement as perceived health benefits tend to influence food label use and this is consistent with the basis aim of food label itself which is to emphasize on healthiest food selection to reduce global burden of NCDs (Hoteit et al., 2022). Some studies revealed that some high trust consumers did not use food label which might associate with absence of negative experience in purchasing history (Donga & Patel, 2018 & Sousa et al., 2020). Meanwhile, products' issues on small fonts, difficult terms and language barriers were the major

difficulties usually encountered by consumers when using food label (Song et al., 2015; Al-Barqi et al., 2020 & Arfaoui et al, 2021).

Positive significant correlation found between score of attitude and practice found in this study indicates that attitude of respondents has impact on practice of food label use. As over 80% of respondents had positive attitude towards food label, most probably the majority of them were good users of food label. It is mentioned that perceived beliefs toward the use of label had significant result between attitude and practice, as label users had more favorable beliefs and motivation on nutritional advantages as compared to non-label users (Lim et al., 2015).

Conclusion

Most respondents had high score level of KAP on food label use. No significant differences were found in KAP on food label use according to gender and education level. In fact, significant positive correlation was found only between scores of attitudes and practice. Furthermore, healthy eating consciousness was the most influential factors, whereas product familiarity was the top demotivated factors in food label usage besides small font size and too much technical terms as the most notable barriers. However, this study may not represent all students from all universities and colleges in general as the respondents were taken from one selected university only.

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