

Knowledge and attitude of selected non-Muslim college students towards Halal-certified food products

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Abstract

Halal certification is a vital component of the food industry. The increasing popularity of Halal-certified foods among non-Muslim consumers is attributed to food safety and wholesomeness. This study aimed to determine the knowledge and attitude of non-Muslim consumers towards Halal-certified foods. Out of 342 college students who participated in the online survey, 28.4% considered flavour as the most important factor in choosing food, followed by health (27.8%), and safety (23.4%). On the other hand, 82.5% regarded religious reasons as the least important. Moreover, 40% defined Halal as Muslim food and food preparation, with media (89.5%) and the community (88%) as common sources of Halal information. In terms of their knowledge, 50.3% of non-Muslim college students have a moderate level of knowledge, and 55% have a neutral attitude towards Halal. These results imply the need for strategies to increase Halal awareness and improve the knowledge and attitude of non-Muslim consumers. Social media may be a useful platform to disseminate information as this has been identified by most respondents as their source of information.

1. Introduction

Religious persuasion is one of the factors that influence food consumption. Certain religions prescribe dietary restrictions, fasting, and guidelines in food preparation. For example, Jewish and Muslim faiths have dietary laws that encompass their permissible foods known as Kosher and Halal, respectively (Eliasi and Dwyer, 2002; Sabaté, 2004). A study done by D'Haene and colleagues (2019) reported that religion-inspired consumption practices might have repercussions on the supply chain. The Orthodox fasting, for instance, adversely affected the milk value chain in Ethiopia. This underscores the extent of the impact of religion on food and dietary patterns. As most major religions have dietary restrictions, these beliefs are anchored towards promoting individuals' health and physical well-being.

For this reason, even those who do not share the same faith tend to follow the dietary behaviours of a particular religion due to its associated benefits, such as in the consumption of Halal food products (Azeez, 2013). Halal is not just food but a concept that emphasizes safety, hygiene, and wholesomeness of food produced and served hence setting an excellent platform

for healthy food options. Halal awareness was even found to influence purchase intention, together with brand image, health, and perceived value (Purwanto *et al.*, 2021). This may have been the springboard for the brewing industry of Halal tourism. Battour and Ismail (2016) summarized Halal tourism as any object or action that is permissible to engage in tourism according to Islamic teachings. Although the Halal Industry is still a work in progress in the Philippines, it nonetheless would like to seize the opportunity and join in the bid to meet the lucrative demand for Halal products in the global arena, especially in terms of tourism and export. As such, the Philippines renewed its support to the Halal industry by enacting R.A. 10817 entitled "The Philippine Halal Export Development and Promotion Act of 2016". The act aims to promote growth and ensure the integrity and quality of Philippine Halal exports. Two of the identified strategic directions in R.A. 10817 are Halal product consumer promotion and Halal food product research; hence the study was set out to determine the knowledge and attitudes of non-Muslim college students towards Halal-certified food products.

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2. Materials and methods

2.1 Research design and data collection

This study employed a descriptive study design. The target respondents were selected undergraduate students in the province of Laguna, Philippines. Laguna is located in Region IV-A, south of the National Capital Region in Luzon. The college undergraduate population was reported at 330,952 in 2015 (Philippine Statistics Authority (PSA), 2018b). A combination of dichotomous and multiple-choice questionnaires, and open-ended questions, divided into three sections were designed. The first part was on the economic and socio-demographic characteristics of the participants and their dietary information. The second part is a 16-item questionnaire that assesses the knowledge of the respondents on Halal-certified foods. Whereas the last part covered the attitude towards Halal product consumption and the basis of their attitude. Content validity of the questionnaire was done with the nutrition expert panel from the university. After this, the questionnaire was pre-tested to 10% of the expected sample size. The reliability of the tool to assess the knowledge and attitude towards Halal-certified food products was ensured through the use of Cronbach's alpha. Based on the data collected during the pre-testing, Cronbach's alphas for knowledge and attitude towards Halal products were 0.921 and 0.862, respectively, indicating the reliability of the tool. Then using the structured questionnaire, an online survey was conducted among the target respondents, in which a total of 342 participated.

2.2 Data analyses

To determine the level of knowledge and attitude, Bloom's cut-off points were used as described by Seid and Hussien (2018). For knowledge, the scores were classified as good (80-100%), moderate (50-79%), and poor (<50%). On the other hand, the level of attitude was sorted as positive (80-100%), neutral (60-79%), and negative (<60%).

Frequency and percentage distribution were constructed for the distributional characteristics of the respondents. Appropriate numerical descriptive measures were also generated for quantitative data. Likewise, data pertaining to the knowledge and attitude of the students were summarized. Moreover, Cramer's V coefficient was calculated to determine the degree of association between knowledge and some identified characteristics of the respondents. A similar analysis was done for the degree of association between attitude and some identified characteristics of the respondents.

3. Results and discussion

3.1 Socio-demographic characteristics

Out of the 342 respondents (Table 1), the majority are female (71.9%), single (98.2%), and living with immediate family members (90.4%). All of them are Filipinos and most are Christians, of which 69% are Roman Catholics while 21.6% are Protestants. More than half (67.3%) are enrolled in Science, Technology, Engineering, and Mathematics courses. While the household income is varied, about 18% belong to households earning Php 20,000.00-29,999.00 and Php 30,000-39,999 monthly. In 2018, it was reported that the average family income of Filipinos is Php 313,000.00 or about Php 26,000.00 per month (PSA, 2018a), which is comparable to the reported monthly household income of the respondents. Their daily food budget largely falls between Php 50.00-99.00 (19.6%), 100-149 (29.8%), and 150-199 (18.7%), which is reasonable based on the assertion that a Php 7,528 average monthly budget for food suffices a family of five (PSA, 2019; Bautista as cited by Corrales, 2019).

3.2 Dietary practices

The pronouncement of flexible learning and other alternative modes of delivery in place of face-to-face classes during the pandemic led to more meals eaten at home (89.2%). As shown in Figure 1, the responsibilities of purchasing and preparing food for the family are shared among parents (28.1%, 15.5%) and the respondents themselves (22.8%, 32.5%), with the mother doing both most of the time (32.2%, 33.3%).

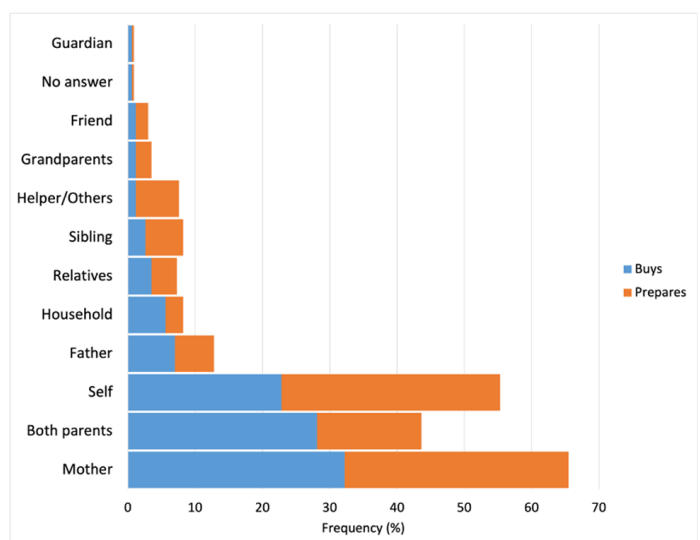


Figure 1. Persons in-charge of buying and preparing food for the household

Among the factors considered in choosing food to be purchased and consumed (Figure 2), the flavour was veered to be the most important (28.4%), health as more important (27.8%), safety as important (23.4%), convenience as not important (42.4%), accessibility as

Table 1. Sociodemographic characteristics of the respondents

Characteristics		Frequency	%
Sex	Female	246	71.9
	Male	92	26.9
	Prefer not to say	4	1.2
Civil Status	Single	336	98.2
	Married	5	1.5
	Prefer not to say	1	0.3
Religion	None	9	2.6
	Aglipay	3	0.9
	Protestant	74	21.6
	Iglesia ni Cristo	5	1.5
	Jehovah's Witness	3	0.9
	Roman Catholic	236	69.0
	Seventh Day Adventist	11	3.2
	Shalom	1	0.3
Undergraduate Degree Program	Arts and Humanities	6	1.8
	Management and Entrepreneurship	74	21.6
	Science, Technology, Engineering, and Mathematics	230	67.3
	Social Sciences	29	8.5
	Did not specify	3	0.9
Living Arrangement	Residing with family	309	90.4
	Apartment/Condominium	33	9.6
Household Income (Monthly)	<10,000	49	14.3
	10,000-19,999	31	9.1
	20,000-29,999	60	17.5
	30,000-39,999	60	17.5
	40,000-49,999	43	12.6
	50,000-59,999	29	8.5
	60,000-69,999	30	8.8
	70,000-79,999	14	4.1
	80,000-89,999	12	3.5
	90,000-99,999	8	2.3
> or equal to 100,000	6	1.8	
Daily food budget	<50	22	6.4
	50-99	67	19.6
	100-149	102	29.8
	150-199	64	18.7
	200-249	39	11.4
	250-299	15	4.4
	300-349	10	2.9
	350-399	4	1.2
	400-449	4	1.2
	450-499	3	0.9
> or equal to 500	12	3.5	

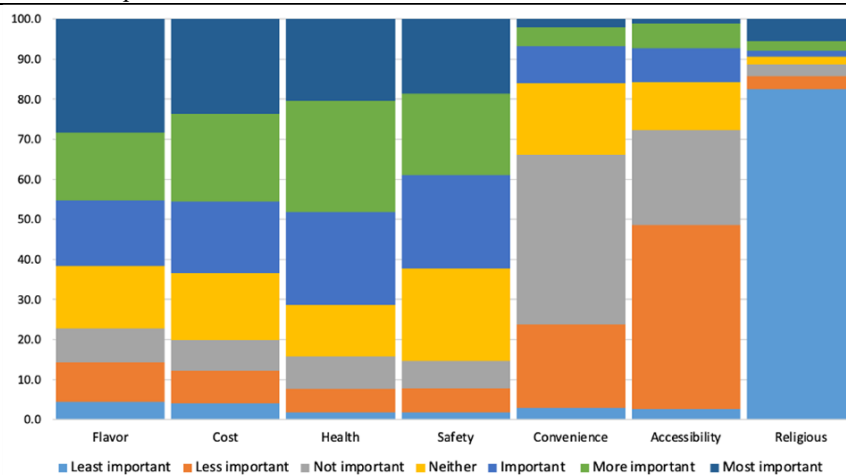


Figure 2. Factors considered in choosing food to be purchased and consumed by importance

Table 2. Dietary practices of the respondents

	Variable	Frequency	%
Reading nutrition labels	Yes	297	86.8
	No	45	13.2
Reasons for reading labels*	Health (nutrition information)	258	75.4
	Allergy	72	21.1
	Safety and quality (expiration)	262	76.6
	Aesthetic (packaging/design)	61	17.8
	Religious	31	9.1
	Pet's safety	1	0.3
	Level of spiciness	1	0.3
	Trusted brands	1	0.3
Meals usually eaten*	At home	305	89.2
	Canteen/Cafeteria	20	5.8
	Carinderia	24	7.0
	Fast food	24	7.0
Composition of meals*	Rice, starchy roots and tubers, cereals	321	93.9
	Vegetables	289	84.8
	Fruits	232	67.8
	Meat and poultry	310	90.6
	Fish and seafood	252	73.7
	Dairy	177	51.8
	Nuts, beans, legumes	102	29.8
	Bread and pastries	243	71.1
Dessert and confectionery products	161	47.1	
Processed food	200	58.5	

*Multiple answers

less important (45.9%), and religious reasons as the least important (82.5%). Palatability remains to be the primary criterion of food choice among students, consistent with the findings among 1364 public high school students in Cagayan de Oro City (Obsequio-Namoco, 2016), and that there is a growing market for healthier options among Filipino consumers (Glorioso *et al.*, 2018). The pandemic, furthermore, led to increased interest and awareness of health and food safety (Hassen *et al.*, 2020).

Adolescents usually eat rice, starchy roots and tubers, cereals (93.9%) and meat and poultry (90.6%) (Table 2). Concurrent with the national data on the contribution of food groups to mean daily intake by age, about half of the one-day intake of adolescents is composed of cereals and cereal products and about 20% is fish, meat, and poultry (DOST-FNRI, 2020). Meat and poultry dishes were consistently found among the most preferred foods (Figure 3), with 34.8% of the respondents ranking it the first most preferred, 30.7% as second most preferred, and 22.5% as third-most preferred. Among the least preferred foods are vegetables (Figure 3), with 29.2% of the respondents ranking it as the first least preferred, 17% as second least preferred, and 16.4% as third least preferred. In seven randomly selected public secondary schools and three colleges in the City of Manila alone, it was found that

Filipino adolescents are consuming substantially fewer servings of vegetables than the recommended but fruit intake remains to be higher (Gonzales *et al.*, 2016).

The use of nutrition labels has been associated with a positive attitude towards healthy diets, improved dietary choices, self-efficacy, and nutrition knowledge among college students (Miller and Cassady, 2015; Cristoph *et al.*, 2016; Cristoph and An, 2018). A local study further revealed that the use of nutrition labels was associated with intention, time for shopping, and searching for specific nutrition information (Sy and Bullecer, 2020). Among the 297 (86.8%) respondents who read food and nutrition labels, a majority refer to them to check the safety and quality of the product, i.e., expiration dates (76.6%), and for health reasons (75.4%).

3.3 Definition of Halal

Halal is an Islamic term that refers to permissible to be used or consumed in accordance with Islamic law (CODEX Alimentarius Commission, 2019). A few (3.6%) of the respondents cited its direct translation, which is anything lawful or permissible, while 4.4% related it generally to Islam (Table 3). While Halal extends to all consumables such as cosmetics, food, and clothing, it is frequently used to refer to food as it is considered the most important need that has to be satisfied (Erdem *et al.*, 2015). What makes food Halal,

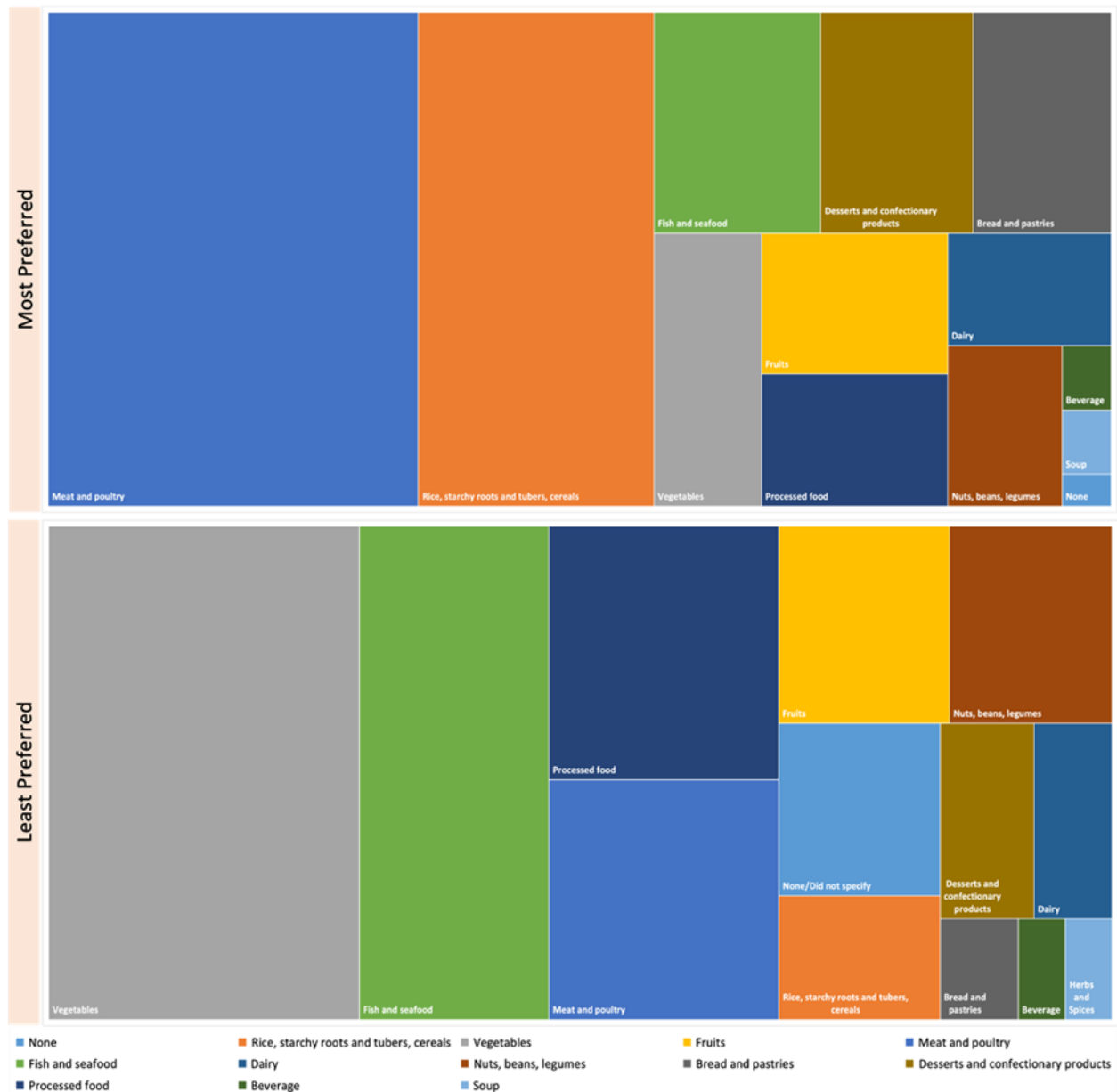


Figure 3. Most preferred and least preferred food of the respondents

according to Abdul *et al.* (2009), are the nature and processing techniques involved in food production and handling, which should always be the one approved and recommended by Islam. About 40% specifically referred to Halal as Muslim food and food preparation, while some associated it with a specific cuisine (2.3%), i.e., Arabic, Mediterranean; characteristic of food (3.6%), i.e., spicy, healthy, safe; or a type of diet (1.2%). About 12%, on the other hand, related Halal only to meat products. Others defined Halal in relation to food standards such as certification (4.3%), food safety (2.6%), and certifying organizations (2.1%). Among the factors contributing to the expansion of Halal food, the market is perceived food quality, described by both Muslim and non-Muslim consumers as healthy, safe, and wholesome (Ireland and Rajabzadeh, 2011).

Media and the community are the common sources of Halal information, 89.5% and 88%, respectively. About half of the respondents learned about Halal from

social media (51.2%) and from school/work (50%). In 2017, it was reported that a total of 59 million Filipinos use social media and social networking sites with a 56% penetration rate and 3.5% of the youth logging in at least 35 hours a week on the Internet (Jhpiego Philippines, 2017). Meanwhile, family/friends (38%) and broadcast media including print, television, and radio (38.3%) are the second most common sources of information. When asked about their perceived level of awareness of Halal (Figure 4), comparable proportions gave a self-rating of 6(15.2%), 7(15.5%), and 8(15.8%). However, it is also notable that while 6.7% gave themselves a perfect score of 10, there were also a few (5.8%) who gave themselves a score of 1.

3.4 Levels of knowledge and attitude

Half of the respondents (50.3%) had a moderate level of knowledge about Halal. On the other hand, 47.3% were graded as poor, and only 2.3% were considered to have a good grasp of Halal. This poor to

Table 3. Definition of halal and sources of information

	Variable	Frequency	%
Definition of Halal	Food	178	52.2
	Refers to food in general	12	3.6
	Pertains to a specific cuisine	8	2.3
	Pertains to a specific characteristic of food	12	3.6
	Pertains to a specific diet	4	1.2
	Muslim food	126	36.8
	Muslim food preparation	16	4.7
	Related to meat products	40	11.7
	Meat cuts	2	0.6
	Restricts pork	34	9.9
	Restricts all types of meat	4	1.2
	Religion	16	4.7
	Related to Islam	15	4.4
	Related to other religions	1	0.3
	Culture	68	20.0
	Muslim culture	50	14.6
	Anything lawful	12	3.6
	Anything forbidden	6	1.8
	Food standards	31	9.0
	Certification	15	4.3
	Food safety	9	2.6
	Food company/organization/committee	7	2.1
None/No idea	30	8.8	
Source of Information*	Community	301	88.0
	School/work	171	50.0
	Family/friends	130	38.0
	Church	1	0.3
	Food outlets	2	0.6
	Media	306	89.5
	Broadcast media	131	38.3
	Social media	175	51.2
	Others	19	5.6
	Field trips/immersions	3	0.9
	Scientific journals	3	0.9
	Trainings/seminars	2	0.6
	Own research	2	0.6
	None specified/No idea	9	2.6

*Multiple answers

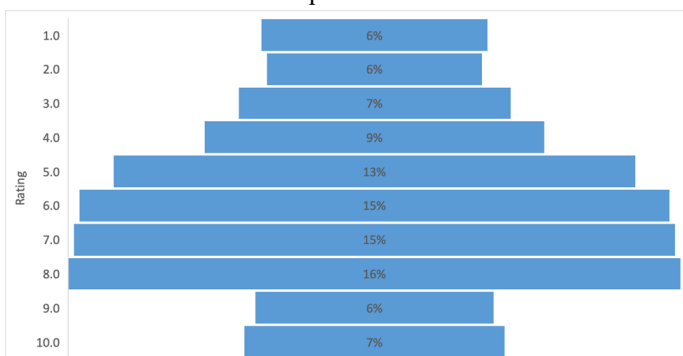


Figure 4. Frequency distribution of the perceived level of awareness on Halal (where 1 is the lowest and 10 is the highest)

moderate knowledge about Halal is reflected by their limited definition of Halal—being Halal is associated

with Muslims and is related to meat products only. Clearly, an in-depth understanding of Halal and its certification is lacking among the respondents. Results also show that the knowledge scores differed by sex and religion (Table 4). The majority of the male respondents (57%) have poor knowledge of Halal-certified food products whereas 56% of the female students scored moderately, indicating that female students are seemingly more familiar with Halal foods. This may be attributed to gender-specific differences in eating and dieting influenced by psychological and socio-cultural factors. Concurrent with previous studies, females are more likely to have better knowledge of food and nutrition because of their pronounced beliefs in the benefits of healthy eating and preoccupation with body

Table 4. Distribution of students' level of knowledge by sex and religion

Variable	Knowledge Level*			Total (by variable)	
	Poor	Moderate	Good		
Sex	Female	107 (31.30%)	137 (40.10%)	2 (0.60%)	246 (71.90%)
	Male	52 (15.20%)	34 (9.90%)	6 (1.80%)	92 (26.90%)
	Prefer not to say	3 (0.90%)	1 (0.30%)	0 (0.00%)	4 (1.20%)
Religion	Agnostic/ Atheist/ None/ No Current Religion	7 (2.00%)	2 (0.60%)	0 (0.00%)	9 (2.60%)
	Aglipay	3 (0.90%)	0 (0.00%)	0 (0.00%)	3 (0.90%)
	Christian	34 (9.90%)	33 (9.60%)	2 (0.60%)	69 (20.20%)
	Iglesia ni Cristo	2 (0.60%)	3 (0.90%)	0 (0.00%)	5 (1.50%)
	Jehovah's Witness	1 (0.30%)	2 (0.60%)	0 (0.00%)	3 (0.90%)
	Pentecost	1 (0.30%)	0 (0.00%)	0 (0.00%)	1 (0.30%)
	Protestant	4 (1.20%)	0 (0.00%)	0 (0.00%)	4 (1.20%)
	Roman Catholic	107 (31.30%)	124 (36.30%)	5 (1.50%)	236 (69.00%)
	Seventh Day Adventist	3 (0.90%)	7 (2.00%)	1 (0.30%)	11 (3.20%)
	Shalom	0 (0.00%)	1 (0.30%)	0 (0.00%)	1 (0.30%)
	Total (level of knowledge)	162 (47.40%)	172 (50.30%)	8 (2.30%)	342 (100.00%)

*Knowledge levels indicate: poor (<50%), moderate (50-79%), and good (80-100%)

weight (Kiefer *et al.*, 2005; Vari *et al.*, 2017; Grzymislawska *et al.*, 2020). In terms of religion, most of the members of the Agnostic (70%), Aglipay (100%), Christian (49%), Pentecost (100%), and Protestant (100%) communities poorly scored in their knowledge of Halal-certified food products. While religions such as Iglesia ni Cristo (60%), Jehovah's Witness (60%), Roman Catholic (53%), Seventh Day Adventist (63%), and Shalom (100%) were more informed with a moderate level of knowledge.

In terms of their attitude towards Halal, most of the participants (55%) had a neutral attitude, followed by a positive attitude (39.8%), whereas only 5.3% perceived Halal as negative. Comparing the distribution of levels of attitude by sex (Table 5), it is noted that both females (54%) and males (55%) feel neutral towards Halal-certified food products. Nonetheless, 29% of all respondents who had a positive attitude are female. Interestingly, looking into the differences across religions, Iglesia ni Cristo (80%) has a positive attitude towards Halal, which may be attributed to the similarities in their dietary practices such as the prohibition of animal blood and alcohol. Moreover, 36% of Seventh Day Adventists also had a positive attitude while the same number felt neutral about Halal foods. Seventh Day Adventists ascribe to the concept of holism; they prescribe a diet composed of vegetables, fruits, and whole grains, while unclean animals such as pigs,

shellfish, vultures, and bats are forbidden (Banta *et al.*, 2018).

The results of the levels of knowledge of Halal show that there is a need for more campaigns to increase awareness. Knowledge of Halal foods is an important determinant that significantly influences consumer behaviour and purchase intention (Billah *et al.*, 2020). Thus, increasing awareness about Halal is important, especially for non-Muslims. To understand the attitude of the respondents toward Halal-certified foods, the factors that influence their purchase intention must be examined. A study done by Aziz and Chok (2012) noted that, for non-Muslims in Malaysia, Halal awareness, certification, promotion, and brand are related to purchase intention whereas food quality is negatively associated. Contrary to the population under study, flavour, health, cost, and safety are the most important factors in choosing food. It was also found that religion is the least important factor. With that, coupled with their poor knowledge of Halal, the majority of the students felt neutral toward Halal in general.

3.5 Association of factors with knowledge and attitude

Age, income and food budget of the sampled college students are weakly associated with their knowledge and attitude towards Halal-certified food products (Table 6). In particular, income and food budget are negatively

Table 5. Distribution of students' level of attitude by sex and religion

Variable	Attitude Level*			Total (by variable)	
	Negative	Neutral	Positive		
Sex	Female	13 (3.89%)	134 (39.20%)	99 (28.90%)	246 (71.90%)
	Male	5 (1.50%)	51 (14.90%)	36 (10.50%)	92 (26.90%)
	Prefer not to say	0 (0.00%)	3 (0.90%)	1 (0.30%)	4 (1.20%)
Religion	Agnostic/ Atheist/ None/ No Current Religion	0 (0.00%)	6 (1.80%)	3 (0.90%)	9 (2.60%)
	Aglipay	0 (0.00%)	3 (0.90%)	0 (0.00%)	3 (0.90%)
	Christian	0 (0.00%)	39 (11.40%)	30 (8.80%)	69 (20.20%)
	Iglesia ni Cristo	0 (0.00%)	1 (0.30%)	4 (1.20%)	5 (1.50%)
	Jehovah's Witness	0 (0.00%)	2 (0.60%)	1 (0.30%)	3 (0.90%)
	Pentecost	1 (0.30%)	0 (0.00%)	0 (0.00%)	1 (0.30%)
	Protestant	0 (0.00%)	2 (0.60%)	2 (0.60%)	4 (1.20%)
	Roman Catholic	13 (3.80%)	131 (38.30%)	92 (26.90%)	236 (69.00%)
	Seventh Day Adventist	3 (0.90%)	4 (1.20%)	4 (1.20%)	11 (3.20%)
	Shalom	1 (0.30%)	0 (0.00%)	0 (0.00%)	1 (0.30%)
	Total (level of knowledge)	18 (5.30%)	188 (55.00%)	136 (39.80%)	342 (100.00%)

*Attitude levels indicate: negative (<60%), neutral (60-70%), and positive (80-100%).

Table 6. Measures of association of selected factors with knowledge and attitude towards Halal-certified food products

Factor	Knowledge	Attitude
Age ^a	0.073	0.019
Income ^a	-0.057	0.140
Food budget ^a	-0.003	-0.074
Sex ^b	0.161	0.033
Religion ^b	0.163	0.291

^aSpearman correlation coefficient

^bCramer's V coefficient

associated with knowledge, indicating that as the sampled students' household income and food budget increase, their knowledge towards Halal-certified products lowers. Similarly, a negative association was observed between food budget and attitude, demonstrating that high food budget is associated with a low level of attitude among the sampled college students. Studies conducted among Muslim and Non-Muslim consumers both highlight how attitude mediates the relationship between knowledge and purchase intention (Setiawati *et al.*, 2019; Wibowo *et al.*, 2020). Because household income and food budget are considered strong predictors of purchase intention, these may also influence the information-seeking behaviour as well as the attitude of college students toward food. With flavour considered by the respondents as the most important driver of food choice, the increased capacity to buy may

compel them to opt for what tastes good and attend less to other product attributes such as health, safety, hygiene, and wholesomeness.

Moreover, religion revealed a moderate association with knowledge, and with religion and attitude. Religiosity pertains to both belief in God and obedience to laws established by God. As such, individuals with strong intrinsic religious commitment will live according to their religious principles, including adherence to dietary laws (Nurhayati and Hendar, 2020). The similarities in the beliefs and dietary practices prescribed in Islam and other monotheistic religions in the country may, thus, explain the level of association between religion and knowledge as well as religion and attitude.

The weak associations related to sex and age may be explained by the developmental changes occurring during adolescence. College students may show a strong preference towards specific product attributes, manifest complex nutrition and health-related behaviours, and express conflicting views from exposure to various sources of information affecting the way they view food. The interaction of social norms, values, and other psychosocial factors may have contributed to these weak associations. Further studies may be conducted to give more insight as to how gender differences and age can influence knowledge and attitude toward halal and Halal-certified food products.

4. Conclusion

The findings of the study show that the non-Muslim students who participated in the study have poor knowledge about Halal-certified food products, while the majority of the respondents generally define Halal as Muslim food. The students also felt neutral towards Halal and this may be attributed to having flavour, health, and safety as the most important factors when they purchase food. Media, specifically broadcast and social media, which were cited as common sources of knowledge, can be a useful platform for information dissemination that would increase awareness of halal and Halal certification.

Conflict of interest

The authors declare no conflict of interest.

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