ORIGINAL ARTICLE

Knowledge and Practice on the No Plastic Bag Campaign Among Undergraduate Students in Universiti Putra Malaysia (UPM)

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ABSTRACT

Introduction: Excessive use of plastic bags causes plastic waste problems. Plastic waste takes a long time to decompose and contributes to serious environmental pollution. The No Plastic Bags campaign is one of the initiatives to tackle this problem. This campaign is important as it raises awareness of the impact of plastic on the environment as well as provides continuous education to the younger generation. This research was carried out to study the knowledge and practice of the 'No Plastic Bag Campaign' among undergraduate students at Universiti Putra Malaysia (UPM). **Methods:** A cross-sectional study was conducted among 380 undergraduate students in UPM obtained through a multistage sampling method consisting of cluster and stratified sampling methods. Modified questionnaires were distributed among the respondents via internet-based platforms which are email and WhatsApp. Data analysis was done using IBM SPSS version 25. **Results:** The study shows that most of the respondents had a high level of knowledge (97.6%) and a moderate level of practice (18.2%). However, there was no significant association between knowledge and practice in the No Plastic Bag campaign, as the result shows that ($\varkappa$=4.685, p=0.096). Only the Faculty of Science ($\varkappa$=9.520, p=0.009) showed that there is a significant association between the knowledge and practice regarding the No Plastic Bag campaign. **Conclusion:** In conclusion, the 'No Plastic Bags Campaign' can be used as one of the efforts to tackle plastic waste pollution in Malaysia if the level of practice of the 'No Plastic Bags Campaign' among students can be increased.

Keywords: Knowledge; No plastic bag campaign; Plastic waste; Practice, Sustainability

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INTRODUCTION

A plastic bag can be used to carry all kinds of goods such as food, groceries, and even waste (1). In a year, there are as many as 300 million tonnes of plastic produced worldwide, with half of them being single-use plastics (2) and according to International Energy Agency, the numbers may double by 2050 (3). Disposable plastic can only be used once before it is thrown away or recycled (1). Plastic bags are one of the most used containers because every year 500 billion plastic bags are used and thrown away globally (4, 5) which equals a rate of 1 million bags per minute (6). In the United States, around 100 billion disposable bags have been used in a year (7), while in California alone, 19 billion plastic bags are used annually (8).

According to Abdul Rahman (9), on average, Malaysians use a total of nine billion plastic products a year. Most people use plastic as their grocery bags because it is very cheap, weightless, and strong enough to bear the weight of the purchased item (10, 11, 12). Plastic bags are made of petrochemicals, they are non-biodegradable and are also difficult to decompose (13, 14). Plastic material can take up to 1000 years to be degraded in the environment (15, 16). Excessive production and use of plastic materials have raised concerns about the use of non-renewable resources as it causes energy wastage of raw materials (13, 17). A study conducted by Jambeck et al (18), shows that there are more than 90% of crude plastic made from fossil fuels such as oil or natural gas. The physical and chemical properties of plastic bags as well as improper disposal by humans have contributed to many hazards such as water, soil, and air pollution (19). The use of single-use plastics has also destroyed the environment and negatively impacted marine life (20). According to Jambeck et al (18), plastic pollution in oceans around the world is estimated at 4.8-12.7 metric tons per year. Plastic bags floating in the water are often seen as food or nest-building materials for marine life and birds, leading to harm to marine life as they can cause them to become entangled, choked, and poisoned which

can lead to death (21). Research by Bashir (22), states that the number of animals dying from swallowing plastic is much higher than the number of diseases in most African countries. In the long term, plastic waste produces toxic substances that interfere with marine life and become carcinogenic to human health (23, 24).

Furthermore, plastic can cause the dumping of waste and this situation will result in the environment being polluted and unsightly (5). In Malaysia, every year an estimated 19 000 tons of solid waste were produced and 24% of them were plastic waste (11). Due to the nature of photo-grade plastic bags, they will release toxic chemicals due to the decay process and it will disrupt the level of animal hormones in the food chain, and this may also have a negative impact on humans in many ways (5, 25). While at the decomposition stage, plastic will emit toxic gases such as methane and carbon dioxide that are very harmful to health (26). These gases can also reduce the ozone layer, create a greenhouse effect and cause global warming (27). Moreover, waste especially plastic waste will seriously affect the quality of agricultural land, since such chemicals will reduce water percolation and aeration of the soil, therefore, lower soil fertility (28).

The attitude toward disposing of plastic waste will cause clogged waterways and potentially cause severe flash flooding either in urban or rural areas (10). In Bangladesh, plastic bags blocked the drains of the city of Dhaka and resulted in two severe floods (29). This can also result in more serious things happening such as an increase in the number of vector-borne diseases as there will be more breeding grounds for mosquitoes and pests due to the increase in flood areas (30, 19). The problem of plastic pollution becomes more serious when people do not recycle such plastic materials. Whereas in Australia, only 3% of plastic bags were recycled, this results in an estimated 80 million plastic waste just being waste (31, 32). According to Ritchie & Roser (33), as much as 55% of global plastic waste was estimated to have been disposed of, 25% burned, and only 20% recycled. This suggests that recycling rates are very low practiced worldwide (34) compared to other widely used materials (17).

Since there are many environmental issues regarding the negative impact of plastic bag usage, several initiatives to reduce the use of plastic bags have been carried out mainly to address this problem (35). Some countries, such as Australia, Italy, the United States, Tanzania, and Ireland, have imposed fees or prohibitions on the manufacture and use of plastic bags when shopping or for other reasons (10). The Ministry of Domestic Trade, Cooperatives and Consumerism Malaysia (MDTCC) launched the No Plastic Bags campaign aims to encourage Malaysians to reduce their dependency on plastic bags, thus saving the environment (36). The program is targeted at supermarkets, hypermarkets, and major retailers, where they charge every customer who wants a plastic bag MYR0.20 (37). This campaign was implemented to educate and increase the environmental awareness of Malaysian consumers on the negative impact of plastic bag use on the environment (11). Through this program, only people who are willing to pay MYR0.20 can get plastic bags from the shops. In this way, consumers will have the option to bring their own reusable grocery bags to avoid paying for plastic bags (37).

This approach is aimed to educate consumers not to rely on plastic bags to carry purchased items, thus reducing plastic waste. Therefore, this study was conducted to determine the level of knowledge and practice of the No Plastic Bag campaigns among undergraduate students at Universiti Putra Malaysia (UPM). This research has made university students the focus of study as the future of the country's sustainability depends on the younger generation nowadays. Youths play a very important role in reducing plastic bag pollution as they are seen to be capable of making changes. As future leaders, youth certainly have an advantage in helping in improving environmental sustainability (37, 38).

MATERIALS AND METHODS

Study Design

A cross-sectional survey design has been used to assess the knowledge and practice of the 'No Plastic Bag Campaigns' among undergraduate students at Universiti Putra Malaysia (UPM), Selangor. This university was chosen because it ranked first in the UI Green Metric World University Rankings (39). Ethics approval was obtained from the Ethical Committee for Research involving Human Subjects of Universiti Putra Malaysia (JKEUPM) with the reference number JKEUPM-2020-458. The total number of undergraduate students and the list of students' emails was obtained from the Admission Division & Academic Governance Division, UPM for the purpose of distributing questionnaires.

Selection of the Respondents

The sample size for the research study was calculated using the formula by Krejce & Morgan (40) with the population size of 6476 undergraduate students from five faculties in UPM and the proportion was set at 0.46 to indicate good knowledge of plastic among university students, based on (20). Thus, based on this formula, a total of 361 respondents were needed for this study. An additional 20% of the sample size was added for the strength of the analysis as well as the estimates of unresponsive respondents, missing data, and errors. Hence, the optimum number of respondents

needed in this study was 433 respondents.

A multistage method was used in this study which consists of two sampling methods, namely the clustered sampling method and the stratified sampling method. First, all 15 faculties in the UPM Serdang campus have been listed based on the list of faculties stated on the official website of UPM. Then, each faculty was randomly numbered from 1 to 3. Faculties that have been numbered by number one are grouped into the first clusters. The faculties with number two are grouped into the second cluster and the faculties with number three are grouped into the third cluster. Each cluster consists of 5 faculties. Then, the first cluster which consists of the Faculty of Agricultural, Faculty of Medicine & Health Sciences, Faculty of Engineering, Faculty of Science, and Faculty of Computer Science & Information Technology were chosen as a cluster in this study. Subsequently, the respondents were stratified based on the cluster of faculties selected for this study as shown in Table I.

Study Instrument

The questionnaires were adapted from a previous study conducted by (27) and divided into 4 sections which are Section A: Socio-demographic Information (9 items), Section B: Questionnaire on knowledge regarding plastic bags (11 items), Section C: Practice on plastic bag usage (9 items) and Section D: Respondent opinion & recommendation (4 items). The questionnaire is developed in both English and Malay versions. Questionnaires had been evaluated by experts in the field of public health for the validity of the content. The face validity of the questionnaire has been tested to evaluate and examine the understanding of the questionnaires. A pilot study was conducted among 38 selected undergraduate students from Universiti Putra Malaysia (UPM) who are not from the five selected faculties in the real study. Comments were noted and modifications to the questionnaire were made accordingly. The reliability of the questionnaire was tested using Cronbach's alpha value using the IBM SPSS Statistics program (Version 25). The Cronbach's alpha value for knowledge is 0.876 and for practice was 0.712. This questionnaire was designed using a Google form and a link was generated before it was distributed to the respondent.

Data Collection and Analysis

The questionnaire was distributed using the link generated in the Google form to the respondent via internet-based platforms such as students' email. The questionnaire was also distributed personally by student representatives from each faculty the student through faculty WhatsApp groups and courses to increase the response rate. There was no personal phone number of the student was obtained for the purpose of this study. Before participating in this study, the written consent of the informed individual was obtained from each respondent. For confidentiality, respondents have been informed that information will be analyzed anonymously throughout the study or after.

The data were analyzed in accordance with the type of statistical analysis based on the objectives of the study. Descriptive analysis was done using frequencies and percentages for sociodemographic information and to determine the knowledge and practice level of the No Plastic Bag campaign among respondents. Associations between knowledge and practice were tested using Pearson's Chi-square test. P-values were considered significant at <0.05. To determine the level of knowledge, and practice, questionnaires in section B and section C were assigned individual scores. Negatively constructed questionnaires had their scores inverted at the same time. Individual total scores of students were then divided into three groups (41, 42). The scoring method of the knowledge was based on Ajit & Chapman (42) where each 'yes' answer has been given 1 mark whereas 0 mark for the 'no' answer given. The score ranged from 0 - 11 for the knowledge section. For knowledge level, a score of less than 50% is low knowledge, a score between 50% - 80% is medium knowledge and a score of more than 80% is high knowledge. The scoring method for practice was

Table I : Stratification of students based on faculties in UPM

Faculties (N)	Percentage of students based on faculties (%)	Number of respondents (s)
Faculty of Agricultural (982)	982/6474 x 100=15.168	15.168/100 x 433=66
Faculty of Medicine and Health Sciences (1386)	1386/6474 x 100=21.409	21.409/100 x 433=93
Faculty of Engineering (1708)	1708/6474 x 100=26.382	26.382/100 x 433=114
Faculty of Science (1571)	1571/6474 x 100=24.266	24.266/100 x 433=105
Faculty of Computer Science and Information Technology (827)	827/6474 x 100=12.774	12.774/100 x 433=55
Total	100%	433

Table II : Sociodemographic information of respondents (N=380)

Characteristics	Frequency (n)	Percentage (%)
Faculty		
Faculty of Agriculture	54	14.2
Faculty of Medicine and Health Sciences	92	24.2
Faculty of Engineering	86	22.6
Faculty of Science	102	26.8
Faculty of Computer Science and Information Technology	46	12.1
Study Year		
1st Year	81	21.3
2nd Year	131	34.5
3rd Year	68	17.9
4th Year	100	26.3
5th Year	-	-
Age		
19 – 21 years old	179	47.1
22 – 24 years old	191	50.3
25 – 29 years old	10	2.6
Gender		
Male	93	24.5
Female	287	75.5
Race		
Malay	308	81.1
Chinese	30	7.9
Indian	24	36.3
Others	18	4.7
Marital Status		
Married	6	1.6
Single	374	98.4
Place of Residence		
On campus	210	55.3
Off campus	170	44.7
Family Income Class		
T20	46	12.1
M40	143	37.6
B40	191	50.3

based on Ajit & Chapman (42). For positive statements, the score was given 1 for never, 2 for occasionally, 3 for sometimes, 4 for usually, and 5 for always response. The reverse score was given for negative statements. A maximum score of 45 and a minimum score of 0 were possible for the practice section. While for the level of practice, the total individual score of students was classified into three levels by percentage. Scores of less than 50% are classified as low practice, scores between 50% - 80% are moderate practice, and scores of more than 80% are high practice.

RESULTS

Respondents Sociodemographic Characteristics

The first objective of this study is to determine the socio-demographic information of undergraduate students at UPM. A total of 380 students agreed and completed the questionnaire out of a total of 433 respondents with a response rate of 88%. Table II shows, from a total of 380 undergraduate students who took part in the study, 75.5% (n = 287) were women and 24.5% (n = 93) were men. Meanwhile, the majority of students are between the ages of 22-24 years (50.3%). Based on the category of years of study, the highest number of respondents was in the second year of study, 34.5% (n = 131) and there are no students from the fifth year who participated in this study. For the race category, there was a majority of 81.1% (n = 308) of respondents were Malay, 7.9% (n = 30) were Chinese, 6.3% (n = 24) were Indian and 4.7% (n = 18) were other races. For the marital status, most of the respondents are single with 98.8% (n = 374). In terms of place of residence, 55.3%

Table III : Knowledge regarding Plastic Bag among undergraduate students in UPM (n=380)

Item	Questions	Answer	Frequency (%)
1	I know that plastic waste in Malaysia has become worse and it is a serious problem.	Yes	375 (98.7)
		No	5 (1.3)
2	I know about the No Plastic Bag Campaign that is being implemented by Malaysia's Government.	Yes	368 (96.8)
		No	12 (3.2)
3	I know The No Plastic Bag Campaign is implemented to address the pollution problems caused by single-use plastic.	Yes	370 (97.4)
		No	10 (2.6)
4	I know supermarkets implement The No Plastic Bag Campaign by imposing a charge of RM0.20 for each requested plastic bag.	Yes	378 (99.5)
		No	2 (0.5)
5	Do you know that plastic bag is made from natural resources which as Petroleum?	Yes	286 (75.3)
		No	94 (24.7)
6	I know that plastic bags are harmful to the environment because they released toxic substances into the soil.	Yes	368 (96.8)
		No	12 (3.2)
7	Do you know that plastic bags can take 10-100 years to degrade in landfills?	Yes	363 (95.5)
		No	17 (4.5)
8	Do you know that plastic thrown into the sea would threaten and cause the death of aquatic life?	Yes	378 (99.5)
		No	2 (0.5)
9	Do you know that plastic waste cause blockage of the drainage system and it is one of the main causes of urban flooding?	Yes	369 (97.1)
		No	11 (2.9)
10	It's important to avoid single-use plastics bags in our daily life	Yes	377 (99.2)
		No	3 (0.8)
11	A plastic bag can be recyclable.	Yes	290 (76.3)
		No	90 (23.7)

(n = 210) of students live in the college instead of off-campus 44.7% (n = 170). For the family income class, there are 50.3% (n = 191) of undergraduate students come from B40 families, 37.6% (n = 143) of M40 families and 12.1% (n = 46) from T20 families. For the faculty category, most respondents were from the Faculty of Science 26.8% (n = 102), followed by 24.2% (n = 92) from the Faculty of Medicine and Health Sciences, and the least number of the respondents 12.1% (n = 46) from the Faculty of Computer Science and Information Technology.

Knowledge of Plastic Bags Usage

To measure students' level of knowledge of plastic bags, students were tested with 11 questions consisting of various aspects of plastic bags, including knowledge of plastic pollution in Malaysia, the No Plastic Bags Campaign, and knowledge of the dangers of plastic waste to the environment. Table III shows the frequency and percentage of knowledge-related questions on plastic bags. The results of this study have shown that in general students have knowledge of plastic bags in which they have answered yes to almost all 11 items. Out of a total of 11 items, a total of 9 items received more than 90% of yes answers, and only 2 items received a yes answer in the range of 70% from the students. For the 4th and 8th items having the same number of yes answers from students (n = 378, 99.5%), this indicates that students are aware that a charge of RM0.20 has been allocated for each plastic bag requested in the supermarket and they also admit that plastic bags thrown into the sea will threaten and cause death to aquatic life. Only (n = 2, 0.5%) students answered no to both items.

The first point is related to the respondent's current knowledge of the trend of plastic waste disposal in Malaysia and (n = 375, 98.7%) students responded to this. Only 1.3% (n = 5) of students answer that they do not know about it. This indicates that the

Table IV : Practice on plastic bag usage among undergraduate students in UPM (n=380)

No.	Practice on the No Plastic Bag Campaign	Never n (%)	Occasionally n (%)	Sometimes n (%)	Usually n (%)	Always n (%)
1	How often do you visit a mart/ grocery shop/ supermarket?	0	37(9.7)	150(39.5)	129(16.8)	64(16.8)
2	I support The No Plastic Bag Campaign by bringing along my own reusable bag when shopping.	18(4.7)	26(6.8)	88(23.2)	109(28.7)	139(36.6)
3	I always keep reusable bags in my car/ motorcycle.	58(15.3)	81(21.3)	83(21.8)	96(25.3)	62(16.3)
4*	I keep forgetting to bring my own reusable bags when shopping.	71(18.7)	119(31.8)	93(24.5)	70(18.4)	25(6.6)
5	I refuse the single-use plastic bag at the grocery shop/ supermarket when offered by the cashier.	32(8.4)	60(15.8)	129(33.9)	99(26.1)	60(15.8)
6	If shopping bags are not enough, I will carry all purchased items using my hands or just put them in the trolley.	48(12.6)	57(15)	103(27.1)	99(26.1)	73(19.2)
7*	If shopping bags are not enough, I will buy a plastic bag for RM0.20 from the retailer.	112(29.5)	125(32.9)	66(17.4)	54(14.2)	23(6.1)
8	I reuse or recycle plastic bags.	7(1.8)	19(5)	42(11.1)	71(18.7)	241(63.4)
9	I dispose of plastic waste in a rubbish bin instead of littering (Plastic waste: used plastic, used food containers, used water plastic).	12(3.2)	13(3.4)	40(10.5)	83(21.8)	232(61.1)

*Negative statement

majority of the respondents are aware of the issue of plastic waste that is happening in Malaysia such as the problem of improper disposal of plastic waste which has become worse. The second item states whether or not students know about the No Plastic Bag campaign which is being implemented by the Government of Malaysia. This item obtained 96.8% (n = 368) from the yes answer and only 3.2% (n = 12) without an answer, indicating that almost all students were informed of this implemented campaign. Based on this study, it can be seen that only the fifth and eleventh items produced 76.3% of the yes answers (n = 286) and 76.3% (n = 290) respectively. The fifth item specifically touches on the knowledge of plastic bags, whether they admit or not that plastic bags are made from a natural source which is Petroleum. Whereas as many as 24.7% (n = 94) of students answered no and this indicates that they do not know about the raw source of plastic bags. Whereas for the eleventh item, which states whether the plastic is recyclable or not, then 23.7% (n = 90) of students answer no and assume that the item is a false statement. The total mean score of knowledge is 10.4 and a standard deviation of 5.2.

Practice on the Use of Plastic Bags

To assess the practice of the use of plastic bags among students, the frequency scale has been used to measure items consisting of never, occasionally, sometimes, usually, and always. Table IV shows the frequency and percentage of the practice of using plastic bags among undergraduate students. The highest item practiced was that students constantly reuse or recycle plastic bags. A total of 63.4% (n = 241) students always practice recycling, while 18.7% (n = 71) usually practice it, 11.1% (n = 42) sometimes practice it, 19% (n = 5) occasionally practice it and 1.8% (n = 7) never practice it. This can translate that the majority of students do not just throw away their plastic bags after one use. Instead, they reuse plastic bags and this practice can help in maintaining a sustainable environment. Most students 61.1% (n = 232) always dispose of plastic waste in the trash instead of littering while only 1.8% (n = 7) never practice it. This suggests that many students are aware of the importance of the environment and behave well by constantly littering in a responsible way. A total of 36.6% of students practice the practice of carrying reusable bags when shopping (n = 139). This suggests that they really support the No Plastic Bags Campaign by carrying their own reusable bags when shopping instead of buying plastic bags. Only (n = 109, 28.7%) usually bring it, (n=88, 23.2%) sometimes carry their own reusable bags, (n = 26, 6.8%) occasionally carry reusable bags and 4.7% (n = 18) never bring their own reusable bag when shopping.

Table V : Association between knowledge and practice on the No Plastic Bag Campaign among undergraduate students in UPM (n=380)

Knowledge	Practice				
	High (18.2%)	Moderate (73.4%)	Low (8.4%)	ϰ	p- value
Knowledge					
High (97.6%)	65	274	32	4.685	0.096
Moderate (2.4%)	4	5	0		

Table VI : Association between knowledge and practice on the No Plastic Bag Campaign among undergraduate students in UPM according to five different faculties (N=380)

Knowledge on the No Plastic Bag Campaign	Practice				
	High (18.2%)	Medium (73.4%)	Low (8.4%)	ϰ	p- value
Faculty of Agriculture					
High (97.6%)	4	41	7	4.198	0.123
Medium (2.4%)	1	1	0		
Faculty of Medicine and Health Sciences					
High (97.6%)	12	74	6	-	-
Medium (2.4%)					
Faculty of Engineering					
High (97.6%)	24	53	6	1.665	0.435
Medium (2.4%)	0	3	0		
Faculty of Science					
High (97.6%)	16	79	5	9.520	0.009
Medium (2.4%)	2	0	0		
Faculty of Computer Science and Information Technology					
High (97.6%)	9	27	8	1.172	0.556
Medium (2.4%)	1	1	0		

Out of all items, only item number 6 was highly never practiced by the respondents. Almost 12.6% (n = 48) of students never carry the purchased items with their hands or just put them in the trolley, if the shopping bags are not enough. A total of 15% (n = 57) occasionally bring purchased items with hand or put them in the trolley, 27.1% (n = 103) sometimes practice it, 26.1% (n = 99) usually do that and 19.2% (n = 73) say that they always bring the purchased items with hand or put the items in the trolley if shopping bags are not enough. In determining the level of student practice on the use of plastic bags, negative practices have also been included to see how often students practice them and the scores were reversed during data entry. The first negative practice is "I keep forgetting to bring my own reusable bags when shopping". Most of the respondents 31.8% (n = 119) students occasionally do this while only 6.6% (n = 25) always forgot to bring their own reusable bags when shopping. Students are aware that they must always carry their own reusable bags while shopping and make them a habit, as this practice shows positive support for campaigns without plastic bags and can also conserve the environment. The second negative practice is "If the shopping bag is not enough, I will buy a plastic bag of RM0.20 from the retailer". This is a practice that should be avoided as it will lead to increased use of plastic bags and the problem of plastic waste. A total of 29.5% (n = 112) of students never do it, and 32.9% (n = 125) occasionally buy plastic bags. 17.4% (n = 66) sometimes practice it, 14.2% (n = 54) usually purchase plastic bags and

6.1% (n = 23) always buy plastic bags at supermarkets, when the shopping bags that they have are not enough. The total mean score for practice is 30.7 and the standard deviation is 5.39.

Level of Knowledge and Practice in the No Plastic Bag Campaign

Most of the students had a high level of knowledge about the No Plastic Bags campaign with 97.6% (n = 371) and 2.4% (n = 9) students had a moderate level of knowledge. With the various green initiatives that have been implemented in the university, it is not surprising that undergraduate students have a great level of understanding of the use of plastic bags. Most of the students are in the moderate practice category with a percentage of 73.4% (n = 279). This was followed by a high practice of 18.2% (n = 69) and low practice was 8.4% (n = 32).

The Association Between Knowledge and Practice on the No Plastic Bag Campaign

Pearson's chi-square test was conducted to determine the association between knowledge and practice scores. Table V shows that students with high knowledge of the No Plastic Bags campaign have a moderate level of the No Plastic Bags campaign. The P-value of this test shows that there is no significant association between knowledge and attitude (p>0.05). Based on the Pearson Chi-square test, from the total of 371 students with a high level of knowledge, 73.4% practiced only moderately (n = 274). In this study, students with a high level of knowledge about plastic have more practice at a moderate level.

Association Between Knowledge and Practice on The No Plastic Bag Campaign According to Five Different Faculties

Pearson's chi-square test was done to determine the association between knowledge and practice on the No Plastic Bag campaign among undergraduate students in UPM according to five different faculties (Faculty of Agriculture, Faculty of Medicine and Health Sciences, Faculty of Engineering, Faculty of Science, and Faculty of Computer Science and Information Technology). Table VI shows that only the Faculty of Science (χ=9.520, p=0.009) had shown that there is a significant association between the knowledge and practice regarding the No Plastic Bag campaign.

DISCUSSION

Based on questions about knowledge of the No Plastic Bag campaign, it shows that generally, students have high knowledge of the No Plastic Bag campaign since most of the respondents answer yes to almost all 11 items from the Knowledge Scale. Based on item 1 of the Knowledge Scale, the respondent's current knowledge of the trend of plastic waste in Malaysia was high with (n=375, 98.7%). This signifies that the majority of them are aware of the plastic waste issue that is happening in Malaysia. This is supported by when the use of plastic has increased every year despite numerous campaigns to encourage consumers to avoid single-use plastics in daily life (43). Other than that, for item 4 of the Knowledge Scale, it can be seen that students are aware of the charge of RM0.20 per plastic bag requested at the supermarket and they know it is an instrument that refers to one of the implementations of the No Plastic Bag campaign. However, there were still 0.5% of respondents in this study did not know about this campaign because they said they did not know the supermarket charged RM0.20 for every plastic bag requested by customers as part of the No Plastic Bag campaign. The same result also shows in a study conducted by Baker (44), 11% of Spain's respondents also do not aware of the campaign. This is supported by Kamaruddin & Yusuf (45), there are 75% of consumers aware that they have to pay RM0.20 for plastic bags, and for them, it is a reasonable price for the purchase of plastic bags.

Based on item 8 of the Knowledge Scale, shows that the majority of students are aware that plastic thrown into the sea will threaten and cause death to aquatic life because only (n = 2, 0.5%) students answer no to this. In contrast to the previous study by Abd Hamid & Yahaya (46), only 29.4% of respondents were aware that plastic products could threaten marine life. Next, knowledge of recycling awareness is seen as still low among students. Based on item 11 of the Knowledge Scale, which stated whether the plastic can be recycled or not, a total of 23.7% (n=90) students answer no. A low level of awareness of recycling plastic products has been proven that only 5% of the recycling rate is practiced by Malaysians compared to other Asian countries (47).

Based on questions for the practice of the No Plastic Bags campaign, the results showed that the highest item practiced was that students constantly reused or recycled plastic bags. Based on item 8 of the Practice Scale, with a total of 63.4% (n = 241), students always reuse or recycle plastic bags in their daily lives. This item translates that the majority of students do not throw away their plastic bags after a single use, instead, they will reuse them as a trash bin liner (24). This is supported by the previous study, a total of 45% of the respondents make the secondary use of plastic bags as garbage bags (37). This recycling and reuse of plastic bags demonstrate positive consumer behavior practices that can help in maintaining environmental sustainability. Based on item 9 of the Practice Scale, a total of 61.1% (n = 232) of respondents regularly throw plastic waste into the trash instead of dumping garbage everywhere. This suggests that the majority of students are aware of the importance of the environment and behave well by constantly littering in a responsible way.

Another practice that many students have done is to always carry a reusable bag while shopping (n = 139, 36.6%). This shows that they really support the No Plastic Bag Campaign by bringing their own reusable bags while shopping instead of buying plastic bags. A study conducted by Abd Hamid & Yahaya (46) showed that 91.97% of respondents supported the campaign to reduce the use of plastic in everyday life. A total of 88.8% of students are aware that a campaign without plastic bags is needed to reduce the use of plastic bags in Malaysia (39). However, there was a study that shows 43% of respondents do not want to support and are not interested in participating in the No Plastic Bag campaign (27). This also shows that the No Plastic Bags campaign is only accepted by Malaysian consumers after 11 years of its implementation.

For the association between knowledge and practice of the No Bag Plastic campaign, there is no significant association as many respondents had a high level of knowledge (97.6%) while the level of practice of the respondents in this study mostly scored moderately (18.2%). This is supported by the study of Moh & Abd Manaf (48), which states that students with high knowledge will not guarantee a high level of practice. Students may have a high level of knowledge of the importance of recycling but they do not turn knowledge into practice due to the lack of motivation to turn knowledge into real practice. The findings are inconsistent with the research by Srinivasan et al. (20), on plastic use, where the study resulted in higher knowledge scores are more likely to have good practice. Based on a study conducted by Abd Hamid & Yahaya (46), the level of connected knowledge from a strong environmental background during high school finally showed support when entering university. Therefore, it is not surprising to see that undergraduate students have a high understanding of the disadvantages of using plastic bags. With all these environmental conservation initiatives, the university has played an excellent role in continuing to educate its students as a whole to ensure that students successfully apply good practices in preserving nature. However, it clearly shows, that despite having a high level of knowledge of environmental issues, this will not change one's actions in a more positive direction in the issue of environmental conservation (49).

For the association between knowledge and practice on the No Plastic Bag campaign among undergraduate students in UPM according to five different faculties, a significant association between the level of knowledge and practice is only found within the Faculty of Science. It is influenced by more environmental exposure and awareness from all the events that students from the Faculty of Science had experienced compared to other faculties. The Faculty of Science has actively organized many environmental-related campaigns such as no plastic day, water saves, go green, Biogreen Week 1.0, and Biogreen Week 2.0. BIOGREEN campaign is included plastic-free, think green, 3R, ocean game challenge, and earth day elements (50). In addition to various campaigns, students from the Faculty of Science also have compulsory elective subjects that need to be taken, namely human and environmental. This subject has been specifically taught about the relationship between man and the environment. This is supported by a previous study by Srinivasan et al. (20) found a significant association between knowledge and practice on plastic usage among students of professional courses with a background in science. Thus, students can really understand the theoretical and practical study of environmental knowledge.

CONCLUSION

In conclusion, there was a high level of knowledge compared to the level of practice of the plastic bag-free campaign among undergraduate students at UPM. Moreover, there are significant differences in knowledge and practice in the campaign without plastic bags among undergraduate students from the Faculty of Science. Overall, this study reveals that students with high or moderate knowledge, do not prove they have good practice in the 'No Plastic Bag Campaign'. Therefore, an intervention program on the use of plastic bags for students can be implemented at the UPM campus to enhance the effectiveness of the 'No Plastic Bag Campaign' as well as the level of knowledge and practice on the campaign among them. Accordingly, this study suggests that a new policy on the use of plastic bags that are suitable to be practiced on campus can also be highlighted to ensure that the younger generation can contribute more to environmental sustainability.

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