RESEARCH COMMUNICATION

Nutrition and Cancer Prevention: Knowledge, Attitudes and Practices among Young Malaysians

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Abstract

Objective: The objective of this study was to determine the knowledge, attitudes and practices of university students toward nutrition related to cancer prevention. Methodology: A total of 396 students from the Management and Science University (MSU) participated during the semester of March 2010. Stratified random sampling was used and consent was obtained before the questionnaire was distributed. ANOVA and the t-test were used for the univariate analysis and multiple linear regression was used for the multivariate analysis. Results: The participants ages ranged from 18 to 27 years (Mean±SD=23.33±1.57), more than half being female (62.4%). The majority were 23 years old or younger, single, Malay and from non-Medical and Health Science faculties and with a family monthly income of less than 10,000 Ringgits Malaysia(79.5%; 99%, 65.9, 52.5%, 63.9%; respectively). Only 18.4% of participants reported a family history of cancer. About 32.1% had a medical check-up in the previous 12 months and 17.4% were smokers. Multivariate analysis showed the faculty type to be significantly associated with knowledge of cancer prevention (p = 0.04). Regular medical check-ups were associated with attitudes and practices of cancer prevention (p = 0.04, p=0.003 respectively), the latter being significantly influenced by sex, family history of cancer and smoking (p = 0.034, p=0.013, p=0.002; respectively). Conclusion: The majority of participants had poor knowledge of nutrition as related to cancer prevention. Attention should be given to regular medical check-ups, awareness of family history and smoking influence.

Keywords: Cancer prevention - nutrition - knowledge - attitude - practice - Malaysian university students

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Introduction

The role of nutrition in health promotion, disease prevention and treatment of chronic diseases is well recognized (Hu et al., 1997; Schaller and James, 2005). Nutrition plays a critical role in numerous pathophysiological conditions, including such prevalent diseases as diabetes, cancer, and cardiovascular diseases (McGinnis and Foege 1993; Ventura et al., 1997). According to the Department of Health and Human Services (1988), diet is a lifestyle factor that contributes significantly to cancer incidence and mortality.

Dietary factors have been thought to account for about 30% of cancers in western countries (Doll & Peto 1981) making diet second only to tobacco as a preventable cause of cancer. The contribution of diet to cancer risk in developing countries has been considered to be lower, perhaps around 20% (Miller, 2001). Unraveling the effects of diet on cancer risk is therefore, of great public health importance, but research to date have uncovered few definitive effects and left frustratingly large areas of uncertainties.

Despite the recognition that physicians are often called upon to provide guidance on the nutritional aspects of disease and disease prevention, (Young et al., 1983; Levine et al., 1993; White et al., 1994; Kirby et al., 1995) nutrition has not been consistently emphasized in medical schools curricula. Indeed, numerous reports suggest that nutrition education of physicians remains inadequate (Young et al., 1983; White et al., 1994).

Primary prevention strategies and goals for 2020 are to promote healthy weight maintenance and to eat more than 2 servings of fruits and 3 servings of vegetables per day with a saturated fat intake of less than 10% of calories (Appel et al., 1997). Dietary manipulation is considered in all reports to be the cornerstone of prevention and management efforts of the above mentioned diseases. Therefore health professionals should be prepared to provide nutritional guidance to their patients, and in developing countries physicians are in the front line of responding to patients' questions regarding their diet. Several studies have indicated relatively less knowledge of nutrition in students and educators within the medical education system causing much mortality in the United States (Schulman, 1999; Temple, 1994). Because of poor nutritional knowledge of physicians, nutrition

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has been ignored as a beneficial factor in accelerating health. Several studies have indicated that medical students receive relatively little education in nutrition (Temple, 1994). A significant, modifiable risk factor associated with cancer is diet. According to Willett, "the inverse relationship between the intake of fruits and vegetables and the risk of lung cancer represents one of the best established associations in the field of nutritional epidemiology" (Willett, 1990). Findings from several cohort studies have demonstrated a significant protective effect of the intake of fruits and vegetables against cancer (Willett, 1990; Patterson and Block 1991; Block et al., 1992; Chen et al., 1996). A recent study showed that oesophageal squamous cell carcinoma was associated with drinking hot tea (Ismail et al., 2009). There is no published data on nutrition related to cancer prevention knowledge among university students in Malaysia; hence the purpose of this study is to assess this gap in nutrition knowledge.

Materials and Methods

This study was conducted at the Management and Science University (MSU), located in Section 13, Shah Alam. There are five different faculties at this university. These include the Faculty of Health and Life Sciences (FHLS), Faculty of Business Management and Professional Studies (FBMP), Faculty of Information Sciences and Engineering (FISE), International Medical School (IMS) and the School of Pharmacy (SOP). For the purpose of this study, the Medical and Health Sciences faculties are composed of the International Medical School, the Faculty of Health and Life Sciences and the School of Pharmacy. The group that makes up the non-Medical and Health Sciences are composed of the Faculty of Business Management and Professional Studies and the Faculty of Information Sciences and Engineering. The populations for this study are students in the Management and Science University (MSU). The number of students participated in this study were 396 done during the short semester of March 2010. Stratified random sampling was used. Information on the total number students enrolled at the university, the total number of students in every program as well as the total number of students in every semester was obtained from the Registrar Department in order to conduct stratified sampling. The next step was to find the total number of students in MSU and calculate the percentage in each faculty, followed by the percentage in each program in every semester. The sample was then divided according to the percentages of each stratum. Sometimes, there was a greater variability in some strata as compared to others. In this case, a larger sample was drawn from those strata with a greater variability. In general, the size of the sample in each stratum is in proportion to the size of the stratum. Before the questionnaires were distributed, lecturers and class representatives were asked for their permission and cooperation. The representatives from each class were explained about how the procedure was to be done. At the end of the lecture, the first respondent was chosen randomly by using a 'lucky draw numbers'- from numbers 1-10 as the starting point and using the attendance list as the reference. The next respondent is chosen after a certain interval. A number of respondents were then chosen from each respective class and questionnaires were then distributed. About 30 minutes was given to answer the questions. Once the questionnaire was completed, the respondent gave it back to the researcher. The questionnaire consisted of three parts: 'Socio-demographic characteristics' of the participant which included 12 questions, 'Regular Dietary Food Intake and Social Habits' had 9 questions, and 'Knowledge on the Relationships between Nutrition and Cancer' had 15 questions. The inclusion criteria were: Students over the age of 18 years, voluntary participation and that the participant can speak, read and write in Malay, English or both. The exclusion criteria included students below the age of 18 years, those who cannot speak, read or write in Malay, English or both. Newly established programs were excluded due to the small number of the students in each semester. Consent was obtained by asking permission from the respondents for their voluntary participation in this study. The data gathered from the questionnaires were recorded and keyed into the SPSS version 13 for analysis. ANOVA and t-test for univariate analysis and multiple linear regression was used for the multivariate analysis.

Results

A total of 396 students participated in this study, their ages ranged from 18 to 27 years (Mean±SD=23.33±1.57). More than half of the participants were female (62.4%). The majority of participants were 23 years or younger, single and Malay (79.5%; 99%; 65.9%; respectively). The majority of participants were from the non-Medical and Health Science faculties, have a family monthly income

Table 1. Socio-demographic Characteristics of Study Participants (n=396)

Variable		Number	%
Sex	Male	149	37.6
	Female	247	62.4
Age	<=23	315	79.5
	>23	81	20.5
Race	Malay	261	65.9
	Chinese	22	5.6
	Indian	85	21.5
	Others	28	7.1
Marital status	Single	392	99
	Non-Single	4	1
Faculty	IMS/FHLS/SOP	188	47.5
	FBMP/FISE	208	52.5
Family Monthly	< RM 10 000	253	63.9
Income	>=RM 10 000	143	36.1
Residency	Urban	325	82.1
	Rural	71	17.9
BMI	Underweight <18.5	69	17.4
	Normal weight 18.5-24.9	253	63.9
	Overweight >=25	74	18.7
Family History of	Yes	73	18.4
Cancer	No	323	81.6
Medical Check-Up	Yes	127	32.1
in the last 12 Months	No	269	67.9
Smoking	Yes	69	17.4
	No	327	82.6

Table 2. Socio-demographic Characteristics and Knowledge, Attitudes and Practices of Cancer Prevention among University Students (n=396)

Variable		Total Score of:		
		Knowledge	Practices	Attitudes
Sex	Male	0.34±0.47	0.44±0.49	0.53±0.50
	Female	0.31±0.46	0.56±0.49	0.58±0.49
		p=0.62	p=0.01	p=0.30
Age (years)	≤23	0.34±0.47	0.50±0.50	0.57±0.49
	>23	0.26±0.44	0.56±0.50	0.52±0.50
		p=0.16	p=0.41	p=0.36
Marital Status	Single	0.39±0.46	0.52±0.50	0.56±0.49
	Non-Single	0.25±0.50	0.25±0.50	0.75±0.50
		p=0.76	p=0.36	p=0.50
Faculty	IMS/FHLS/SOP	0.37±0.48	0.51±0.50	0.63±0.48
	FBMP/FISE	0.27±0.44	0.52±0.50	0.50±0.50
		p=0.037	p=0.71	p=0.01
Family Monthly Income	<RM 10,000	0.30±0.46	0.52±50	0.59±0.49
	≥RM 10,000	0.35±0.47	0.51±50	0.52±0.50
		p=0.35	p=0.88	p=0.17
Annual Medical Check-up	Yes	1.88 ±0.67	2.15±0.68	2.61±0.60
	No	1.93±0.65	1.92±0.72	2.34±0.75
		p= 0.47	p=0.03	p=0.001
History of Cancer	Yes	0.34±0.47	0.53±0.50	0.51±0.50
	No	0.32±0.46	0.51±0.50	0.58±0.49
		p=0.66	p=0.71	p=0.28
Smoking	Yes	0.39±0.49	0.29±0.45	0.48±0.50
	No	0.31±0.46	0.56±0.49	0.58±0.49
		p=0.18	p=0.001	p=0.11
Race	Malay	0.33±0.47	0.49±0.50	0.54±0.50
	Chinese	0.36±0.10	0.59±0.50	0.59±0.50
	Indian	0.27±0.44	0.60±0.49	0.64±0.48
	Others	0.39±0.49	0.43±0.50	0.57±0.50
		p=0.60	p=0.21	p=0.45
BMI	Underweight <18.5	0.26±0.44	0.49±0.50	0.61±0.49
	Normal Weight 18.5-24.9	0.35±0.47	0.53±0.50	0.56±0.49
	Overweight >=25	0.27±0.44	0.50±0.50	0.54±0.50
		p=0.211	p=0.85	p=0.68

Table 3. Prediction Model for Total Score of Knowledge Towards Cancer Prevention by Multiple Linear Regression

Predictive Factors		B	SE	Beta	P value
Constant		2.154	0.048		
Faculty	Medical and Health Sciences	Ref.	Ref.	Ref.	Ref.
	Non-Medical and Health Sciences	-0.14	0.07	-0.10	0.04

F value,4.16; p value, 0.042; $R^{2= 0.010}$

less than 10,000 Ringgits Malaysia and were of normal weight (52.5%, 63.9%, 63.9%) respectively. Only 18.4% of participants reported that they have a family history of cancer. About 32.1% of the participants had a medical check-up during the past 12 months. About 17.4% of participants were smokers (Table 1). Overall, the majority of participants (67.9%) had poor knowledge of nutrition as related to cancer prevention. However, more than half of the participants had good attitudes and practices of nutrition as related to cancer prevention (56.3%; 51.5%; respectively).

There are differences in mean scores between males and females in terms of their practices of cancer prevention and these differences are statistically significant (p=0.01).

Table 4. Prediction Model for Total Score of Attitude Towards Cancer Prevention by Multiple Linear Regression

Predictive factors		B	SE	Beta	P value
Constant		2.56	0.08		
Sex		0.11	0.07	0.1	0.05
Age		-0.15	0.09	-0.08	0.08
Annual Medical Check-Up	Yes	Ref.	Ref.	Ref.	Ref.
	No	-0.27	0.08	-0.17	0.004

F value, 6.40; p value, 0.003; $R^{2= 0.047}$

Table 5. Prediction Model for Total Score of Practice Towards Cancer Prevention by Multiple Linear Regression

Predictive factors		B	SE	Beta	p value
Constant		1.81	0.13		
Sex	Male	Ref.	Ref.	Ref.	Ref.
	Female	0.17	0.08	0.11	0.03
Age		0.16	0.09	0.09	0.06
Faculty		0.12	0.07	0.09	0.09
Family History of ancer	Yes	Ref.	Ref.	Ref.	Ref.
	No	-0.22	0.09	-0.12	0.01
Medical Check-Up	Yes	Ref.	Ref.	Ref.	Ref.
	No	-0.23	0.08	-0.15	0.003
Smoking	Yes	Ref.	Ref.	Ref.	Ref.
	No	0.39	0.10	0.20	0.002

F value, 8.50; p value, 0.001; $R^{2=0.116}$

Regarding their educational backgrounds; there are differences in mean scores between Medical and Health Sciences background students versus the non-Medical and Health Sciences background in terms of their knowledge and attitudes, and these differences are statistically significant (p=0.037; p=0.01 respectively). Regarding regular medical check-ups, there are differences in mean scores between those who did regular check-ups and others in terms of practices and attitudes and the differences are statistically significant (p=0.03, p=0.001 respectively). As for smoking, there are differences in mean scores between smokers and non-smokers in terms of practice (p=0.001). There are no significant differences between the knowledge, attitudes and practices according to their age, marital status, family monthly income, family history of cancer, race and BMI (Table 2).

In multivariate analysis (Table 3), the type of faculty significantly correlated with their knowledge of cancer prevention. Students from non-Medical and Health Sciences faculties had on average 0.13 points lower total knowledge scores about cancer prevention as compared to students from the Medical and Health Sciences faculties (p = 0.04). In multivariate analysis (Table 4), annual medical check-up was associated with attitudes of cancer prevention among university students. Students who did not perform their medical check-up annually had on average 0.26 points lower in their total attitudes about cancer prevention as compared to students who performed regular medical check-ups (p = 0.04).

In multivariate analysis (Table 5), sex was associated with the practice of cancer prevention among university students. Female students had on average of 0.16 points higher in their practice of cancer prevention as compared to male students (p = 0.034). A family history of cancer was also associated with the practice of cancer prevention.

Those without a family history of cancer had on average 0.22 points lower than those who reported a positive family history (p=0.013). Regular medical check-up was significantly associated with the practice of cancer prevention among university students. Those who did not practice medical check-ups had on average 0.22 points lower than those who did (p=0.003). Smoking was also significantly associated with the practice of cancer prevention among university students. Those who are non-smokers had on average 0.38 points higher than smokers (p=0.002).

Discussion

In this study, the knowledge, attitudes and practices of university students regarding cancer prevention were explored. These findings confirmed the low knowledge levels of cancer prevention among university students.

Sex was associated with the practice of cancer prevention among university students using univariate and multivariate analysis. Female students had on average 0.16 points higher scores as compared to male students.

Smoking was also significantly associated with the practice of cancer prevention among university students using multivariate analysis. Those who are non-smokers had on average 0.38 points higher scores than smokers.

The type of faculty was significantly associated with knowledge of cancer prevention among university students using multiple linear regression analysis. Students from the non-Medical and Health Sciences faculties had on average 0.13 points lower total knowledge scores about cancer prevention as compared to students from the Medical and Health Sciences faculties. This may due to those students from the Medical and Health Sciences faculties learn about cancer prevention during their studies.

Annual medical check-up also was significantly associated with attitudes and practices of students using multiple linear regression analysis. Students who did not perform their medical check-ups annually had on average 0.26 and 0.22 points lower scores in total attitudes and practices about cancer prevention as compared to students who performed their medical check-ups regularly. This may be due to those who performed regular annual check-ups were more conscientious of their health.

A family history of cancer was associated with the practice of cancer prevention among university students. Those without a family history of cancer had on average 0.22 points lower scores than those who reported a positive family history. In concluson, the majority of the participants had poor knowledge of nutrition as related to cancer prevention. The types of faculty were significantly associated with having knowledge of cancer prevention. Regular medical check-ups were associated with attitudes and practices of cancer prevention. Sex, family history of cancer and smoking significantly influenced the practice of these university students.

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