Nutrition Label Understanding among the Nursing Students in a Selected University: A Cross-sectional Study

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Abstract

Nutrition labeling is a simple way to help people make healthier food choices. The study aimed to assess Nutrition label understanding among undergraduate nursing students in a selected university. Method: Cross-sectional study conducted among 120 students. A validated, self-administered two-section questionnaire, section one included social demographic characteristics, while section two focused on students' understanding of nutrition labels; including the source of information, knowledge level, and barriers that hinder food label use. Results: Only 16.7% of the participants stated that they often use food labels when purchasing food products, while more than half of them felt that food label is important during buying. There was a statistically significant association between age, year of the study, nationality and weight category with the use of food labels among the nursing students. However, there was no statistical evidence between gender, marital status, and the study group's use of food labels. Most of the participants stated that absence of health problems and not knowing how to use label were the main barriers for not using food labels, followed by lack of time. Conclusion: The minority of nursing students often use food labels during purchasing food. Nutrition awareness campaigns and education programs are important mechanisms for promoting nutrition label use among college students and young adults. Future research is warranted to assess the role of label use on improved dietary decisions

Keywords: Nutrition Label, Understanding, Nursing Students, University, A Cross-sectional.

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INTRODUCTION

Nutrition is the most important aspect of human life. Balanced diet promotes health and prevents illnesses. Awareness of people towards healthy food intake is of prime importance. Today the markets are flooded with all sorts of food items and ingredients that includes healthy and unhealthy foods. The United Arab Emirates has a National Action Plan in Nutrition for the period 2017-2021 that aims to improve the nutritional status of all population residing in the UAE with a collective vision of a healthier and sustainable future (MOHAP, 2017). The US Department of Agriculture and US Department of Health and Human Services, (2010) stated the federal dietary recommendations have made increasing nutrient-rich food consumption and reducing energy-dense food consumption a primary subject since 1980. The majority of Americans, however, do not adhere to these recommendations due to their high discretionary calorie intake and inadequate consumption of nutrient-rich in fruits and vegetables (Krebs-Smith et al, 2010). A balanced diet is important for promoting health and preventing disorders linked to over- and undernutrition such as obesity, type II diabetes, hypertension, and micronutrient deficiencies (Al-Barqi et al, 2020).

Nutrition labeling is a simple way to help people improve their nutrition intake by making healthier food choices (Kim, Chorong & Jae-Kyung., 2016). Nutrition labels at the point of purchase are recommended to improve food choice, yet food choice does not always translate into food consumption. It is important to understand the relationship between label use, food selection, servings, and consumption (Christoph & Ellison, 2017). Nutritional information on food products can be found on nutrition labels, which also act as a population-level intervention with unmatched reach for consumers (Christoph, An & Ellison, 2016). It was identified that age, education, income, household size, and nutrition knowledge had an impact on Nutrition label use. Health promoters should aim to increase the use of Nutrition labels (Collison et al., 2010).

Many young adults are transitioning from living at home with their families to living independently during their college years. Young adults are compelled by this transition to begin creating their own routines, preferences, and habits which include food and dietary decisions (Nelson et al, 2008). According to Nelson et al. (2008), the change from

adolescence to adulthood is accompanied by lower levels of physical activity, higher fast food and soft drink consumption, and decreased consumption of fruits and vegetables. Nutrition labels may serve as an important preventive tool for college students and young adults by encouraging the formation of habitual behaviours that could profoundly impact their food preferences and diet quality later in life.

Besler, Ktuncer, and Uyar (2012) conducted a study in Turkey to evaluate consumer knowledge and usage of food and nutrition labeling. The results showed that around three-fourths of participants were using food and nutrition labels. The use of nutrition labels was substantially correlated with sex, age, marital status, degree of education, and socioeconomic status. The inability to comprehend terminology, symbols, and values; the information's poor presentation; and uncertainties regarding its correctness were all obstacles to the use of nutrition labels. Consumers' requirement was that the labels be in a uniform place and format, and that the information they contained be given in simple, understandable words to make healthy decisions.

In a research on urban and rural youth's eating behaviors, Chciska et al. (2013) revealed that total calories were the most crucial Nutrition labeling factor, followed by fat, carbohydrate, cholesterol, and calcium. As a result, it is believed that teaching teenagers how to properly comprehend Nutrition information is essential for them to utilize it in their daily lives. Additionally, a more thorough approach of Nutrition information labeling on processed food is thought important as a supporting step.

Young adults may use nutrition labels, but there is little data on their frequency or determinants of use. There have been reviews of the effects of food environment interventions in college students, but very few have examined the correlations or determinants of label use in young adults and college students (Roy et al, 2015). It is crucial to identify the variables that affect this subgroup's usage of nutrition labels in order to guide targeted nutrition interventions and boost the efficiency of nutrition education programs and awareness efforts. Nursing students' knowledge about the nutrition labels helps them to eat healthy diets and to provide health education about the same to their clients. Therefore, the aim of the current study was to assess the nutrition label understanding among university nursing students.

METHODS

Across-sectional study was conducted in the RAK College of Nursing, RAK Medical and Health Sciences University, RAK, UAE during the academic year 2018/2019.

The convenient sample included nursing students in different grades of the college. Students approval was obtained through a written consent after due information was provided to those who would be present on the day of the survey. Sample size was calculated online (http://www.openepi.com/SampleSize/SSPropor.htm) with the following: Sample Population size (for finite population correction factor or fpc) (N) FPC60. Hypothesized % frequency of outcome factor in the population (p): 55%+/-5. Confidence limits as % of 100(absolute +/- %) (d): 5%. Design effect (for cluster surveys-DEFF):1. Sample Size (n) for 99% Confidence Level was 120.

Tools of data collection

A standardized Self- administered questionnaire used for data collection consisted of two parts: Part (1): Socio-demographic characteristics such as gender, age, nationality, marital status, family income, weight and height. Part (2): Students' understanding of nutrition labels as a source of information, barriers to the use of nutrition labels and the component of the label (Fatimah, Nik Ismail & Tee, 2010).

Ethical consideration

The RAKMHSU-Research Ethical Committee approved the study with reference number: RAKMHSU-REC-152-2018-F-N and a permission letter to conduct the study from the Dean of RAK College of Nursing was given to the chief researcher. The researcher requested from each class coordinator a class period to introduce herself and explain the aim and the process of the study to the students. Written consent was taken from the study participants after they were informed of confidentiality. Each participant was given a code number instead of their name. The collected data, used only for research purposes, was secured under lock and key and only the researchers had access. The participants had the right to reject participation or withdrawal at any time. The self-administered questionnaire distributed to the students took 5-10 minutes to complete.

Statistical analysis

Statistical Package for Social Science (SPSS), Version 23 was used for data entry and analysis. Data was presented in the form of frequency, percentage, mean and standard deviations. The Chi-square test was utilized to assess the association between students' socio-demographic data and their level of understanding of the nutrition label. Statistical significance was considered at a p-value ≤ 0.05.

Limitation

Due to the convenient sampling technique and the specific study population, these results cannot be generalized and may not reflect the attitudes of other UAE population groups.

RESULTS

Table (1): General characteristics of the study subjects (N= 120)

Characteristics		F	%
Gender	Male	33	27.5
	Female	87	72.5
Age (Years)	18 - < 25	72	60.0
	25 – 32	48	40.0
Mean (Std. Deviation)	23.54(3.62)		
Nationality	Arab	75	62.5
	Non-Arab	45	37.5
Marital status	Single	36	30.0
	Married	84	70.0
Year of study	1st	43	35.8
	2nd	39	32.5
	3rd	38	31.7
Family income/month (AED)	≤ 4000	14	11.7
	4000 – < 8000	25	20.8
	8000 - <12000	26	21.7
	12000 -< 16000	37	30.8
	≥16000	18	15.0
Weight category	Underweight	5	4.0
	Normal	34	28.3
	Overweight	64	53.3
	Obese	17	14.2
Mean (Std. Deviation)	25.15 (4.52)		

The general characteristics of the study participants are presented in table (1): This study included a total of 120 participants. Most of them (62.5%) were Arab, 70.0% were married with 72.5% females and 27.5% males. Their ages ranged from 18 to 32 years with a mean age of 23.54 ± 3.62.

In regards to the family income, 20.8% earned from 4000 to less than 8000 AED per month while (30.8%) from 12000 to less than 16000AED. More than (53.3%) were overweight while (13.3%) were obese.

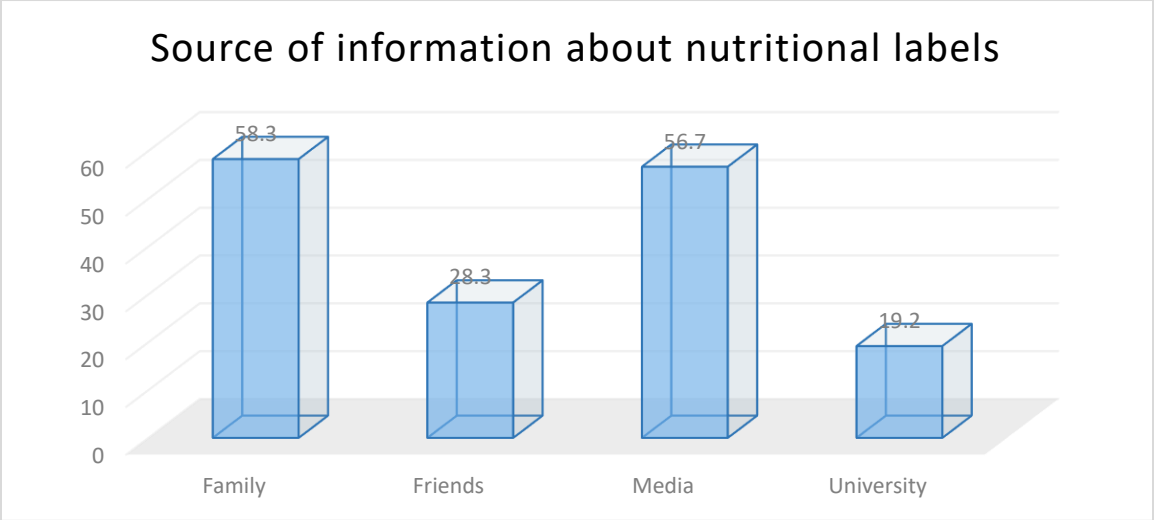

Figure (1): Distribution of the study group according to their various sources of obtaining information regarding nutrition labels

* MORE THAN ONE

Figures (1) displays the study participants' sources of information about the Nutrition labels. Family was reported as 58.3%, followed by Media (56.7%), friends (28.3%) and finally 19.2% stated that university was the source.

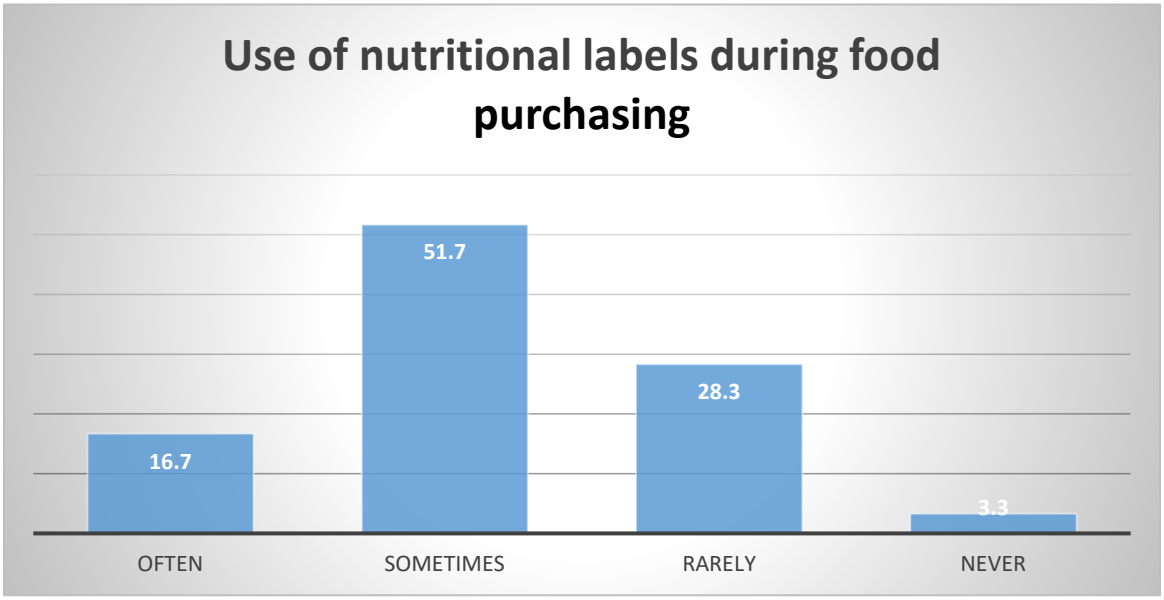

Figure (2) Distribution of the study group according to their use of nutrition information labels during food purchasing decision

As exhibited in Figure (2), 51.7% of participants reported that they were using the nutrition information label sometimes during food purchasing. While very few (16.7%) stated that they used it often. 28.3% used rarely and 3.3% never use it during food purchasing.

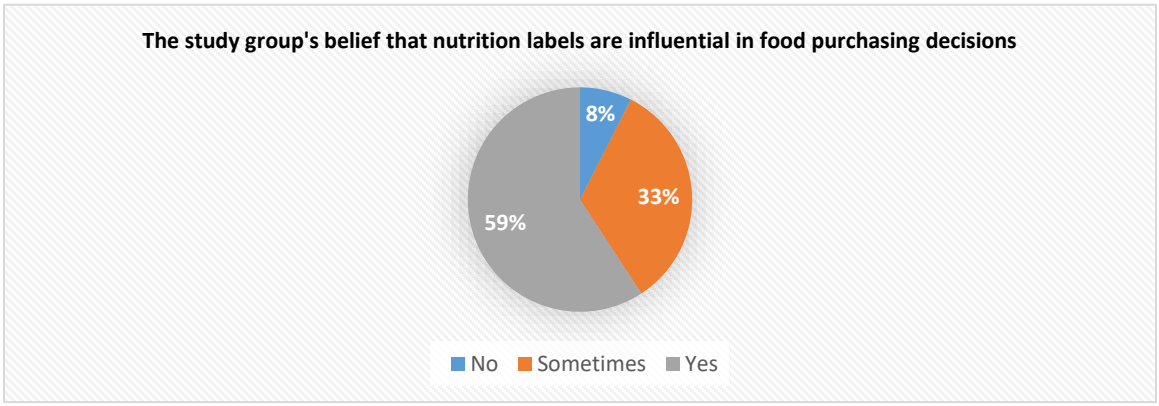

Figure (3) Distribution of the study group according to their belief the food label influences their decisions to purchase products

As presented in figure (3), more than half (59.2%) of the study group thought that nutrition labels are influential in food purchasing decisions and 33.3% students were of the opinion that only sometimes they were influential. While 7.5% did not agree they were helpful in their decision to purchase foods.

Table (2) Distribution of the study group according to the extent of the importance of various aspects they consider when buying food

Aspect	Most Important		Important		Least Important		Not important	
	N	%	N	%	N	%	N	%
Price	32	26.7	52	43.3	17	14.2	15	12.5
Taste	52	43.3	56	46.7	10	8.3	2	1.7
Nutritional content	44	36.7	63	52.5	9	7.5	3	2.5
Ingredients	51	42.5	60	50.0	8	6.7	---	--
Packaging	61	50.8	41	34.2	11	9.2	6	5.0
Expiry date	74	61.7	40	33.3	4	3.3	2	1.7
Storage	66	55.0	39	32.5	7	5.8	7	5.8

Table (2) shows the extent of the importance of various aspects, the study group considers when buying food products. The expiry date (61.7%), storage (55%), and packaging (50.8%), were considered as most important whereas nutritional content (52.5%), ingredients (50%), Taste (46.7%) and price (43.3%) were marked as important aspects while purchasing the items.

Table (3) Distribution of the study group according to important items to read on food labels

	Most Important		Important		Least Important		Not important	
	N	%	N	%	N	%	N	%
List of ingredients	40	33.3	58	48.3	14	11.7	7	5.8
Serving size	40	33.3	57	47.5	15	12.5	7	5.8
Health claim	44	36.7	60	50.0	9	7.5	6	5.0
Calorie energy	32	26.7	60	50.0	21	17.5	6	5.0
Calories from fat	35	29.2	55	45.8	23	19.2	6	5.0
Total fat	43	35.8	52	43.3	19	15.8	5	4.2
Trans fat	45	37.5	49	40.8	17	14.2	8	6.7
Saturated fat	43	35.8	46	38.3	20	16.7	10	8.3
Cholesterol	45	37.5	41	34.2	24	20.0	9	7.5
Sodium/ salt	38	31.7	43	35.8	30	25.0	8	6.7
Carbohydrate	29	24.2	56	46.7	26	21.7	8	6.7
Protein	40	33.3	53	44.2	20	16.7	6	5.0
Fiber	11	9.2	59	49.2	42	35.0	5	4.2
Sugar	37	30.8	66	55.0	13	10.8	3	2.5
Vitamin & mineral	24	20.1	45	37.5	23	19.9	27	22.5

Table (3) shows the distribution of the study group according to the important items they read on food labels. Trans fat and cholesterol (37.5%), health claim (36.7%) and total fat (35.8%) were considered as most important to look into whereas list of ingredients (48.3%), serving size(47.5%), health claim and calorie energy(50%) were identified as important items to check. The participants also stated that it is important to check the calories from fat (45.8%), saturated fat (38.3%), sodium/ salt (35.8%), carbohydrate (46.7%), protein (44.2%), fiber (49.2%), sugar (55.0%) and vitamin & mineral (37.5%) in the purchase items.

Table (4) Distribution of the study group according to factors affecting their use of Nutrition labels while purchasing

Factor		N	%
Reason for referring to the nutrition label	Concern about taste and price	27	22.5
	Understand each information on food label	67	55.8
	Examine food allergy	37	30.8
	Control energy intake from food	48	40.0
	For health or beauty	47	39.2
Reason for not referring to the nutrition label	Do not know how to use food label/nutrition information	85	70.8
	Time constraint/limited time	39	32.5
	Label is not attractive and it is confusing	22	18.3
	No health problem	98	81.7

Table (4) shows the reasons for referring or not referring to the nutrition labels among the study group participants. More than half (55.8%) participants wanted to understand the information on food labels, 40.0% needed to control energy intake from food, 30.8% stated that they required to examine any stated food allergy while 22.5% were concerned about taste and price. In regards to reasons for not referring the food label; 81.7% mentioned that they do not have any health problem, 70.8% were not knowing how to use food label/nutrition information, 32.5% felt they have time constrain while 18.3% thought the labels are not attractive and they are confusing.

Table (5) Association between general characteristics and use of food labels among the study group

Characteristics		Often N (%)	Sometimes N (%)	Never N (%)	Chi-square P-Value
Gender	Male	5 (15.2)	11 (33.3)	17 (51.6)	0.49 > 0.05
	Female	11 (12.6)	51 (58.6)	25 (28.7)	
Age (Years)	18 - < 25	7 (9.7)	36 (50.0)	27 (37.5)	15.29 ≤ 0.05*
	25 – 32	9 (20.5)	26 (59.1)	7 (15.9)	
Year of study	1st	6 (14.0)	19 (44.2)	18 (41.9)	21.83 ≤ 0.05 *
	2nd	4 (9.3)	31 (72.1)	4 (9.3)	
	3rd	6 (18.2)	15 (45.5)	12 (36.4)	
Nationality	Arab	11 (14.3)	34 (44.2)	28 (36.4)	11.86 ≤ 0.05 *
	Non-Arab	5 (11.6)	32 (74.4)	6 (14)	
Marital status	Single	2(6.1)	20 (60.6)	9 (27.3)	12.51 > 0.05
	Married	14 (16.7)	46 (54.8)	24 (28.6)	
Weight category	Underweight	0	1(20)	4(80)	31.16 ≤ 0.05 *
	Normal	4(11.8)	4(11.8)	26(76.5)	
	Overweight	30 (46.9)	22 (34.3)	12 (18.8)	
	Obese	2 (11.1)	11 (61.1)	5 (27.8)	

According to the Table (5), there is a statistically significant difference between ages of the study group participants and their use of food labels. There was no statistical evidence

between gender, marital status and participants' use of food labels. In regards to the year of the study, there was a statistically significant difference in the usage of food labels. In addition, there was a statistically significant difference between nationality and weight category in relation to the participants' use of food labels.

DISCUSSION

The current study shows that more than half of the nursing students reported using the nutrition information label sometimes during food purchasing. Only (16.7%) often and (28%) rarely use it. The study shows that the frequency of food label use among female students was not high when purchasing foods. This is also in harmony with Zhang, Zhai, Osewe, & Liu (2020). His study results indicated that there is a need to improve the status of food nutrition label usage. This is evident with this study as about 25.53% do not use food labels when purchasing food, 47.31% of the participants use labels sometimes, whereas 19.91% use them frequently when purchasing food.

In the current study, findings related to important aspect students read in food labels is health claim and calories energy, sugar, list of ingredients, fat, carbohydrate followed cholesterol, sodium/ salt and vitamins and minerals. This is in accordance with a research about urban and rural youth's eating behaviors conducted by Chciska et al. (2013). The study revealed that total calories were the most crucial Nutrition labeling factor, followed by fat, carbohydrate, cholesterol, and calcium.

Results of the existing study revealed the important aspects considered when buying food products were expiry date (61.7%), storage (55%), nutritional content (52.5%), packaging (50.8%), ingredient (50.0%), price and taste (43.3%). This is in agreement with Nurliyana, Norazmir & Anuar's (2011) findings in which they reported the important aspect during buying food products were expiry date (98.5%), taste (95.7%), price (92.4%) and nutrient content (90.5%). This is in contrast with Al-Barqi et al, (2020) who stated that taste is the most important aspect while purchasing foods, among students (78.5%) compared to price (38.4%) and health value of the product (37.7%), which is consistent with the students agreeing to purchase unhealthy foods despite what they have read on the nutrition labels.

In regards to reasons of not referring to the food labels, the present study revealed that 81.7% were of the opinion that they do not have any health problems and they are healthy so there was no need to check the labels and 70.8% of the participants stated they do not know how to use food label/nutrition information. Other reasons were time constrain, label was not attractive and confusing. This is in contrast with Al-Barqi et al, (2020) who reported that lack of time was the main reason for 40.9% of the students for not using food labels. Other reasons were no interest, no need, and difficulty to use, respectively. This might show that the majority of the students do not have the time to use food labels when purchasing and they assume that there is no need to waste time in using food labels because they know what to buy.

Results of the existing study assessed gender differences in nutrition label use and indicated that more than half of females reported sometimes using the label compared to one-third males with no statistical significant difference. This is in accordance with **Wie & Giebler (2014)**; **Christoph, An & Ellison (2016)** who reported that females were more likely to use nutrition labels than males.

In relation to BMI and use of Nutrition labels, the current study indicated a significant association between BMI and nutrition label use among nursing students. This is in agreement with Martinez et al (2012). The study reported that overweight or obese college students were significantly more likely to use nutrition labels in making lower-calorie and healthier food choices in dining halls. This is in divergence with Krukowski et al. (2006); Li et al. (2012) as they stated no association between BMI and nutrition label use among college students and young adults.

The findings on nutrition label use in relation to age and student year of study exhibited that age was statistically associated with nutrient label use. This is in accordance with Cha et al, (2014); Misra, (2007). This is also in contrast with Graham and Laska, (2012) found no significant changes in nutrition label use by age. In terms of student year of study, 2nd year students were more likely to use food labels than freshmen and 3rd year. This is in agreement with Misra, (2007 Jasti and Kovacs (2010) stated that graduate students were less likely to use nutrition labels than undergraduates. Whereas, in contrast, Misra, (2007; McLean-Meyinsse, Gager and Cole (2011) found undergraduate and graduate students were equally likely to use labels. Another study conducted by Li, Concepcion and Lee (2012) reported no significant changes in nutrition label use by student classification.

The current study showed non-Arab were more likely to use food labels with a statistically significant association. There is limited evidence on nutrition label use in relation to race/ethnicity or nationality. Two studies reported that white students, Graham and Laska (2012), or non-Hispanic white students Jasti and Kovacs (2010) were more likely to use nutrition labels than all other races/ethnicities. Whereas another study reported no difference in nutrition label use by race/ethnicity Li, Concepcion and Lee (2012). There was no statistical evidence between marital status and the student use of food labels in the current study. This is in agreement with Li, Concepcion and Lee's (2012) study which assessed marital status but did not find it to be associated with nutrition label use among university students.

CONCLUSIONS AND RECOMMENDATIONS

Faulty nutrition is one of the important etiological factor in non- communicable diseases. Understanding the importance of nutrition label while purchasing and selecting the right

kind of food item/s is most important today. This study established that insignificant number of nursing students often use food labels during purchasing food despite that more than half of the students thought that Nutrition label is helpful during food purchasing decision. Age, year of the study, nationality, in addition to weight category were associated factors with the use of food labels among the nursing students. Free of illnesses and difficulty in using food labels were the barriers.

Nutrition awareness campaigns and education programs are important mechanisms for promoting nutrition label use among college students and young adults. Future research is warranted to assess the role of label use on improved dietary decisions.

Further investigations, including Non-Health College students. are needed to obtain a comprehensive analysis on the use of food labels. It is also essential to highlight the epidemic growth of diet-related diseases such as obesity, diabetes and cardiovascular disease in United Arab Emirates.

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