EAS Journal of Nutrition and Food Sciences
Abbreviated Key Title:EAS J Nutr Food Sci
ISSN: 2663-1873 (Print) & ISSN: 2663-7308 (Online)
Published By East African Scholars Publisher, Kenya

Volume-4 | Issue-2 | Mar-Apr; 2022 | DOI:10.36349/easjnfs.2022.v04i02.001

OPEN ACCESS

Original Research Article

The Correlation of Knowledge with Attitude and Behavior of Reading Nutrition Facts Label of Packaged Foods on Students Universitas Nusa Cendana

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Article History
Received: 01.02.2022
Accepted: 05.03.2022
Published: 11.03.2022

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background:*** The increasing number of packaged food products requires consumers to be able to read the nutrition foods label on the packaging label. Reading packaged food labels is one of the general messages of balanced nutrition that helps consumers know the ingredients contained, otherwise reading food labels can have an impact on nutritional status. ***Research Objectives*****:** The correlation between knowledge with attitudes and behavior in reading the Nutrition Facts Label (NFL) of packaged foods for students at University of Nusa Cendana. ***Settings and Design***: This is a cross-sectional observational analytic study at University of Nusa Cendana. ***Methods and Material*****:** There are 365 respondents of Nusa Cendana universities who met the inclusion criteria that were chosen through the snowball method using validated and reliable questionnaires to assess knowledge, attitudes, and behavior related to reading NFL on packaged foods. ***Result*****:** The research was analyzed univariately using a frequency distribution table and bivariate analysis using the Spearman Rank Test. ***Results*****:** 63,6% respondents have good knowledge of how to read NFL on packaged foods. 71,7% respondents have a good attitude toward reading NFL, and 65,8% respondents have a poor behaviour toward reading NFL. There are correlation between knowledge and attitudes with p = 0.041, r = 0.107, and a correlation between knowledge and behavior with p = 0.108. ***Conclusion*****:** Knowledge affects attitudes but not behavior when it comes to reading nutrition facts labels on packaged foods because the NFL is not considered a reference for consuming packaged foods, even though NFL aims to control food calorie intake based on conditions and needs.

Keyword: Reading, Food Labeling, attitudes.

INTRODUCTION

Packaged food production is increasing according to the more various food types therefore consumers access to the packaged food is also increasing. In order to pick suitable packaged food ideally consumers are able read the nutrition facts label (NFL) on the packaged food [1].

One of the general messages of balanced nutrition is accustom to read packaged food label especially nutritional value or expired date since the aim of packaged food label is to help consumers to identify the ingredients of the food and become aware of the risk of their own particular diseases [2]. Nutritional needs in adolescents increase along with it, nutritional needs can be met through lunch or dinner and interseage foods [3, 4]. Nutritional needs of interseent foods can be met by eating packaged foods, for that teenagers need to read the NFL label first to know the composition of food ingredients on packaged foods. Consumers who don't read nutritional value on the label will experience impact on their nutritional status, this is supported by research of Shinta Anggraini *et al.* (2018) conducted in Brawijaya University students resulting in obese students have poor knowledge in reading the information of nutrition facts label compared to students with normal nutritional status. This research proves that behavior on choosing

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packaged food by students with normal nutritional status are is better than students with obese [5].

Research by Nurliyana *et al*. (2015) in Teknologi Mara University (UTM) Puncak Alam in Malaysia shows there are no significant correlation between knowledge level and nutrition fact label usage, students with higher knowledge about nutrition is 55% but only 24,9% among them who uses food label meanwhile 5,5% among them doesn't [6]. Research by Afriza Riyanti *et al.,* (2020) in Sekolah Tinggi Ilmu Kesehatan about difference of knowledge and behavior of reading the food label between students of nutrition and non-nutrition department, resulted in reading food label behavior of non-nutrition students was inadequate. Therefore, behavior on reading food label needs to improve for all students including non-nutrition department students [7]. The ability on reading nutrition fact label of students is insufficient; this is found in research conducted by Abdullah Syafei (2019) about perception and behavior on reading food label and nutritional fact in SMK Wijaya Kusuma [8]. Research of I Kadek *et al*. (2016) in consumers in Jakarta and surrounding to 424 respondents resulted 71,5% respondents read the food label in cookies and biscuits meanwhile 28.5% respondents did not [9].

According to World Health Organization (WHO) teenager in age range between 10-24 which includes students shows food intake in this particular age is considerably great in range of energy sufficiency is 72,3% [10]. In the Covid-19 pandemic learning system has applied study from home which results in behavioral changes including behavioral changes in consuming packaged food [11]. This fact proved by research conducted by Reny Noviasty *et al*. (2020) in Public Health Department in Mulawarman University which shows there were 59,38% respondents admitted to consume food more during the pandemic and experienced increasing in frequency of snacks is 43,75% [12].

According to the explanation above, researcher interested in conducting research in the correlation between knowledge, attitude and behavior in reading the nutrition facts label in stundents of Nusa Cendana University and also the as the collaborative research with correlation of knowledge and behavior in reading the packaged food composition label in SMPN 2 and SMPK Giovani Kupang.

RESEARCH METHODOLOGY

This research is analytical observational with cross sectional design. Subjects of the research are undergraduate students of Nusa Cendana University from 11 departments in Nusa Cendana University. This research was conducted online through zoom meeting by filling questionnaire of knowledge, attitude, and behavior on reading nutrition facts label on packaged food in google form since September 11th 2021 to September 29th 2021 by 365 respondents who accepted in inclusion criteria [13].

Analysis used in this research is univariate and bivariate analysis. Univariate analysis is to identify the distribution of each variable of knowledge, attitude and behavior reading the nutrition facts label on packaged foods. Meanwhile bivariate analysis is used to identify the correlation between two variables which are the correlation between knowledge and attitude with the behavior on reading the nutrition facts label on packaged food. Statistic test being used is spearman correlation test on α=5%. If the result of the statistic test shows $p<0,05$ then H_0 is declined and H_1 is accepted.

RESULT

Respondents Characteristics

Table-1: Respondents Characteristic Undergraduate Students of Nusa Cendana University 2021

No	Variable	Frequency (n)	Percentage (%)
1	Sex		
	Men	107	29,3
	Women	258	70,7
2	Age (yo)		
	18	49	13,4
	19	59	16,2
	20	71	19,5
	21	126	34,5
	22	60	16,4
3	Faculty		
	Science and Engineering	37	10,1
	Animal Husbandry	26	7,1
	Agriculture	33	9,0
	Fishery and Marine Science	37	10,1
	Public Health	36	9,9
	Teacher Training and Education	34	9,3
	Veterinary Medicine	35	9,6

No	Variable	Frequency (n)	Percentage (%)
	Medicine	34	9,3
	Social and Political Science	24	6,6
	Law	35	9,6
	Economics and business	34	9,3
4	Body Mass Index (BMI)		
	Underweight	118	42,4
	Normal	178	43
	Overweight	38	12,7
	Obesity 1 Obesity 2	25 6	1,9 1,6
5	Respondents Always Read Nutrition Label		
	Yes	295	80,8
	No	70	19,2
6	Respondents Always Read Expired Date		
	Yes	328	89,9
	No	37	10,1
7	Acknowledge the NFL on Packaged Food		
	Yes	320	87,7
	No	45	12,3
8	Predominantly Acknowledge there are NFL on Packaged Food		
	Yes	228	62,5
	No	137	37,5
	Total	365	100

According to the Table 1 respondents characteristics shows 70,7% (258 respondents) are women with most age is 21 years old in 126 respondents (34,5%) and normal BMI in 178% respondents (43%). Faculty with most respondents is Faculty of science and engineering and Faculty of fisheries and marine which consist of 37 respondents (10,1%). Most of the respondents always read the nutrition facts label (NFL) packaged food and the expired date label each consist of 295 respondents (80,8%) and 328 respondents (89,9%). Most of the respondents acknowledge the NFL on packaged food each are 295 respondents (80.8%) and 328 respondents (89, 9%). Respondents predominantly acknowledge there are NFL on packaged food for 320 (87, 7%) and stated still consuming the packaged food without NFL for 228 (62, 5%).

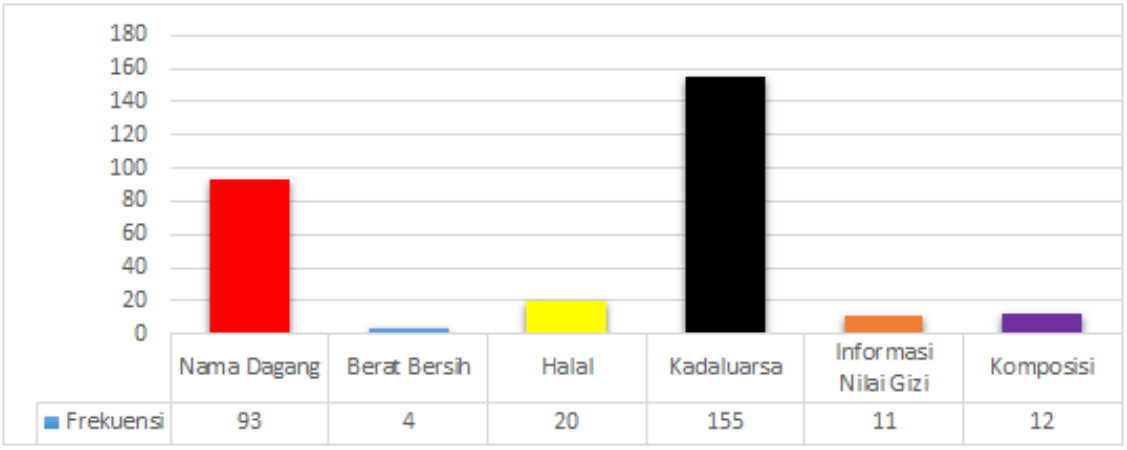

Fig-1: Food Label Which Being First Read

According to Figure 1 is found 295 (80,8%) people who always read the food label, the expired date is the first being read predominantly by 155 (42,5%) people, meanwhile the net weight is the least being read by 4 (1,1%) followed by nutrition facts label (NFL) by 11 (3,0%) which being first read.

Univariate Analysis

Tabel-2: Knowledge Distribution of reading label NFL on the packaged food

Knowledge	Frequency (n)	Percentage (%)
Good	232	63,6
Moderate	86	23,6
Poor	47	12,9
Total	365	100,0

Knowledge distribution of Nusa Cendana University students mostly adequate which is 232 (63,6%) people who read the nutrition facts label on the packaged food.

Tablel-3: Attitude Distribution of Reading Label NFL on Packaged Food

Attitude	Frequency (n)	Percentage (%)
Good	265	71,8
Moderate	86	23,6
Poor	17	4,7
Total	365	100,0

Table 3 shows that most of the attitude on reading the nutrition facts label on packaged food is good in 265 respondents (71,8%), attitude classified as moderate in 86 respondents (23,6%) and classified as poor in 17 respondents (4,7%) on reading the NFL of packaged food.

Table-4: Behavior Distribution of Reading Label NFL on Packaged Food

Behavior	Frequency (n)	Percentage (%)
Good	50	13,7
Moderate	75	20,5
Poor	240	65,8
Total	365	100,0

According to the table above behavior with predominant percentage is good behavior on reading the nutrition facts label of the packaged food in 240 respondents (65,8%).

Bivariate Analysis

Table-5: Analysis Correlations Between Knowledge And Attitude On Reading The Nutrition Facts Label (NFL)

	Attitude								
	Good		Moderate		Poor				
Knowledge	N	%	N	%	N	%	n %	*r*	*p*
Good	170	46,6%	58	15,9%	4	1,1%	63,6%		
Moderate	68	18,6%	15	4,1%	3	0,8%	23,6%	0,107	0,041
Poor	24	6,6%	13	3,6%	10	2,7%	12,9%		

*Spearmen statistic, *p*<0,05

Based on Table 5 majority of Nusa Cendana University students who have good knowledge and good attitude is 170 (46,6%) students. Students with moderate knowledge and poor attitude is 10 (12,9%) students. Result of Rank Spearman's statistic tes between these two variables shows there is significant correlation between knowledge and attitude on reading the nutrition facts label of packaged food proven by p = 0,041 (p < 0,05) and the strength of the correlation is 0,107 which indicates there is a weak correlation between knowledge and attitude on reading the nutrition facts label. This indicates there is weak correlation, significant and directed result. In this research can be concluded that the better the knowledge on reading the nutrition facts label the better the attitude on reading the nutrition facts label on the packaged food by the students of Nusa Cendana University.

Tabel-6: Analysis Correlations Between Knowledge And Behavior On Reading The Nutrition Facts Label (NFL)

	Behavior							
	Good		Moderate		Poor			
Knowledge	N	%	N	%	N	%	n %	*p*
Good	36	9,9%	49	13,4%	147	40,3%	63,6%	
Moderate	10	2,7%	19	5,2%	57	15,6%	23,6%	0,108
Poor	4	1,1%	7	1,9%	38	9,9%	12,9%	

Spearmen Statistic, $p>0,05$

Table 6 shows that the majority medical students with good knowledge have poor behavior in 147 (40, 3%) people. Students of Nusa Cendana University with moderate knowledge and poor behavior established in 57 (15, 6%) people. The result of Rank Spearman's test between these two variables shows there is no significant relation between knowledge and behavior on reading the nutrition facts label on packed food with the p value=0,108 (p> 0,05).

DISCUSSION

The research of correlation between knowledge with attitude and behavior on reading nutrition facts label of packaged foods in Students of Nusa Cendana University conducted to know the correlation between the two variables. Knowledge questionnaire consists of 6 questions of reading the nutrition facts label of the packaged foods and attitude questionnaire consists of 5 questions about health attitude (2 statements) and attitude in packaged food nutrition facts label (3 questions).

Result of the statistic test in this research shows there is correlation between knowledge and attitude in reading the nutrition facts label (p = 0,041, r = 0,107). Correlation of these two variables is weak. Correlation coefficient valued positive which means the correlation is balanced where good knowledge leads to good attitude too.

This is in line with research conducted by Anshu, *et al*. (2020) regarding the assessment of knowledge, attitudes and behavior in reading food nutrition labels on consumers in Kalkaji, southern delhi, which showed that there was a significant relationship between knowledge and attitudes towards reading food nutrition labels ($p< 0.01$, r = 0.44) [14].

According to the result of this research known that there are 170 respondents (46,6%) who have good knowledge with good attitude. The number of respondents who has good knowledge with poor attitude is 4 respondents (1, 1%). Researcher concludes that the majority of the respondents have balanced knowledge and attitude which means the higher the knowledge the better the attitude they have.

This shows that attitude is formed from knowledge components. One of the factors affected the attitude is internal factors or factors from the individual in terms of knowledge. People with good knowledge tend to have good attitude due to the high understanding about particular issues therefore they react to the it as good as their knowledge. Attitude of a person appears started by the existence of knowledge that being perceived as good or not, this perception then rooted in themselves to the point where the person react according to her/his knowledge.

Research conducted in Nusa Cendana University students about the correlation of knowledge with attitude and behavior of reading the nutrition facts label on packaged foods shows there is no significant correlation of knowledge and behavior of reading the nutrition facts label on packaged foods (p= 0,108). This research is similar to the research of Ali *et al*. (2021) on nutritionist in Surakarta shows there is no correlation of knowledge with the behavior of reading the nutrition facts label on the packaged food (p=0,3) [15]. Research conducted by Christoper *et al*. (2019) on students of Sekolah Menengah Kejuruan in Depok city shows similar results of there is no correlation of knowledge and behavior of reading the nutrition facts label (p= 0,172) [16].

According to the result of this research majority of the respondents with good knowledge and poor behavior on reading the nutrition facts label on packaged food is on 147 respondents (40,3%). The number of respondents with moderate knowledge followed by the poor behavior is 57 respondents (15, 6%). Researcher concludes that good or moderate knowledge doesn't make someone has good behavior in reading the nutrition facts label on packaged foods. This is caused by the lack of good perception about the importance of reading the nutrition facts label even though majority respondents show the sufficient ability on reading the nutrition facts label of the packaged foods.

From the table 1 of this research shows that students who always read the food label is 295 respondents (80, 8%) but the priority of the reading is expired date description and the products brand (Figure 1). There are 320 respondents (87, 7%) knows about nutrition facts label on the packed foods (Table 1), this shows that even though majority of students knows about nutrition facts label but they are not able to read the NFL on packaged food probably because of the information at the nutrition facts is not a parameter on

consuming or buying a packaged food. Besides, mostly (68, 5%) students stated that they still consume packaged food even though there is no nutrition facts label on it (Table 1). There are several reasons why the respondents still consume packaged foods without the nutrition facts label like because the good taste, frequent consumption of the product, they prioritize the expired date description, believe that the product is homemade so it's safe to consume. This is more likely because the students haven't aware of the importance on reading the nutrition facts label which helps the selection of packaged foods. Packaged foods as snacks are put on the NFL to control the calorie intake and nutrition according to the requirement and condition.

CONCLUSIONS

In this study, most of the students had the knowledge and attitude to read the nutrition facts label of packaged food which was classified as good, but had poor behavior in reading the nutrition facts label of packaged food. There is a significant correlation between knowledge and the attitude of reading nutrition facts label of packaged foods for students at the University of Nusa Cendana. There is no significant correlation between knowledge and behavior in reading nutrition facts label of packaged foods for students at the University of Nusa Cendana.

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Cite This Article: Januario Sebastiano Sega, Christina Olly Lada & Derri Tallo Manafe (2022). The Correlation of Knowledge with Attitude and Behavior of Reading Nutrition Facts Label of Packaged Foods on Students Universitas Nusa Cendana. *EAS J Nutr Food Sci*, *4*(2), 28-33.