Relationship Between Socio-Demographic Characteristics and Food Labeling Consumption in Sulaimani City by Using Chi-Square Test

Fatih Karim Hama Ali[1], Seerwan A. Abdullah[2] and Soran Husen Mohamad[3]

[1]Food Science and Quality Control Department, Sulaimani Polytechnic University, KRG, Iraq.
[2]Food Technology Department, College of Agricultural Engineering Sciences, Univercity of Salahaddin, KRG, Iraq.
[3]Statistics and Informatics Department, College of Administration and Economics, Sulaimani University, KRG, Iraq.

[1]E-mail: fatih.karim@spu.edu.iq.
[2]E-mail: serwan.abdullah@su.edu.krd
[3]E-mail: soran.abdulrahman@univsul.edu.iq

Abstract. This study was considered the distribution of samples according to socio demographic characteristics and their relationship with food labelling survey in Sulaimani city. Food labelling information used as a basic for all other parameters such as consumers education levels, gender, consumers able to read food labelling, know regarding of food labelling, sensitivity or illness by some foods and consumers age. Regarding the consumer's education level, the low, medium and high literate skills level of consumers were showed that to be higher than the level illiterate skills with attention and use food labelling information before purchase it. In addition, 52% of female respondents were checking the food labelling information before purchase the food. Although, there were no significant differences between information in related to gender. Otherwise, the data are associated to the read of food labelling information, it can be identified that our consumers generally notice information labels, but do not take much attention in its content. Concerning the question of are you know food labelling information? There were statistically significant differences between foods labelling information in related to be you know? For the sensitivity or illness parameter in this study. The results discovered that, there were statistically significant differences between information in related to Sensitivity or Illness as well as, quarter of the respondents (75%) did not read the food information. Finally, consumers within the age group 41 and above use food labelling information less than consumers within the age group between 18-40 ages.

Keywords. Socio demographic characteristics, Food labelling information, Chi-square test.

1. Introduction

Over the past decade, food label consumption is a consumer behaviour and related to lifestyle pattern due to deciding purchase or what should not purchase any kind of products and services. On the other hand, consumer purchasing behaviour for food and market products depends on all the terms, lifestyle factors, economic, religious, cultural, expire date, nutrition labelling and health [1,2]. One of the important aspects in creating consumer buying intention is a religious awareness in food label

becomes [3]. It is a crucial to know the relationship between the socio-demographic properties in the marketplace section and lifestyle. The demographics characteristics are included gender, age, education, income and occupation. There are three elements of lifestyle that give impact in considering food label which are health notice, ecological activist, and religious awareness. In order to reliability of food labelling information on a package, all consumers separates among products and to make proper use of the products.

[4,5], illustrated that the food label on the product provide informing the consumer about the product, which includes, ingredients and nutrients it contains. A label on the food product are proposed basic product information such as common name, list of ingredients, net quantity, expire date, grade/quality, country of origin, name and address of manufacturer, importer or dealer and labelling plays a significant role in limiting the effects of deterioration by providing suitable storage and handling instructions.

[6] Described that the food labelling information has been universally provided on food products and comply with food laws and standards. In order to defend consumers' health, labelling information is changing dramatically to address nutrition-related problems, the food labelling can be mandatory and voluntary labelling rules. Food labelling information is the best way to consumers of sort foods according to their demands, confidence in the safety and quality of food as well as food desire. Lifestyle aspect will be changed due to consumer's attitude, awareness and knowledge.

[7] Described that the labelling is a part of branding and it is printed information either written, electronic, or graphical communications on the packet. The objectives of labelling information are included several positions such as, product price, manufacturing date along and expiry dates, name and address of the product manufacturer, Warning / instruction about health risk, nutrition habits, ethical and information on nutritional contents for better control of health risk. Consumers needs to know where the food comes from and its nutritional value as well as its healthy, to comfort with the diet of foods. Labelling is a key as it a realize consumers attention to purchase the product because of graphic appeal. Lack of food label information problem between producers and consumers, as well as lack of the study encourage us to make this study.

[8] A review article found that the use of labelling by people with lower socio economic, education level, and younger and older than 18 and 50 years old issue tend to read food labelling before purchase lower than the groups between 18-50 years old. There have been no studies that have been inspected the influence of socio demographic characteristics on utilize of menu labelling before purchase the foods especially, food packaging in the market.

The current study try to investigate association of socio demographic characteristics factors and usage or non-usage of food labels during purchase of packed due to an interview samples of the population in Sulaimani city. Food labelling information used as a basic for all other parameters such as consumers education levels, gender, consumers able to read food labelling, know regarding of food labelling, sensitivity or illness by some foods and consumers age. To the best of our awareness, lack research on the relationship between foods labelling information with the mentioned parameters which are related to our consumers in our city has been conducted, so we hope that the present study will benefit in filling this gap.

2. Methodology

2.1. Sample and Sampling Procedures

Survey questionnaire design used in the methodology of this research in Sulaimany city from, Jun.21 2022 Sep. 10 2022 and numerate participants of consumers according to socio demographic characteristics as follows:

For the distribution of samples according to socio demographic characteristics, number of participants of consumers is 178. Consumers included three levels of ages, less than 18, between 18 to 50 and older than 50 years old, were purchased randomly after checkout from market and questioned if they purchased any pre-packaged food and were willing to participate in this research.

2.2. Questionnaire

The questionnaire included the followings variables, distribution of the sample of population according to socio demographic characteristics, label information (low, medium and high), Age (less than 18, between 18-50 and older than 50 years old), gender (male and female), educational level (literate and illiterate), able to read (yes or no), are you know (yes or no) and health (sensitively or illness).

2.3. Statistical Analysis

Statistical Package for Social Sciences (SPSS) version 24. Was used in this research. The data had been coded, tabulated, and presented in a descriptive form. In this study the data were analysed by using the basic statistical methods which include: Descriptive statistical data analysis (Frequency, percentage, Mean and stranded deviation) and Inferential data analysis: Chi square. There are criteria of the probability level of determining the significance of the test: P -value as: High significant ($P< 0.001$), Significant ($P< 0.05$) , Non-significant ($P> 0.05$) and Very highly significant ($P< 0.000$).

3. Results and Discussions

Table 1 demonstrates the socio demographic characteristics of respondents, revealing all variables of food labelling information, ages, genders, educational level, read it, are you know and sensitivity or illness. Data collected was further analyzed and presented in this study. More than half of the total respondents 62(41.9%) of the participants has low information and approximately 47(31.8%) of the participants has median information.

Table 1. Percentage of variable of Socio demographic characteristics.

Variables	Items	Frequency	%
Food labeling Information	Low	62	41.9
	Median	47	31.8
	High	39	26.4
Age (years)	< 18	9	6.1
	18-30	66	44.6
	31-40	38	25.7
	41-50	25	16.9
	> 50	10	6.8
	Mean ± S.D	31.83~ 32 ±12.37	
Genders	Male	71	48.0
	Female	77	52.0
Educational level	Illiterate	34	23.0
	Literate	114	77.0
read it	No	76	51.4
	Yes	72	48.6
Are you know of food labeling information	No	66	44.6
	Yes	82	55.4
Sensitivity or Illness	No	111	75.0
	Yes	37	25.0
Total		148	100

The majority of the age was 18-30 years old which was 44.6% of the total and 25.7% was between 31-40 years old. In addition, most participants study, 52.0% of the respondents were females and 48% was males. 114(77.0%) of the participants had literate and also 72(48.6%) of the respondents had read of food labelling information and 82(55.4%) of the participants had known information about of food labelling information and also 37(25.0%) of the participants had of Sensitivity or Illness.

In other parts of this study, we tried to investigate and find the relationship between all socio-characteristic parameters one by one with the labelling information as basic for all parameters.

Page 141

Table 2. Association between food labelling Information and Educational level.

Educational level		Food labeling Information			Total
		Low	Median	High	
Illiterate	Count	20	12	2	34
	% of Total	13.5%	8.1%	1.4%	23.0%
Literate	Count	42	35	37	114
	% of Total	28.4%	23.6%	25.0%	77.0%
Total	Count	62	47	39	148
	% of Total	41.9%	31.8%	26.4%	100.0%
Chi-Square		10.213		P-value	0.006

Table (2) represents that the association between food labelling Information and educational level. As a results shows that. As a results shows that there was statistically significant difference (or association) between association between food labelling Information and educational level (p-value=0.006) because the result of p-value was less than the common alpha 0.05.

Table 3. Association between information and Gender.

Gender		Food labeling Information			Total
		Low	Median	High	
Male	Count	25	27	19	71
	% of Total	16.9%	18.2%	12.8%	48.0%
Female	Count	37	20	20	77
	% of Total	25.0%	13.5%	13.5%	52.0%
Total	Count	62	47	39	148
	% of Total	41.9%	31.8%	26.4%	100.0%
Chi-Square		3.153		P-value	0.207

Table (3) represents that the association between food labeling Information and gender. As a results shows that. As a results shows that there was no statistically significant difference (or association) between association between information and gender (p-value=0.207) because the result of p-value was more than the common alpha 0.05.

Table 4. Association between food labelling Information and reads of reads.

Reads		Food labeling Information			Total
		Low	Median	High	
No	Count	50	19	7	76
	% of Total	33.8%	12.8%	4.7%	51.4%
Yes	Count	12	28	32	72
	% of Total	8.1%	18.9%	21.6%	48.6%
Total	Count	62	47	39	148
	% of Total	41.9%	31.8%	26.4%	100.0%
Chi-Square		40.961		P-value	0.000

Table (4) shows that the association between food labelling Information and reads of reads. As a results shows that. As a results shows that there was statistically significant difference (or association) between association between food labelling Information and reads of reads (p-value=0.000) because the result of p-value was less than the common alpha 0.05.

Table 5. Association between food labelling Information and Are you know of food labelling.

Are you know of food labeling Information		Food labeling Information			Total
		Low	Median	High	
No	Count	43	8	15	66
	% of Total	29.1%	5.4%	10.1%	44.6%
Yes	Count	19	39	24	82
	% of Total	12.8%	26.4%	16.2%	55.4%
Total	Count	62	47	39	148
	% of Total	41.9%	31.8%	26.4%	100.0%
Chi-Square		30.44		P-value	0.000

Table (5) indicates that the association between food labelling Information and Are you know of food labelling. As a results shows that. As a results shows that there was statistically significant difference (or association) between association between food labelling Information and Are you know of food labelling (p-value=0.000) because the result of p-value was less than the common alpha 0.05.

Table (6) shows that the association between food labelling Information and Sensitivity or Illness. As a results shows that. As a results shows that there was statistically significant difference (or association) between association between food labelling Information and Sensitivity or Illness (p-value=0.000) because the result of p-value was less than the common alpha 0.05.

Table 6. Association between food labelling Information and Sensitivity or Illness.

Sensitivity or Illness		Food labeling Information			Total
		Low	Median	High	
No	Count	34	42	35	111
	% of Total	23.0%	28.4%	23.6%	75.0%
Yes	Count	28	5	4	37
	% of Total	18.9%	3.4%	2.7%	25.0%
Total	Count	62	47	39	148
	% of Total	41.9%	31.8%	26.4%	100.0%
Chi-Square		23.132		P-value	0.000

Table (7) shows that the association between food labelling Information and age. As a results shows that. As a results shows that there was no statistically significant difference (or association) between association between food labelling Information and age (p-value=0.929) because the result of p-value was more than the common alpha 0.05.

Table 7. Association between food labelling Information and Age.

Age		Food labeling Information			Total
		Low	Median	High	
< 18	Count	5	1	3	9
	% of Total	3.4%	0.7%	2.0%	6.1%
18-30	Count	25	23	18	66
	% of Total	16.9%	15.5%	12.2%	44.6%
31-40	Count	15	13	10	38
	% of Total	10.1%	8.8%	6.8%	25.7%
41-50	Count	12	7	6	25
	% of Total	8.1%	4.7%	4.1%	16.9%
> 50	Count	5	3	2	10
	% of Total	3.4%	2.0%	1.4%	6.8%
Total	Count	62	47	39	148
	% of Total	41.9%	31.8%	26.4%	100.0%
	Chi-Square	3.08		P-value	0.929

The aim of this study shows that the relationship between socio-demographic characteristics and food labelling consumption in sulaimani City. As a results represents that the more than half of the total respondents 62(41.9%) of the participants has low information and approximately 47(31.8%) of the participants has median information. The majority of the age was 18-30 years old which was 44.6% of the total and 25.7% was between 31-40 years old. In addition, Most participants study, 52.0% of the respondents were females and 48% was males. This result was in line with [9] that women were majority 52.9% while the smallest percent was males 47.1% to checking expire date and nutritional labels because they are more concerned about their body mass and the ingredients in pre-packaged products. Currently, people are more interested of their obesity and healthy eating, especially, women. This is agree with the researchers [1 and 10], were explained the percentage of female was higher than males to study the nutritional labels. There is no doubt, the comparison between consumers have a literate and illiterate, utilized food labels with participants have a literate were higher than with participants have illiterate. The results illustrated that the 77% of the participants have been Literate

and 48.6% of the participants have been reads and 55.4% has known about it and also 75% has not Sensitivity or Illness.

Several researches [11] reported that more than 150 of foods have been allergic reaction people in the world. Behind the population the microbiological risk, allergies and intolerances are related to foods or food ingredients that cause discomfort, illness, or even death. For that reason, it is a crucial identification the ingredients of food labelling in pre-packed foods for the sensitivity consumers clearly. According to our data obtained regarding consumers' sensitivity or illness, numerate of consumers up to 111 (75%) has a sensitivity or illness by some of foods or food ingredients and the others 37 consumers (25%),

 For an example, food manufacturers can be mentioned some forms of labelling in order to aware allergic consumers of risks, using phrases such, not suitable for someone with a nut allergy, or nut is used in food ingredients, this way help the sensitivity or illness consumers to be safe [12]. Otherwise, regarding the question of are you know labelling or no? From 148 consumers, 82 (55.4%) persons said yes, and others 66 (44.6%) said no.

One of the factors of food label usage is considered consumers education level. The results in Table 2 also indicate that the high level illiterate skill was 13.5%, and had a low labelling information, while only 1.4% of level literate skill was used the labelling information. However, 28.4% of participants of low level literate skill and 23.6% consumers of median level literate skill were used the labelling information. In addition, the result of this work observes that, there were differences (or association) between information in related to Educational level after data analysis (p-value=0.006), this is refer to the result of P-value which is less than the level of 0.05. These results are agreement with [13 and 14], when they were found that influence an educational level on their attitude. Forever, researchers addressed in their studies that the respondents with higher degree of educational level are parallel to read food labelling information and in contrast with lower educational level. Thereby, [15] reported that a strong relationship food labelling information with age and education level separately.

On the other hand, the association between food labelling information with respect of gender, the results show that the maximum percentage of males was up to 18.2% median food labelling information and the minimum percentage of males 12.8% was a high information regarding labelling. In contrast, 25.0% of females were low information and 13.5% of females were median and high information of food labelling. Table (3) represents that the Association between information and gender. The result of this work indicates that, there were no statistically noteworthy differences (or association) between information in related to gender (p-value=0.207) because the result of P-value was recorded higher value compared to more the level of 0.05. Current study disagree with researchers regarding the association between genders with food labelling information. [1 and 16], who were concluded that the male and female has a significant influence on the use of food labelling information. Moreover, the food labelling information that females viewed content of food label food was higher than males. In addition, [9 and 17], reported that more than half of females were more likely read food labelling information before purchasing the commodities compared to less than half of males. This proposes that females are more likely than males to read content of food labels because they are more concerned about their body mass and the ingredients of products before packaging.

According to our data collected, which are associated to the read of food labelling information. The results investigated that the high percentage 33.8% from 51.4% consumers were either unable to reads or able to reads but food labelling information was not interesting (low food labelling information), while only 4.7 % of participants were liked to read and used the food labelling information. On the other hand, the data is clear 21.6% from 48.6% of participants able to read and used the food labelling information. It can be identified that our consumers generally notice information labels, but do not take much attention in its content. Table (4) shows that the outcome of this investigate demonstrations that, there were statistically noteworthy differences (or association) between information in related to reads (p-value=0.000) because the value of P-value was less than the common level 0.05. However, the results of present study agree with [18], reported that participates with low food labelling information less frequently viewed it. The main reason of not reading food labelling information among participants is lack of interest [19].

Regarding the association between food labelling information and question of are you know food labelling information. When we asked the question to 148 of consumers, 66 of them said no

information food labelling and 82 had an information. From 66 of consumers 43 (29.1%) had low information or never used the food labelling information and 8 of them (5.4%) had a median information, while 19 (12.8%) consumers from 82 participants had a low information as well as 39 (26.4%) consumers from 82 had a median information. Thereby, table (5) indicates that the Association between information and Are you know. The result of this research that, there were statistically significant differences (or association) between information in related to Are you know (p-value=0.000) because the P-value was lower than the common value 0.05.

These results are contrast with a study conducted by [20], consumers within the knowledgeable consumer group largely tends to notice a nutrition label as point to aware of food labelling information (P<0.001)

For the sensitivity or illness parameter of socio demographic properties basic on the food labelling information. The result of the study illustrates that, there were statistically significant differences association information in related to Sensitivity or Illness (p-value=0.000) because the result of P-value was lower than the common value 0.05

Food labelling information will be interested to consumers for some reasons on their health, beauty, or weight.

Additionally, that the Association between information and age. Data presented the result of the study shows that, there were no statistically significant differences (or association) between information in related to age (p-value=0.929) because the result of P-value was more than the common alpha 0.05

These results are consistent with a study conducted by [21], consumers within the age group 41 and above use food labelling information less than consumers within the age group between 18-40 ages. In addition [22], declared the younger shoppers was observed to be more wary in purchasing food packaging or canning foods.

Conclusions

This work has concluded that awareness and use pre-packaged food labelling information is varies level among participants in Sulaimani city depends on the socio demographic characteristics such as education, gender, can he/ or and she reads the food labelling information, and asking question regarding are you know the content of food labels? As well as consumers healthy and the ages of participants in this study. Generally, the results showed that most of parameters of socio demographic properties were associated to the food labelling information by different percentage.

References

[1] Grunert, K.G.; Wills, J.M.; Fernández-Celemín, L. (2010). Nutrition knowledge, and use and understanding of nutrition information on food labels among consumers in the UK. Appetite, 55, 177–189. https://doi.org/10.1016/j.appet.2010.05.045

[2] International Food Information Council, (2011). Functional Foods/Foods for Health Consumer Trending Survey.

[3] Anir NA, Nizam MNM, Masliyana. RFID Tag for Halal Food Tracking in Malaysia: Users Perceptions and Opportunities. (2008) In: 7th WSEAS Int. Conf. on Telecommunications and Informatics (TELE-INFO '08); Istanbul, Turkey.

[4] Food Safety and Applied Nutrition (FSAN). (2018). Available online: www.nafdac.gov.ng/index.php/about-nafdac/directorates/food-safety-applied-nutrition.

[5] Donga G, Patel N. (2011). The Nutrition Labelwhich information is important to the Consumer? International Journal of New Technology and Research 4): 53-56.

[6] Alberst, J. (2010). Innovations in food labelling. Published by The Food and Agriculture Organization of the United Nations and Wood head Publishing Limited.

[7] Srivastava, N. (2021). Effect of Socio-demographic characteristics on usage and non-usage of food labels during purchase of packaged food In India. Journal of Business and Management (IOSR-JBM), ISSN: 2319-7668, 23, 3. 25-32.

[8] Shahrabani, Sh. (2021). Determinants of Israeli consumers' decision to use food label information more frequently: a national survey study. Shahrabani Israel Journal of Health Policy Research, https://doi.org/10.1186/s13584-021-00462-0

[9] Adesina, E., Ajayi, B., Amoo, E. O., Adeyeye, B., Ajayi, M. P., Olawande , T.,Olawole-Isaac, A. and Udume, M. E.(2022). Consumers' Knowledge and Use of Nutritional Labelling Information in Lagos, Nigeria, Sustainability, 14, 578. https://doi.org/10.3390/su14010578

Page 145

[10] Grunert, K. G., Fernandez-Celemin, L., Wills, J. M., Storcksdieck genannt Bonsmann, S., and Nureeva, L. (2010). Use and understanding of nutrition information on food label in six European countries. Journal of Public Health, 18, pp. 261–277. https://doi.org/10.1007/s10389-009-0307-0

[11] Cowburn, G.; Stockley, L. (2005). Consumer understanding and use of nutrition labelling: A systematic review. Public Health Nutr., 8, 21–28. https://doi.org/10.1079/phn2004666

[12] Hattersley S. and Chan, CH. (2010). Labelling of allergenic foods of concern in Europe. Food Standards Agency, United Kingdom, First published Woodhead Publishing Limited, except Chapter 5. https://doi.org/10.1533/9781845697594.59

[13] FSA (FOOD STANDARDS AGENCY). (2002), 'May Contain' Labelling – The Consumer's Perspective. Crown Copyright.

[14] Brecher, S.J.; Bender, M.M.; Wilkening, V.L.; Mccabe, N.M.; Anderson, E.M. Status of nutrition labeling, health claims, and nutrient content claims for processed foods: (1997) . Food Label and Package Survey. J. Am. Diet. Assoc. 2000, 100, 1057–1062. https://doi.org/10.1016/s0002-8223(00)00308-4

[15] Fullmer, S.; Geiger, C.J.; Parent, C.R.M. (1991) Consumers' knowledge, understanding, and attitudes toward health claims on food labels. J. Am. Diet. Assoc., 91, 166–171. https://doi.org/10.1016/s0002-8223(21)01081-6

[16] Samson G. (2017). Awareness of food labelling and use of the information in purchasing pre-packaged food products among consumers in Ilala municipality Dares Salaam (Doctoral dissertation, Muhimbili University of Health and Allied Sciences).

[17] Patricia U. (2016). Consumers" knowledge, attitude and use of Food Labels in an urban city in Southeast Nigeria. Advance Nutrition 7: 22.

[18] CARILLO, E., VARELA, P. & FISZMAN, S. (2012): Infl uence of nutritional knowledge on the use and interpretation of Spanish nutritional food labels. J. Food Sci., 71, H1–H8. https://doi.org/10.1111/j.1750-3841.2011.02479.x

[19] RANILOVIĆ, J. & COLIĆ BARIĆ, I. (2013): Perceived barriers and motives to reading nutrition label among label 'nonusers' in Croatia. Croat. J. Food Technol., Biotechnol. Nutr., 8, 52–57. https://doi.org/10.1108/00070701111097376

[20] LOUREIRO, M.L., GRACIA, A. & NAYGA, R.M. (2006): Do consumers value nutritional labels? Eur. Rev. Agric. Econ., 33, 249–268.

[21] Alshukri, A., Elramli, S. and Albkoush, H. (2020). Study of knowledge, attitude and awareness of the information of food labeling among consumers in Tripoli municipality Libya. IJRAR- International Journal of Research and Analytical Reviews,7,2 32-42.

[22] Shireen S., Sumaya, M. S., Bhuvaneswari KM, Lakshmi S. R. (2022). Food Label and its Influence among Indian Consumers - A Review, J Food Sci Nutr Res 2022; 5 (2): 543-551 DOI: 10.26502/jfsnr.2642-11000097 Journal of Food Science and Nutrition Research. 5. 2 [ISSN 2642-1100] 543. https://doi.org/10.26502/jfsnr.2642-11000097