INFLUENCE OF CONSUMERS' FOOD LABEL KNOWLEDGE AND PERCEPTION ON UTILIZATION IN ABAKALIKI LOCAL GOVERNMENT AREA, EBONYI STATE, NIGERIA

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ABSTRACT

Objectives: This study was designed to determine the influence of consumers' food label knowledge and perception on food label utilization in Abakaliki Local Government Area, Ebonyi State, Nigeria.

Methodology: A descriptive and cross-sectional study design was employed. A total of 262 respondents were selected using multi-stage sampling technique. An interviewer administered structured questionnaire was used to elicit their socio-demographic characteristics, food label knowledge, perception and utilization. Descriptive and inferential statistics was used to analyse the variable with significance judged at P< 0.05 where applicable.

Results: Results revealed that 50.8% and 35.9% of the respondents had poor and average food label knowledge respectively. Most (69.1%) of them had fair perception, while 22.5% had poor perception towards food label. Results showed that 24.8% and 46.6% always and sometimes use food label during product purchase respectively. Manufacture/expiry date (39.5%), food price (25.3%) and nutrition information (17.6%) were found to be the common food label components checked by the respondents. Fats (30.5%) and carbohydrates (29.6%) were the key nutrients considered by the respondents when using food labels. This was evident in their avoidance of high fat (36.5%) and high sugar (36.1%) foods. Some of the respondents often utilized foods products with low/no sugar (50.2%), low/no fat (63.5%), cholesterol free (41.6%) and sodium free (48.5%) health claims. A significant relationship exist between food label knowledge and food label utilization frequency (r =0.03; p = 0.001).

Conclusion: Poor/average food label knowledge and perception score of the respondents was observed. Although, most of the consumers use food label information, manufacture/expiry date was the most checked component of food label. A positive correlation between food label knowledge and utilization frequency was reported in this study.

Key words: Knowledge and perception, Utilization, Food label, Consumers, Abakaliki

INTRODUCTION

Food labelling remains one of the effective avenues for delivering health messages on nutrition and diet to consumers for better food choices (1). Nutritional labels are good tools for keeping consumers informed about their food and diet composition (2). Thus, nutrition knowledge of consumers and their perception about food labels are very important tools for improving dietary patterns towards a healthy diet (3-4). According to the Food and Nutrition Research Institute (5), food labels are said to be tags placed on food to give details about its producing company, its content and sometimes usage and components. Food labels are labels required by law on virtually all packaged foods with five requirements: a statement of identity; the net content (by weight, volume, or measure) of the package; the name and address of the manufacturer, packer, or distributor; a list of ingredient and; nutrition information (6). Today nearly all foods sold in the super market must be labelled with the product name, name and address of manufacture, amount of product in the package, and ingredients listed in descending order by weight (7). Food

labelling has four primary objectives: to provide consumers with extensive nutrition information about packaged food; to assist in the education of consumers in the complex area of nutrition; to encourage improvement of the nutritional content of the food supply; and to safeguard the nutritional content of the food supply (8). Additionally, food labelling satisfies the consumer's right to know and improve confidence in the food industry.

Although consumers value nutrition when deciding which foods to buy, nutrition information on food labels is complex and does not always live up to its potential to communicate effectively (9-11). Consumers need to understand the information on food labels in order to use food labels effectively when making food choices and this understanding has to do with what they know as regards to nutrition and food label terminologies. However, several studies have found that consumers experience difficulties understanding the nutritional information on the labels, especially the terminology used on labels (12-14). The potential of food labels to improve healthy

food choices is dependent upon the ease with which consumers are able to understand and use the information. Prior knowledge has been shown to support performance on complex tasks in the cognitive literature; however, its role in food label use is less clear. A few studies have deciphered the fundamental role of food label knowledge and perception on correct application or utilization (15-16). In Nigeria, the level of awareness of consumers with reference to food label is very poor (17). It is therefore crucial to establish a relationship between consumers' knowledge, attitudes, and use of food labels to improve the quality of information provided on labels in forms that consumers can use them to make healthy dietary choices (18). This study is aimed at identifying the effect of food label knowledge and perception on utilization amongst consumers living in Abakaliki Local Government Area (L.G.A.) of Ebonyi State

METHODOLOGY

Study design
The study was descriptive and cross sectional in design

Sample size determination
Yamane (19) formula was used to determine the sample size.

$$n = \frac{Z^2 \, pq}{d^2}$$

where

n = sample size

z = 1.96 (constant)

d = tolerance/error

p= percentage prevalence of food label use in Nigeria = 80.8% (20)

p = 1-p

$n = \frac{1.96^2 \, (80.8) \, (100-80.8)}{}$ = 238.28

To take care of attrition that may occur in the study 10% of sample size was added =238.28 + 23.83 ≅262 respondents

Sampling and Sampling Techniques
A two-stage sampling technique was employed in selecting the respondents.

Stage 1: Two open markets (Abakpa and Kpiri-kpiri Market) and a shopping mall in Abakaliki Local Government Area were purposively selected given that they represent the major commercial centres in the capital city.

Stage 2: Furthermore, 87 respondents was drawn from each of the selected open market/malls using simple random sampling technique

Informed consent
Informed consent of the consumers were obtained. The respondents were assured of the confidentiality and non-maleficience nature of the research. Only those who wilfully consented to partake in the study were recruited.

Data collection
Data was collected with an interviewer administered structured questionnaire. This was used to elicit information on the respondents knowledge, perception and utilization of food label.

Data Analysis

Knowledge scores
Each of the correctly answered knowledge question was scored 2. A composite score was calculated for each respondent. A perfect score is 10 which represents 100%. The scores were categorized into 3 grades; poor knowledge- 0-3; average knowledge - 4-6 and good knowledge -7-10.

Perception scores
A correctly answered perception question was assigned a score of 1. Composite score was computed for each respondent and perfect score is 8 which represents 100%. The perceptions scores were categorized into 3 grades; poor perception- 0-2; fair perception - 3-5 and good/positive perception -6-8.

Statistical Analysis
Descriptive statistics (frequency and percentage) were used to determine their socio-economic characteristic, knowledge, attitude and use of food label. Correlation analysis was used to determine the influence of respondents' categorized food label knowledge and perception scores on their utilization with significance judged at p-value <0.05. All statistical analysis were done using IBM SPSS Statistics for windows version 22.

RESULTS

Socio-economic characteristics of respondents
Information on the socioeconomic characteristics of respondents is shown in Table 1. Results on socio-economic characteristics showed that more than half of the respondents were females (64.5%), married (58.4%) and aged 30-49 years (57.3%). Furthermore, 43.9% and 18.7% of the food shoppers had secondary and tertiary education respectively. The respondents were mainly traders (35.5%), farmers (19.1%).

Table   1 Socio-demographic characteristics of respondents

Variables	Frequency	Percentage
Sex		
Male	93	35.5
Female	169	64.5
Total	262	100.0
Age		
18-29	73	27.9
30-49	150	57.3
50 and above	39	14.9
Total	262	100.0
Marital status		
Single	98	37.4
Married	153	58.4
Divorced	5	1.9
Widowed	6	2.3
Total	262	100.0
Household position		
Father	48	18.3
Mother	128	48.9
Child	79	30.2
Relation	s7	2.7
Total	262	100.0
Religion		
Christianity	255	97.3
Muslim	3	1.2
Traditionalist	4	1.5
Total	262	100.0
Educational status		
None	18	6.9
Primary education	80	30.5
Secondary education	115	43.9
Tertiary education	49	18.7
Total	262	100.0
Occupation		
Civil servant	17	6.5
Farmer	50	19.1
Trader	93	35.5
Clergy	11	4.2
Artisan	35	13.4
Unemployed	14	5.3
Student	10	3.8
Transporter	11	4.2
Banker	6	2.3
Teacher/Lecturer	14	5.3
Others	1	.4
Total	262	100.0
Estimated amount spent daily on food (in naira)	₦806.36 $\pm$ 485.68	
<200	3	1.1
200-500	57	21.8
501-1000	90	34.4
1001-1500	42	16.0
>1500	6	2.3
No idea	64	24.4
Total	262	100.0

Consumers' awareness and knowledge of food label

Results on consumers' awareness of food label is shown in Table 2. Results showed that majority (83.6%) of the respondents were aware of food label.

Information on food label was mostly obtained from television/radio (28.6%), internet (11.5%), billboard (9.5%), health professional (9.2%) and textbooks (8.4%).

Table 2 Consumers' awareness of food label

Variables	Frequency	Percentage
Aware of food label		
Yes	219	83.6
No	43	16.4
Total	262	100.0
Source of information about food labels		
None	43	16.4
Televison/radio	75	28.6
Health professional	24	9.2
Billboard	25	9.5
Internet	30	11.5
Textbooks	22	8.4
Newspaper	18	6.9
School	10	3.8
Others	15	5.7
Total	262	100.0

Table 3 revealed the consumers' response to food label knowledge questions. Overall, less than half of the respondents correctly identified the food label definition (35.6%), importance of food label (42.4%), components of food label (26.7%), health claims in food (47.0%) as well as the difference between food label and nutrition label (47.7%).

Table 3 Consumers' response to food label knowledge questions

Variables	Correct responses	F	%
Definition of food label	Tags placed on packaged foods to give details about its producing company, its nutrient content and sometimes usage	94	35.9
Importance of food label	To provide consumers with extensive nutrition information about the food	111	42.4
Components of food labels except	Sensory characteristics	70	26.7
Health claims found in food	Zero sugar/No cholesterol	123	47.0
Difference exists between food and nutrition label	True	125	47.7

Results on the categorized knowledge score of the respondents is shown in Table 4. Results showed that more than half (50.8%) of the respondents had poor nutrition knowledge, 35.9% of them had average knowledge of food label while only 13.4% had above average food label knowledge score. Study reports revealed a mean knowledge score of 3.70 ± 2.26 out of a possible 10 marks.

Table 4 Categorized knowledge score of respondents

Variables	Frequency	Percentage	Mean $\pm$ SD
Poor (0-3)	133	50.8	1.84 ± 0.99
Average (4-6)	94	35.9	4.87 ± 0.79
Good (7-10)	35	13.4	7.60 ± 0.77
Total	262	100.0	3.70 ± 2.26

Consumers' perception of food labels

Results from Table 5 and 6 showed the consumers' perception of food label. Results showed that more than half of the respondents were in agreement that; nutrition information on pre-packaged foods are legible (60.3%) and can influence the purchase of products with high nutritional value (50.8%), also expiry date mark on food guarantees them safe for consumption (52.3%). Almost half of the respondents

attested that the location of manufacture/expiry date is suitable (48.9%) and also advised that food labels be standardized and applied to all food products (48.5%). Some of them also believed that nutrition information on packaged foods are understandable (32.1%) and trustworthy (30.5%). Only 22.3% of the consumers disagreed that food price should be considered more than food label in product selection.

Table 5 Consumers' perception of food labels

Variables	Positive responses	F	%
Nutrition information on packaged foods can influence the purchase of a product with high nutritional value	Agree	133	50.8
Nutrition information on packaged foods can be trusted	Agree	80	30.5
Nutrition information on packaged foods are legible	Agree	158	60.3
Nutrition information on packaged foods are understandable	Agree	84	32.1
Location of manufacture/expiry date is suitable	Agree	128	48.9
Expiry date mark on food guarantees them safe for consumption	Agree	137	52.3
Food price should have more influence than food label when selecting a product	Disagree	58	22.1
Food label should be standardized and applied to all food products	Agree	127	48.5

Table 6 revealed the categorized consumers level of perception towards food label. Results showed that 69.1% and 22.5% of the food shoppers had fair and

poor perception towards food label. Only 8.4% of the respondents had a positive (good) perception towards food labels.

Table 6 Consumers level of perception towards food labels

Variables	Frequency	Percentage	Mean $\pm$ SD
Poor (0-2)	59	22.5	1.70 $\pm$ 0.57
Fair (3-5)	181	69.1	3.71 $\pm$ 0.76
Good (6-8)	22	8.4	6.05 $\pm$ 0.21
Total	262	100.0	3.45 $\pm$ 1.34

Consumers' Food Label Utilization

Information on the consumers' food label utilization is summarized in Table 7. Results showed that 46.6% sometimes use food label during product purchase. More than one tenth of the respondents do not use food label with claims that it is difficult to understand

(6.5%) and time wasting (3.4%). Manufacture/expiry date (39.5%), and food price (25.3%) were found to be the common food label components checked by the respondents. Fats (30.5%) and carbohydrates (29.6%) content were the key nutrients considered by more than half of the respondents when using food labels.

Table 7 Consumers food label utilization

Variables	Frequency	Percentage
Frequency of food label use during product purchase	**N =262**	
Always	65	24.8
Sometimes	122	46.6
Rarely	46	17.6
Never	29	11.1
Reasons for not using food label	**N =262**	
No response	222	84.7
Time wasting	9	3.4
Difficult to understand	17	6.5
Not useful	7	2.7
Small font size of prints	7	2.7
Motivations towards food label utilization	**N =233**	
Product appearance	23	9.9
Like to know specific information	132	56.7
Preference of some ingredients	58	24.9
Health reasons	13	5.6
Religious beliefs	2	.9
Advertisements	5	2.1
Level of understanding food label information	**N =233**	
Very easy to understand	53	9.5
Somewhat easy to understand	88	20.2
Somewhat hard to understand	76	34.7
Very hard to understand	16	29.4
Extent nutrition information help respondents select a product over another	**N =233**	
A lot	29	12.4
Quite a bit	119	51.1
A little	80	34.3
Not at all	5	2.1
Component of food label respondents check most	**N =233**	
Brand name	10	4.3
Manufacture/expiry date	92	39.5
Nutrition information	41	17.6
List of ingredients	25	10.7
Net content	3	1.3
Price of food	59	25.3
Health claims	3	1.3
Type of nutrients considered when buying labelled products	**N =233**	
Fat	71	30.5
Protein	22	9.4
Carbohydrate	69	29.6
Vitamins	12	5.2
Minerals	5	2.1
Cholesterol	23	9.9
Total calorie	2	.9
All	29	12.5

Consumers' reactions to health claims

Table 8 showed the consumers' level of reaction towards health claims. Products high in fat, sugar and cholesterol were avoided by 36.5%, 36.1% and 13.7% of the respondents respectively. Prevention of obesity (19.7%), cardiovascular disease (29.7%), diabetes (15.9%) and high blood pressure (21.0%) made them avoid those foods. A good number of the respondents often utilized foods products with low/no sugar (50.2%), low/no fat (63.5%), cholesterol free (41.6%) and sodium free (48.5%) health claims.

Table 8 Consumers' reactions to health claims

Variables	Frequency (N=233)	Percentage
Health claims that prompts product avoidance		
High fat content	85	36.5
High cholesterol content	32	13.7
High sugar content	84	36.1
High protein content	11	4.7
High vitamin content	8	3.4
High sodium content	12	5.2
All of the above	1	.4
Reason for avoiding them		
To avoid getting obese	46	19.7
To prevent cardiovascular diseases	65	27.9
To avoid risk of diabetes	37	15.9
To prevent high blood pressure	49	21.0
Do not like at all	36	15.5
Reactions to low sugar claims		
Avoid	24	10.3
Use sparingly	92	39.5
Use often	117	50.2
Reactions to high fat claims		
Avoid	124	53.2
Use sparingly	95	40.8
Use often	14	6.0
Reactions to low/no fat claims		
Avoid	5	2.1
Use sparingly	80	34.3
Use often	148	63.5
Reactions to cholesterol free health claims		
Avoid	17	7.3
Use sparingly	119	51.1
Use often	97	41.6
Reactions to low sodium/sodium free claims		
Avoid	11	4.7
Use sparingly	109	46.8
Use often	113	48.5

Influence of consumers knowledge and perception of food label on utilization

Results on the relationship between consumers' knowledge and perception of food label on food label utilization is shown in Table 9. Results showed a significant relationship exist between consumers food label knowledge and frequency of food label use (r =0.03; p = 0.001). This denotes a positive relationship, thus as food label knowledge increases, frequency of food label use increases as well.

Table 9   Influence of consumers' knowledge and perception of food label on utilization

Food label use variable	Statistic	Food label knowledge	Food label perception
Frequency of food label utilization	r	0.03**	-0.04
	p-value	0.01	0.58
Degree of understandability of food label information	r	-0.10.	0.11
	p-value	0.16	0.10
Extent of food label influence in food selection	r	-0.08	0.02
	p-value	0.25	0.78
Reactions to low sugar claims	r	-0.08	0.02
	p-value	0.25	0.78
Reactions to low fat claims	r	0.10	0.01
	p-value	0.13	0.24
Reactions to cholesterol free claims	r	0.10	0.03
	p-value	0.15	0.69

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

The involvement of more married (58.4%) and female (64.5%) respondents in this study is in agreement with reports from Falola (21) who observed that females (72.5%) and married (60.0%) constitute the bulk of the shoppers of pre-packaged foods that were interviewed in Lagos, Nigeria. This suggests that issues related to food buying and management were generally regarded as the function of females. Also according to Nayga (22), males who come to shop for food tend to be impatient. Furthermore marriage comes housekeeping responsibilities which includes; buying, preparing and serving food to family.

Trading (35.5%) was the predominant occupation of the respondents. Also the highest educational level attained was reported to be primary (30.5%) or secondary education (43.9%). This compares well with a study by Ukaegbu *et al*., (23) on female traders in a major city in South East, Nigeria which reported that 46.7% of them were SSCE holders. Similarly another study reported a preponderance of primary and secondary educational qualification among a group of traders and farmers in Ikosi-isheri, Lagos State (24). Findings from this study revealed that few (13.5%) of the respondents had good knowledge of food label. Similarly, studies done by Ukaegbu (25) and Olatona *et al*., (26) reported a low prevalence of "good" knowledge of food label among food shoppers in Aba (26.6%) and Lagos (5%), Nigeria. In contrast to study reports, findings from several countries reported that the percentage of respondents with "above average" or good food label knowledge ranged from 48-69% in UAE (27), India (28), China (29) and USA (14).

Study reports revealed a "below average" food label perception score of 3.45 out of a possible 8 marks. This reflected in the low percentage of respondents who perceived that nutrition information on food labels are trustworthy (30.5%), understandable (32.1%) and should be valued more than food price (22.1%). Contrary to study findings, other studies in Europe, the United States, and Australia (30-32) revealed that consumers have more confidence and trust in all elements of the food label in terms of regulations and standardizations, validity, legibility and clarity. This therefore serves a wake-up call for national regulatory bodies to ensure that food label information are regulated, clear and can be trusted so as to increase consumers' confidence in pre-packaged food products.

Most of the respondents sometimes/always (71.4%) check food labels during product purchase. This is consistent with reports from the developed countries which reported a food label use prevalence of 65%, 52% and 63% in Ireland, UK, and France respectively (33). Difficulty in understanding (6.5%), time wasting (3.4%) and small print size (2.7%) were reported as the barriers for food label utilization in this study. This corroborates with findings from several studies which highlighted that lack of nutrition knowledge (34), lack of interest (35), illegible prints (36-37), ambiguity of food label information (38) limited food label utilization.

Manufacture/expiry date (39.5%) followed by product price (25.3%) and nutrition information (17.6%) was reported as the most checked component of food label in this study. This slightly corroborates with a Ghanaian study which observed that consumers checked expiration date the most, followed by nutrition information and the ingredient list (39). Another study also reported that country of origin and price were the most important information considered by south Australian consumers (40).
In this study, the avoidance of pre-packaged products perceived to be high in fat, sugar and cholesterol by 36.5%, 36.1% and 13.7% of the food shoppers was geared towards the prevention of obesity (19.7%),

cardiovascular disease (29.7%), diabetes (15.9%) and high blood pressure (21.0%). The growing prevalence of these non-communicable diseases may have contributed to the increased the consciousness of nutrients associated with them (41). In agreement with study reports, consumers with health problems or at risk of certain health conditions are often prompted to look out for and react to associated health claims while shopping (41-43). The respondents reacted/utilized foods with low sugar. (50.2%), low fat (63.5%) and cholesterol free (41.6%) and sodium free (48.5%) claims. Similarly, studies in UK (44) and Ireland (45) have also reported, "low in fat' and 'plant sterols/cholesterol-free' as the common health claim which influenced consumers decision and reaction at the point of purchase. Consistent with study findings, a positive association between food label knowledge and utilization was also reported in other studies (46-47). Thus knowledge of food label empowers an individual to make healthier food choices by consciously checking food label information.

CONCLUSION
The food label knowledge and attitude score of the respondents are below average. Although most of the food shoppers checked food label information, manufacture/expiry date was the most checked component of food label. The positive correlation observed between food label knowledge and food label use frequency highlights the need to improve the consumers' level of awareness and knowledge of food label as it will influence utilization.

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DECLARATION
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