KNOWLEDGE AND ATTITUDE OF STUDENTS OF MIDDLE-LEVEL AGRICULTURAL INSTITUTIONS IN NIGERIA TOWARDS INFORMATION ON FOOD LABELS

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ABSTRACT

This cross-sectional study was carried out to evaluate the knowledge and attitude of students of middle-level agricultural institutions towards information on food labels. The multi-stage sampling technique involved, firstly, the selection of four (4) middle-level agricultural institutions located in Kaduna, Kogi and Zamfara States of Nigeria. Secondly, 226 students were randomly selected and interviewed using a structured questionnaire and data collected were analyzed using both descriptive and inferential statistics. The results showed that 56.2% of the respondents were male and 43.8% females, about 57% fell under the age cohort of 20-24 years. Majority of the respondents (87.6%) claimed to have knowledge of food labels, while the major source of information on same turned out to be the media. The regression analysis to establish relationship between the socio-demographic characteristics and knowledge and use of food labels indicated that some were statistically significant while some were not. Major constraints limiting the knowledge and use of food labels were identified and recommendations, including public sensitization and the enforcement of policy guidelines were proffered with a view to enhancing better knowledge and utilization of food labels among Nigerians.

Key words: *Knowledge Attitude Students Institutions Food labels*

INTRODUCTION

Globally, consumers are often inundated with a vast array of foods and dietary supplement products claiming to improve health, manage conditions and reduce disease risks. However, according to Turner (2005), most consumers are unaware of the legal requirements, regulatory processes and the scientific evaluation that underlie these label statements.

Essentially, food label is a nutritional panel placed on pre-packaged foods providing information on the nutritional content of the food. Labeling of foods and dietary supplements is regulated by regulatory bodies in specific countries such as the Food and Drug Administration (FDA) in the USA and National Agency for Food and Drug Administration and Control (NAFDAC) in Nigeria. Noteworthy is the fact that regulations over labeling cover three main types of health-related statements:

- Health claims of labels
- Structure/function claims, and
- Nutritional content claims

Nutrient content claims describe the level of a nutrient in a food. According to Turner *et al.*, (2005), by understanding the information on the food label and the regulatory framework

behind label statement and claims, consumers can be assisted in making informed and better decisions.

Interest in the health effect of foods by both industry and consumers has put a spotlight on the nutritional and health claims on foods (L'abbe, Dumais, Choa and Junkins, 2008). Establishing the evidence for health claims involves reviewing the available body of scientific knowledge and linking this to statement meaningful to consumers. This requires an understanding of scientific merit as well as common perceptions of health messages. According to Tapsell (2008), the increasing knowledge of the role of food components and its intelligent applications in dietary modification, disease prevention and management has made interpretation of food labels important and influential in healthful food choices.

One area that has amply helped in projecting the importance of nutrient content on food labels, is the growing prevalence of diet-related diseases. Government, retailers and food companies now promote nutritional labeling to help the consumer make healthy, informed food choices. In addition, World Health Organization (WHO) includes nutrition labeling as part of its global strategy on diet, physical activity and health (Bonsmann, Celein and Grunert , 2008). It is also important that the information provided be appropriate and understandable to the consumer and that it impacts food choice behaviours. Potentially, as posited by Wills Schmidt, Pillo-Blocka and Carins, (2009), food labeling represents a valuable tool to help consumers make informed choices about their diet and lifestyle.

A brief on middle-level Agricultural Institutions

These are intermediate level institutions that offer sub-degree agricultural education programmes aimed at producing the type of manpower required by the nation as technicians and technologists; it is essentially vocational education. According to Yabani (1990), this followed the Presidential directive in 1980 that all polytechnics and colleges of technology should revert to the two-tier type of technical education which should lead to the award of National Diploma (ND) and Higher National Diploma (HND).

Problem Statement and Objectives of the Study

Undoubtedly, consumers demand for high quality food has been on the increase in the Western world. Wills *et al.*, (2009) posit that this is as a result of their increased knowledge of the link between diet and health.

Unfortunately, same cannot be said of most consumers in the developing countries including Nigeria, where the consciousness of food safety and quality has just begun to emerge. A corollary of this, according to Oni Oladele and Inedia, (2006) is that knowledge and use of nutrient content of foods including food labels are more like the prerogatives of the elite and affluent.

The prevalence of diet-related diseases such as obesity, diabetes, hypertension, cancers and other challenges of food safety are on the increase. Mensah, Manu, Darko, Abiordey, (2002) stated that food borne illnesses is a major health problem and a factor of reduced economic growth. In any given communities, a large proportion of ready to eat foods are sold on the streets and people who depend on these foods are more concerned about its convenience rather than nutrition and safety (Mensah *et al.*, 2002).

In order to gain understanding on how to enhance consumer ability to make healthful and balanced diet choices using nutritional food labels, a study of this nature needs to be carried out. What better choice of study participants than middle-level agricultural students considering their mandate to reach out to rural communities and positively impact livelihoods. Also, the study is particularly apt to students considering their general predisposition to fast and pre-packaged foods due to pressure of academic engagements. Based on the foregoing, the following research questions emerge:

i. What are the socio-demographic characteristics of the respondents?
ii. What is the level of awareness/depth of knowledge of food labels among middle-level agricultural students?
iii. What is the attitude of the respondents regarding the knowledge and use of food labels?
iv. What factors mitigate the understanding and effective utilization of food labels among the students?

The broad objective of the study was to assess the knowledge and attitude of students of middle-level agricultural institutions in Nigeria towards information on food labels. The specific objectives were to:

i. Describe the socio-demographic characteristics of the study participants.
ii. Assess the knowledge and use of food labels among the respondents.
iii. Determine the socio-demographic variables that influence knowledge and use of food labels.
iv. Identify major constrains to food label usage among the respondents.

METHODOLOGY

A multi-stage sampling technique was used for the study. Firstly, four middle-level agricultural institutions located in Kaduna, Kogi and Zamfara States of Nigeria were randomly selected. Secondly, 240 students, representing 15% of the sample frame of 1620 were randomly selected and interviewed using a structured questionnaire.

At the end of the exercise, 226 questionnaires (94.2%) were duly completed and returned and was the sample size for the study as shown in table 1:

Table 1: Distribution of Respondents According to Institution

S/N	Institution	State	Questionnaire administered	Questionnaire returned
1	Samara College of Agriculture	Kaduna	60	58
2	College of Forest Mechanization, Afaka	Kaduna	60	60
3.	College of Agriculture, Bakura	Zamfara	60	53
4.	Kabba College of Agriculture, Kabba	Kogi	60	55
	Total		**240**	**226***

Source: Survey data (2015)
Note: *Retrieval rate = 94.2%

Data generated were analyzed using descriptive statistics, 4 point Likert-type scale and logit regression analysis. The Likert-type scale had strongly agree (SA) =4, Agree (A) =3, Disagree (D) =2 and Strongly Disagree (SD) =1. The explicit logit model is expressed as

$$Y = B_o + B_1X_1 + B_2 X_2 + \ldots + B_5X_5 + U$$

Where Y = Knowledge of food label (1=have knowledge, 0= No knowledge)

X_1 =   Sex

X_2 =   Age

X_3 =   Tier/level of study (2=HND, 1 =ND)

X_4 =   Tribe

X_5 =   Religion

B_1-B_5 =   Coefficients

U   =   error term

RESULTS AND DISCUSSION

Results of the data collected and analyzed are discussed under the following sub-headings:

- Socio-demographic characteristics of the respondents
- Level of knowledge and sources of information
- Attitude and perception of respondents towards food labels
- Determinants of knowledge and use of food labels.
- Constraints limiting the knowledge and use of food labels.

Socio-Demographic Characteristics of the Respondents

Relevant socio-demographic characteristics of the respondents highlighted in this study include sex, age, level of study, tribe and religion. The results are shown in table 2 as follows:

Table 2: Distribution of Students Based on Socio-demographic characteristics

Characteristics	Frequency (N=226)	Percentage (%)
Sex		
Male	127	56.2
Female	99	43.8
Age		
<20 years	51	22.6
20-24 years	121	53.5
25-29 years	38	16.8
>30 years	16	7.1
Mean	**22.9 years**	
Tier/level of study		
National Diploma (ND)	138	61.1

Higher National Diploma (HND)	88	38.9
Tribe		
Hausa	64	28.3
Ibo	28	12.4
Yoruba	45	19.9
Others	89	39.4
Religion		
Christianity	122	54.0
Islam	104	46.0
Others	-	-

Source: Survey data (2015)

The results in table 2 showed that 56.2% of the respondents were males while 43.8% were females. On age, majority of the respondents (53.5%) fell into the age cohort of 20-24 years. Still on age, about 23% were below 20 years of age while only 16 of them (7.1%) were about 30 years. The mean age for the sample was found to be 22.9 years. This is not surprising since the student body is made up of youths and is consistent with the age profile of respondents in a study by Talas *et al.*, (2013). Regarding the level of study, majority of the respondents (61.1%) were National Diploma (ND) students while the remaining 38.9% were on their Higher National Diploma (HND) programmes.

Distribution of the respondents by tribe showed that most of the respondents (39.4%) were not from the three major tribes of Hausa, Ibo and Yoruba. Of the three major tribes, Hausa had the most frequency accounting for 28.3% of the sample followed by Yoruba (19.9%) and Ibo (12.4%). Similarly, the distribution of respondents based on religion showed that Christianity had 54% while Islam had 46%. No respondent in the sample identified with any other religion outside these two.

Knowledge and Sources of Information on Food Labels

The study sought to ascertain in the first instance, whether the respondents had general knowledge about the existence of food labels. Their responses are shown in table 3 as follows:

Table 3: Respondents General Knowledge of Food Labels

Knowledge status	Frequency	Percentage (%)
Yes	212	93.8
No	14	6.2
Total	**226**	**100**
Chi-square statistics		**173.46**

Source: Survey data (2015)

Interestingly, majority of the respondents (93.8%) claimed to know what a food label is, while a dismal 6.2% claimed not have knowledge of food labels. The high level of awareness must be attributed to the fact that these were students of a tertiary academic institution.

The study probed further to elicit the depth of knowledge of the respondents regarding the contents of food labels. Their responses in this respect are shown in table 4.

Table 4: Distribution of Respondents Based on Knowledge of Content of Food Labels

Understanding of content of food labels	Frequency	Percentage (%)
Nutrition information placed on pre-packaged foods	118	52.2

Sticker placed to show name of manufacturer	38	16.8
Label showing manufacturing and expiry dates		
	52	23.0
The seal of registration		
Name of the food	4	1.8
Total	14	6.2
	226	**100**

Source: Survey data (2015)

Results shown in table 4 revealed that majority of the respondents (52.2%) had knowledge of food labels as nutrition information placed on pre-packaged foods. This was considered a reasonable proportion of the sample and was followed by the respondents (23%) who define it as a label showing manufacturing and expiry date. The third group of respondents (16.8%) defined food labels as just showing the name of the manufacturers. A small percentage of the respondents (6.2%) considered food labels as the name of the food while the remaining 1.8% considered it as the seal of registration. The high level of knowledge exhibited by majority of the respondents in this study (52.2%) is consistent with the findings of Codex (2003) and Oni *et al.*, (2006) who found that literate respondents tended to have better knowledge and understanding of the nutrition information on food labels.

About the sources of information affecting knowledge and understanding of food labels, the use of media ranked highest followed by other sources as shown in table 5:

Table 5: Sources of Information About Food Labels

Sources of Information	Frequency	Percentage (%)
School	37	16.4
Media (electronic and print)	79	24.5
Friends	58	25.7
Family	42	18.6
Nutrition/health clinic	11	4.8
Total	**226**	**100**

Source: Survey data (2015)

Besides electronic and print media, schools, friends and family constituted other sources of information on food labels accounting for 1.4%, 25.7% and 18.6% of the respondents respectively. Unexpectedly, the nutrition/health clinic contributed the least to the knowledge of respondents with a percentage of 4.8.

Attitude of Respondents to Information on Food Labels

Regarding the attitude of respondents to information on food labels, the study sought to know the percentage of respondents that checked information on food labels and the regularity with which they did so. Their responses are shown in table 6 as follows:

Table 6: Respondents Check on Information on Food Labels and Regularity of Checks

Parameter	Frequency	Percentage (%)
1. **Checked information on food labels**		
Yes	205	90.7
No	21	9.3
Total	**226**	**100**
2. **Regularity of checks on food labels**		
Always	94	41.6
Occasionally	111	49.1
Rarely	21	9.3
Total	**226**	**100**

Source: Survey data (2015)

Results in table 6 indicated that majority of the respondents (90.7%) checked and read information on food labels, while 9.3% of them did not check or read food labels. On the regularity of such checks, however, the study revealed that 41.6% of the students checked and read food labels always, while almost half of the sample (49.1%) did that occasionally. About 9% of the respondents neither checked nor read information on food labels. These findings are in agreement with those of Falola (2012) on 'Food label use among Nigerians'.

On the importance of information on food labels, the attitude and perception of the respondents were assessed based on a 4-point Likert-type scale of "strongly agree" (SA), Agree (A), "Disagree" (D) and Strongly Disagree (SD) with 4,3,2 and 1 weighting points respectively.

Table 7: Respondents Assessment of Importance of Information on Food Label

S/N	Item	SA	A	D	SD	$\bar{X}$
1	To check health information on food labels	248	201	102	43	2.66*
2.	Declaration of nutrient contents of foods	348	252	70	20	3.05*
3.	Helps to distinguish products from their competitors	64	99	174	90	1.58
4.	To recognize manufacturers and type of food	100	147	146	79	2.09
5.	Increases consumers understanding of nutrient values	272	279	78	26	2.89*
6.	Attractiveness of the food labels	36	42	198	104	1.68

Source: Survey data, (2015)
Note: *Agreed (mean$\geq$2.5)

The result in table 7 showed that the respondents agreed with items 1, 2 and 5 with means of 2.66, 3.05 and 2.89 respectively; with means greater than the mean score of 2.5. These items relate to information on food labels having to do with health information, nutrient content and nutrient values which are all factored to the essence of food labels. On the other hand, items 3, 4 and 6 had means below the mean score of 2.5 implying that the respondents disagreed with the items being of much importance in the knowledge and utilization of food labels. These findings corroborate those of Falola (2013) and Mensah *et al.*, (2002) regarding the perception of importance of information on food labels.

Socio-demographic determinants of knowledge and use of food labels

The socio-demographic characteristics of sex, age, level of study, tribe and religion were regressed to establish if any relationship existed between them and the knowledge and use of food labels. The results of the regression analysis are shown in table 8 as follows:

Table 8: Results of Logit Regression Analysis of Socio-demographic characteristics of Respondents

Variable	Regression coefficient	Std. Error	Remarks
Sex	0.310	0.016	*
Age	0.163	0.213	NS
Tier/level of study	-0.340	0.008	**
Tribe	0.264	0.064	NS
Religion	-0.022	0.018	NS

Source: Survey data, (2015)

Note: * Correlation significant at 0.05 level

** Correlation significant at 0.01 level

NS = Not Significant, R^2 = 0.481

Regarding the relationship between socio-demographic characteristics and knowledge of use of food labels, sex and tier of study were significant at 0.05 and 0.01 levels of probability respectively. Conversely, age, tribe and religion did not correlate significant with the knowledge and use of food labels. The result that female students made more use of food labels is in agreement with the findings of Oni *et al.*, (2006) in their study of potassium bromated in bread.

Constraints Limiting Knowledge and Use of Food Labels

The study sought to elicit from the respondent the major constraints that limited their knowledge and utilization of food labels. Their responses are shown in table 9 as follows:

Table 9: Distribution of Respondent Based on Constraints Limiting the Knowledge and Use of Food Labels Always

Constraints	Frequency	Percentage	Rank
Difficulty in interpreting food labels	93	23.8	2nd
Lack of time	169	41.9	1st
Smallness and ineligibility of prints on food labels	48	12.3	3rd
Do not have health issue	12	3.1	6th
Obscure/odd positioning of food labels	41	10.5	4th
Of no importance	33	8.4	5th
Total	**391***	**100**	

Source: Survey data, (2015)

Note: * Multiple responses

The major constraint identified by the respondents (40.9%) as limiting the knowledge and use of food labels was 'no time'. This is contrary to the findings of Anita *et al.*, (2011) in which their respondent fingered difficulty in interpreting food labels as the most limiting constraint. Understandably, this being a student population, the respondents considered pressing academic schedule they had to contend with as impinging on their liberty to check and use food labels.. Time was followed by difficulty in interpreting food labels (23.8%) and ineligibility of prints on labels (12.3%). The fourth factor was the positioning of food labels (10.5%). Apparently, not considering food labels important (8.4%) and not having health issues (3.1%) which ranked 5th and 6th respectively were not considered serious constraints to the use of food labels by the respondents in the study.

Conclusion and Recommendations

Considering the importance of nutrition information in the choice of food and diet related issues, the relevance of food labels cannot be over-emphasized. It is interesting to note that a large proportion of the respondents in this study (93.8%) had general knowledge of food labels. However, the percentage of the respondents who actually understood the content of food labels as nutrition information was barely half (52.2%) of the sample. Similarly, the percentage of the sample that checked information on food labels always was low at 41.6% while those who checked occasionally was 49.1%.

On the perception and attitude of the respondents regarding the importance of information on food labels, the study found a generally positive attitude. This was confirmed by the mean scores (>2.5) of those who agreed with the items relating to information on nutrient content of food labels. Regarding the relationship between the socio-demographic characteristics of the respondents and the knowledge and use of food labels only sex and tier of study were found to be statistically significant at 1% level of probability. Age, tribe and religion did not show any influence on knowledge and use of information on food labels.

In view of the constraints identified as limiting the knowledge and use of food labels, the following recommendations have been proffered to enhance better knowledge and use of food labels by consumers:

1. There is need to enlighten and sensitize the consuming public to the importance of utilizing information on food labels. This will ensure healthful food choices and better understanding of nutrition composition of foods.
2. Regulating agencies should enforce general compliance by manufacturers of foods and food supplements to have all relevant information on food labels. Cases of incomplete, inaccurate or total absence of required information on food labels should be discouraged.
3. Constraints relating to the positioning and ineligibility of food labels should be addressed by making them more conspicuous and eligible. This will take care of all cadres of consumers especially the aged and visually impaired.

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