Use of Food labels by students in Public Universities in Akwa Ibom State, Nigeria.

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ABSTRACT

Food labels are found to be a very important public health tool that is used to promote a balanced diet and enhance public health and well-being. This study employed a cross-sectional design to explore the use of food labels by students in Public Universities in Akwa Ibom State, Nigeria. A sample size of one hundred and eighty-two (182) was obtained using a two-stage sampling technique. Specifically, the study described the frequency of reading specific information on food labels by the students in the universities. It, additionally, determined the prevalence, mean margin and intensity of use of food labels by the students in the universities. Lastly, it assessed the perception of the use of food labels by students in the universities. More respondents were males (54.40%) with ages ranging between 15-20years, 95% are single and reside within the campus with an annual income of ≤N20000 (65%). The most frequently read item was the name on the food labels. The percentage prevalence of those that read food labels is 40.11%, using the mean as a critical index while the disaggregated mean prevalence implied a gap of four items between those that use food labels and those that do not. The mean margin of students who read food labels using mean *ufli* as the critical index reports a gap of about three (3) items between respondents that use food labels and those on the threshold of using food labels. Price was perceived to be the most important item read. The study recommends use-specific programmes, anchored by government and non-governmental organisations to bridge the gap between those that use and those that do not use food labels.

Key Words. Prevalence, margin, intensity, food labels, Nigeria.

1. INTRODUCTION

According to World Health Organization (WHO, 2009), food labelling includes any written, printed or graphic materials that are present on the label, accompany the food or is displayed near the food including that to promote its sale or disposal. The South African regulation relating to labelling and adverting of foodstuff also defines a food label as any tag, brand, printed, stencilled, marked, embossed, impressed upon or permanently attached to a container of foodstuff and includes labelling to promote its sale or disposal. Additionally, Mahdavi et al. (2012) defined food labelling as any word, particulars, trademark, brand names, pictorial

matters or symbol relating to foodstuff and placed on any packaging document, notice, a ring or collar accompanying or referring to such foodstuff.

National Codex Committee (NCC) was established in Nigeria in 1973 (reconstituted in 2012) to address matters bordering on codex and other regional standards on composition, safety, labelling, analysis and marketing of foods. Notably, a crucial way through which this information can be made available is food labelling. Hence, labels can help to mitigate health risks by increasing the probability of consumers making better food purchase decisions and consequently, reaching for healthier eating dynamics (Grunert & Wills, 2007). Needless to say, labels, when used appropriately can potentially bridge the health information gap between producers and consumers which, in turn, helps the consumers to make well-informed eating choices (Loureiro & McCluskey, 2000).

Food labelling is considered a population-based approach and if well designed can potentially have a positive influence on the diet of students and therefore contribute to the achievement of public health objectives (Opara & Madukosiri, 2016). Students' spell in university is a prime occasion for erudition, and it has the potential to boost students' nutrition-related knowledge, attitudes, and attendant actions. This is because this phase is usually transitional and predisposes students to make uninformed dietary choices which could result in alarming health issues (Mannir et al., 2021). Globally, studies on the use of nutrition labels have run the gamut from determining the frequency of use of labels among students in Louisianna (Mclean-Meyinsse et al., 2011;) to factors influencing the use of nutrition labels among tertiary students in Malaysia (Norazlanshah et al., 2012). These studies, still on the global frontier, have also included examining the knowledge and frequency of use of nutrition labels by students in India (Jain et al., 2018); and what kinds of information on labels are actually of interest and in use by consumers in Italy (Banterle et al., 2012). Such studies are, therefore, crucial to realizing the sustainable development goal of good health and well-being by making the available empirical basis for the achievement of related sub-objectives (Adesina et al., 2022). In the Nigerian context, however, there is an observable dearth of contemporary studies relating to the use of food labels that zero in on tertiary students; moreso in the South-East region.

Studies carried out on the use of food labels in Nigeria (Danilola et al., 2019; Ezeh & Ezeh, 2014; Falola, 2014; Oghojafor et al., 2012; Olatona et al., 2019; Opara & Madukosiri, 2016) have included but should not be limited to examining the frequency of use and use of food labels, determining the factors influencing the use of food labels, highlighting the challenges of the use of food labels. There is also a noticeable dearth of studies on the use of food labels among undergraduates. This study, in an attempt to bridge the stated gaps, offers a more incisive description of the use of food labels. It does this by, on an additional note, computing the prevalence, margin and intensity of food labels rather than only the frequency of use and other recurrent indices in literature.

2. MATERIALS AND METHODS
2.1 Description of Study Area
The study assessed the use of food labels by students in public universities in Akwa Ibom State, which are the university of Uyo and Akwa Ibom State University. The study will be conducted in Akwa Ibom State. The State is located in the South-South geopolitical and Southeast ecological zones of Nigeria. It is one of the Niger Delta States. The State lies between 4º33" and 5º33" North latitudes, and 7º35" and 8º25 East longitudes. The estimated total area is put at 7,245,935km^2 and has a shoreline of 129km on the Atlantic Ocean to the South. It shares borders with Cross River State to the East, Abia State to the North, and Rivers State to the West (Uwatt, 2000).

University of Uyo (UNIUYO) was formerly known as the University of Cross Rivers state (UNICROSS). On October 1, 1991, the federal government of Nigeria established it as a Federal University, inherited students, staff, academic programmes and the entire facilities of the erstwhile University of Cross River state. UNIUYO has twelve (12) faculties, the Postgraduate School and the School of Continuing Education. It is located in heart of Uyo, capital of Akwa Ibom State, Nigeria. The total population of the students is twenty-nine thousand (29,000). The university operates from four campuses namely: Permanent site/main campus, Town campus, Annex campus and Ime Umana Campus, Ediene Abak. The university has twelve (12) faculties and continuing education. The faculties are as follows: Faculty of Agriculture, Faculty of Arts, Faculty of Basic Medical Sciences, Faculty of Business Administration, Faculty of Environmental Studies, Faculty of Science, Faculty of Clinical Science, Faculty of Law, Faculty of Education, Faculty of Environmental Studies, Faculty of Social Science, Faculty of Pharmacy, Faculty of Engineering and Continuing education.

Akwa Ibom State University was conceived and funded by the Akwa Ibom State Government on October 18, 2000, which was then called university of technology (AKUTECH). The University opened its doors to its students in 2010/2011. The total population of the students is nine thousand (9,000). The university operates from two campuses, main campus located at Mkpat Enin and a second campus located at Obio Akpa Oruk Anam Local Government in Akwa Ibom State. The university has seven (7) faculties. Faculty of Engineering, Faculty of Natural and Applied Sciences, Faculty of Education, Faculty of Agriculture, Faculty of Social and Management Sciences, Faculty of Arts.

2.2 Sampling Size and Technique

The sample size was obtained using the formula below:

From Cochran's formula below

$$N = \frac{NX}{(X+N-1)}$$

Where N= Population number

$$X = \frac{Z_{a/2}^2 * P * (1-p)}{MOE^2}$$

$Z_{a/2}^2$ = Critical value of the normal distribution at a/2 (e.g for a confidence interval of 95%; a is 0.05 and the critical value is 1.96)

MOE = Margin of error = 5% (0.05)

P = Sample Proportion = 50% (0.5)

N = Population Size; N for UNIUYO = 29000; N for AKSU = 9000

First, we solve for X by substituting it for $Z_{a/2}^2$; p, (1-p) and MOE as follows:

$$X = \frac{1.96^2 * 0.5 * 0.5}{(0.05)2}$$

$$= \frac{0.9604}{0.0025}$$

$$= 384.$$

The recommended Sample size for UNIUYO is, hence, obtained as follows by simply substituting for X and N as follows:

Sample size (n) for UNIUYO $= \dfrac{29000 * 384}{(384+29000-1)}$

$= \dfrac{11,13600}{29383}$

$= 378$

$\cong 380$

Recommended Sample size for AKSU is, hence, obtained as follows by simply substituting for X and N.

Sample size (n) for AKSU $= \dfrac{9000 * 384}{(384+9000-1)}$

$= \dfrac{3456000}{9383}$

$= 368.3$

$\cong 368$

From the formula above, the recommended sample sizes for UNIUYO and AKSU were 380 and 362 respectively. These values were obtained with a margin of error (5%), confidence interval (95%) and a sample proportion of 50 %. However, due to the restriction of finances, the researcher opted to use ¼ of recommended sample sizes for both UNIUYO and AKSU. This now slashed the sample sizes to be obtained to 95 and 90 for UNIUYO and AKSU respectively.

A two-stage procedure was employed in sampling. To obtain this sample size given equal opportunity of being sampled was given to each faculty. Four (4) faculties namely: Faculty of Agriculture, Faculty of Arts, Faculty of Engineering and Faculty of Education, were randomly selected from seven (7) faculties in AKSU (across both campuses). Six (6) faculties (Faculty of Law, Faculty of Arts, Faculty of Agriculture, Faculty of Education, Faculty of Engineering, Faculty of Management) were randomly selected from twelve faculties in UNIUYO giving a total of ten (10) faculties. In AKSU, twenty-five (25) students each were randomly selected from each of the four (4) faculties, giving a total of one hundred (100) students. This was to make allowance for improperly filled questionnaires. Eighty-eight (88) questionnaires were properly filled and data coded for subsequent analysis. In UNIUYO, eighteen (18) students were randomly sampled from each of the six (6) faculties giving a total of one hundred and eight (108). However, about ninety-four (94) questionnaires were well filled and suited for data coding and subsequent analysis. Hence a total of one hundred and eighty-two (182) students were used for this study.

2.3   Analytical Framework

The analytical framework adapts and modifies the measures of prevalence, margin and intensity employed by Udoh and Udoh (2020) in describing the prevalence, margin and intensity of dietary diversity of households in Akwa Ibom State.

2.3.1 Use of Food Labels Score (*ufls*): This is the number of items a student reports that he reads, expressed as a proportion of the total number of items ten (10) presented in Table 3.6. These items were drawn from empirical literature (Danilola et al., 2019; Pal Kaur et al., 2016) It is, therefore, a figure that lies between 0 and 1 and $^0/_{10}$, $^1/_{10}$, $^2/_{10}$… $^{10}/_0$.

2.3.2 Use and Non-Use of Food Labels (threshold score): Threshold scores are used in this study to dichotomize respondents into those who use food labels and those who do not. These

scores are the mean use of food labels score and two-thirds (2/3) of the mean use of food label score. This simply means that students with values below the threshold score are said to not use food labels whereas those with scores above and equal to the critical scores are said to use food labels.

2.3.3 Prevalence

Percentage Prevalence: This first measure of prevalence is simply the percentage of students who do not use (fall below threshold scores) and use (above and equal to) food labels. The measure uses an indicator function that takes on a value of 1 for students that do not use and use food labels alternately and expresses it as a proportion of the total number of students. Additionally, multiplying these values by a hundred (100) gives the percentage prevalence. This measure is obtained as seen in equations 1 and 2. Equations 1 and 2 show the percentage prevalence, using the mean as threshold score, for those who do not use food labels and those who do respectively.

Using mean as threshold score:

$$ufli_{pp} = \sum_{i=1}^{N} 1(ufli < \overline{ufli}) \frac{1}{N} \dots\dots\dots\dots\dots\dots\dots\dots .1$$

$$ufli_{pp} = \sum_{i=1}^{N} 1(ufli \geq \overline{ufli}) \frac{1}{N} \dots\dots\dots\dots\dots\dots\dots\dots .2$$

Where N = total number of students

$\overline{ufli}) = mean\ use\ of\ food\ label\ index$

$ufli_{pp} = percentage\ prevalence\ of\ use\ of\ food\ labels$

N/B: Percentage prevalence was similarly obtained using two-thirds of the mean *ufli* as the threshold score.

Disaggregated Mean Prevalence: This is a mean computed based on actual values of use of food label score (as opposed to the use of an indicator function that assigns one (1) to the student that does not use and use food labels). It calculates the mean prevalence for two disaggregated groups- those that use and do not use the food labels. Multiplying the values of the disaggregated mean prevalence by ten (10), the total number of label items presented gives the number of label items students termed to not use and use food labels look for. Additionally, from this measure, the exact gap in the use of food labels between students who do not use and use food labels can be derived. This gap is the extra number of items on the list that the students should read to be termed as those who use food labels. This measure is given as indicated by equations 3 and 4. Equations 3 and 4 show the disaggregated mean prevalence, using the mean as a threshold score, for those who do not use food labels and those who do respectively.

$$ufli_{pa} = \sum_{i=1}^{N} ufli < \overline{ufli}) \frac{1}{n} \dots\dots\dots\dots\dots\dots\dots\dots .3$$

n = number of students with $ufli < \overline{ufli}$.

$$ufli_{pa} = \sum_{i=1}^{N} (ufli \geq \overline{ufli}) \frac{1}{n} \dots\dots\dots\dots\dots\dots\dots\dots .4$$

n = number of students with $ufli \geq \overline{ufli}$

Where $ufli_{pa} = disaggregated\ mean\ prevalence$

N/B: Disaggregated mean prevalence was similarly obtained using two-thirds of the mean *ufli* as threshold score.

2.3.4 Mean Margin

This is essentially a deviation from the threshold scores computed based on the total number of students, N and those who do not use food labels, n. The rationale for this is that number of students that do not use food labels prove the basis for recommendation in terms of targeted (geared only at household that does use food labels) and untargeted geared at all students in the universities whether they use or do not use food labels. It measures the gap between the students who do not use and those who use food labels, assuming that students who use food labels have *ufli* values exactly equal to the threshold scores. By implication, multiplying this measure by the total number of items presented gives the value by which the use of food labels scores of the population should be increased to ensure all students use food labels, i.e have a score exactly equal to the threshold score. This measure is obtained as shown in Equations 5 and 6. Equations 5 and 6 show the mean margin as a proportion of the total number of students, N and as a proportion of only those who do not use food labels, n respectively. These equations (5 and 6) use the mean as a threshold score.

Using the mean as a critical index:

$$ufli_{mm} = \sum_{i=1}^{N} (\overline{ufli} - < \overline{ufli}) \frac{1}{N} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.5$$

N = total number of students

$$ufli_{mm} = \sum_{i=1}^{N} (\overline{ufli} - < \overline{ufli}) \frac{1}{n} \dots\dots\dots\dots\dots\dots\dots\dots\dots 6$$

n = number of students with $ufli < \overline{ufli}$

where $ufli_{mm} = mean\ margin\ of\ use of\ food\ labels$

n = number of students with $ufli < {}^{2}/_{3}\ \overline{ufli}$

N/B: Mean margin was similarly obtained using two-thirds of the mean *ufli* as threshold score.

2.3.5 Intensity
This measures the extremity of the deviation from the threshold scores. A higher value of intensity suggests a more extreme deviation from the threshold score and by implication a greater gap between respondents who use and those who do not use food labels. It is expressed in terms of mean margin and the mean proportionate margin.

Intensity of the mean margin: This is given as presented in equations 7 and 8. Equations 7 and 8 show the intensity of the mean margin as a proportion of the total number of students, N and as a proportion of only those who do not use food labels, n respectively. These equations (7 and 8) use the mean as a threshold score.
Using the mean as a critical index:

$$ufli_{imm} = \sum_{i=1}^{N} (\overline{ufli} - <\overline{ufli}) \frac{1}{N})^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..7$$

N = total number of students

$$ufli_{imm} = \sum_{i=1}^{N} (\overline{ufli} - <\overline{ufli}) \frac{1}{n})^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 8$$

n = number of students with $ufli < \overline{ufli}$

where $ufli_{imm} = intensity\ of\ the\ mean\ margin\ of\ use\ of\ food\ labels$

N/B: Intensity of the mean margin was similarly obtained using two-thirds of the mean *ufli* as the threshold score.

2.3.6 Perception of Use of Food Labels:

In assessing the perception of the use of food labels by students in the public universities, the decision criterion taken as the mean value of two (2) is obtained as follows: (1+2+3)/**3** where 1, 2 and 3 capture the degrees of importance: not important (1), important (2) and very important (3). The three (**3**) in bold relief refer to the fact that the Likert scale had three points-not important, important and very important. Based on this decision value, any mean value above two (2) implies that the label item is important and a value below 2 means it is not important.

3. RESULTS

3.1 Frequency Distribution of Socio-Economic Characteristics

Table 3.1 reports the frequency distribution of the socio-economic characteristics of the students in public universities in Akwa Ibom state. The results (Table 3.1) revealed that (43.96%) of the students were within the age bracket of 15-20years, 36.81% were within the age bracket of 21-25 years and (19.23%) were within 27years and above.

Table 3.1: Frequency Distribution of Socio-economic Characteristics

Variables	Frequency	Percentage
Age		
15-20	80	43.96
21-26	67	36.81
>27	35	19.23
Total	**182**	**100.0**
Sex		
Male	99	54.40
Female	83	45.60
Total	**182**	**100.00**
Marital Status		
Single	174	95.60
Married	5	2.75
Divorced	3	1.65
Total	**182**	**100**
Residence		
Within Campus	119	65.38
Off Campus	63	34.62
Total	**182**	**100**
Monthly Allowance		
≤ 20000	127	69.78
21000 – 40000	42	23.07
41000 – 60000	8	4.40
61000 – 80000	1	0.55
81000 – 100000	2	1.10
➢ 100000	2	1.10
Total	**182**	**100**

Source:

Field survey. (2019).

Results (Table 3.1) further showed that the majority of the students 95.65% were single, 2.75% were married, and 1.65% were divorced. Furthermore, results (Table 3.1) indicated that the majority of the student with (65.38%) resides within the campus, and 34.62% resides off-campus. This indicates that student living within the campus mostly consume packaged food that are labelled. Table, 3.1, reveals that the majority of the respondent 69.78% had an annual income of N20,000, 23.07% had an annual income that ranges between N21000-40000, and 4.40% had an annual income that ranged between N61000-80000,1.10% had an annual income that ranges between N81000-100000.

3.2 Frequency of Use of Specific Information on Food Labels.

Table 3.2 reports the frequency of use of specific information on food labels by students in public universities in Akwa Ibom state. Descriptive statistics (Table 3.2) showed that the majority of the student frequently checked the following items on food labels in descending order: the name of the food on the food labels is the most checked, followed by the price of the food on the labels; nutritional information and country of origin were at the same range, manufacturing date and expiry date, list of ingredient and instruction for use, brand name, net

content. Essentially, more than eight out of ten respondents specifically sought information on the name of food, price and storage information. Additionally, more than half of the respondents checked the list of ingredients, manufacturing and expiry date, nutritional information; and country of origin.

Table 3.2: Frequency of Use of specific Information on Food Labels by Students in Public Universities in Akwa Ibom State.

S/N	Food Label Information	Frequency	Percentage	Rank
1	Name of food	160	87.91	1st
2	Price	158	86.81	2nd
3	Storage Information	150	82.42	3rd
4	Country of Origin	101	55.49	4th
5	Nutritional Information	101	55.49	4th
6	Manufacturing and Expiry date	97	53.30	5th
7	List of Ingredients	95	52.20	6th
8	Instructions for use	77	42.31	7th
9	Brand Name	73	40.11	8th
10	Net Content	70	38.46	9th

Source**:** *Field survey*. (2019).

3.3 Prevalence of Use of Food Labels

Percentage prevalence (Table 3.3) shows that using mean ufli as a critical index, 0.6, 59.89% of students in Public Universities use food labels. Similarly, taking 2/3 of the mean, 0.4, as a critical index 81.32% of students use food labels. Additionally, this table shows that disaggregating the students into those that use food labels and those who do not, the respective mean *ufli* are 0.35 and 0.80, given the mean *ufli*, 0.6, as a critical score. This implies those who do not use food labels typically check about 4 items on the label and those who do observe 8 items, thus creating a precise picture of the population in terms of the two named categories. Incorporating the values of the percentage prevalence, it can be surmised that 40.11% and 59.89% of students check four (4) and eight (8) label items respectively. This further suggests that the exact gap in the use of food labels by students who do not use and who use food labels is four (4) food label items. This means that for all students to use food labels, those who do not should read four extra items on the list. In a similar vein, given 2/3 of the mean as the critical index, the mean for those who do not use food labels and those who do are 0.24 and 0.7 respectively. This means that, at a critical index of 0.4, students said to not use food labels and check information about two (2) items and those who do peruse the information on 7 items. The values of the percentage prevalence additionally suggest that 18.68% and 81.32% check two (2) and seven (7) items on food labels respectively. This additionally implies that the precise gap between students who do not use and those who use food labels is five (5) label items. This gap could, therefore, be bridged by students being encouraged to view this additional number of items on the list.

Table 3.3: Prevalence of Use of Food Labels by Students in Public Universities in Akwa Ibom State.

	Percentage Prevalence		Disaggregated mean Prevalence	
Critical Indices	<Critical Index	≥Critical Index	<Critical Index	≥Critical Index
0.6	40.11	59.89	0.35	0.80
0.4	18.68	81.32	0.24	0.71

Source**:** *Field survey*. (2019).

3.4   Margin of Use of Food labels

The mean margin, as seen in Table 3.4, expresses the average gap between students who use food labels and those who do not, with the specific assumption that those who do not use food labels have a *ufli* score equal to the threshold score in consideration. Given the mean and 2/3 of the mean as critical indices, the mean margin is 0.25 and 0.16, if the mean gap is obtained as a proportion of only those who do not use food labels. These figures imply that students who do not use food labels will need to observe about three more items and two more items respectively on the label to be moved into the group of those who do use labels, specifically assuming that only the students who do not use these labels are encouraged to do so. This can be achieved by programmes, governmental and non-governmental, that emphasize the importance of the least read items on the list. On the other hand, the figures 0.10; 0.03 capture the mean margin as a proportion of the entire student body-those who use food labels and those who do not, given the mean and 2/3 of the mean as critical indices. These figures could mean that for all students to be moved into the category of those who use food labels they would, respectively need to carry out an extra one practice and nil practice, given the mean and 2/3 of the mean as critical indices.

Table 4: Margin of Use of Food labels by Students in Public Universities in Akwa Ibom State

	Mean Margin	
Critical Indices	n	N
0.6	0.25	0.10
0.4	0.16	0.03

Source**:** *Field survey*. (2019).

3.5   Intensity of Food Labels Use

The intensity of the margin, Table 3.5, whether of the mean margin or the mean proportionate margin measures the severity of the gap between the students who use labels and those who do not. From Table 3.5, the figures, given the mean and 2/3 of the mean as the respective critical indices, 0.08 and 0.04 are the intensity of the mean margin when the mean margin is expressed strictly as a proportion of those who do not use food labels. These figures show that the severity of the non-use of food labels is greater when the mean is taken as a critical score, than when 2/3 of the mean is similarly applied. The higher the value, the more severe the margin is. This implies that the mean provided a more insightful basis for reporting the intensity of the mean margin when compared to two-thirds of the mean margin.

Table 5: Intensity of the Margin of the Use of Food Labels.

	Intensity of Mean Margin	
Critical Indices	n	N
0.6	0.08	0.03
0.4	0.04	0.007

Source**:** *Field survey*. (2019).

In expressing the mean margin as a proportion of the whole population, the respective values of the intensity (Table 3.5) are 0.03 and 0.007.

3.6   The Perception of Important Items on Food Labels.

Analysis of perception (Table 3.6) shows the price of food on the label to be the most important item followed by manufacturing date, name of food, instruction for use, nutritional content, storage, list of ingredients, brand, net content and lastly country of origin.

Table 3.6: The Perception of Use of Food Labels by students in Public Universities in Akwa Ibom State.

S/n	Food Label Information	Not Important	Important	Very Important	Mean	Rank	Remark
1	Price of the food	22(1) 12.08%	58(2) 31.87%	102(3) 56.04%	2.44	Ist	Important
2	Manufacturing and Expiry Date	77(1) 42.31%	81(2) 44.51%	80(3) 43.96%	2.32	2nd	Important
3	Name of food	32(1) 17.58%	70(2) 38.46%	80(3) 43.95%	2.26	3rd	Important
4	Instructions for use	32(1) 17.58%	116(2) 63.74%	34(3) 18.68%	2.01	4th	Important
5	Nutritional content	61(1) 33.52%	90(2) 49.45%	31(3) 17.03%	1.84	5th	Not Important
6	Storage Information	75(1) 41.21%	81(2) 44.51%	26(3) 14.29%	1.73	6th	Not Important
7	List of ingredients	77(1) 42.31%	83(2) 45.60%	22(3) 12.09%	1.70	7th	Not Important
8	Brand	94(1) 51.65%	67(2) 36.81%	21(3) 11.54%	1.60	8th	Not Important
9	Net content on food label	96(1) 52.75%	69(2) 37.91%	17(3) 9.34%	1.57	9th	Not Important
10	Country of Origin	114(1) 62.64%	51(2) 28.22%	17(3) 9.34%	1.47	10th	Not Important

Source**:** *Field survey*. (2019).

4. DISCUSSION

The finding that the majority of the students are in the 15-26 age group indicates that the students were active and agile. This is plausible because the given population consisted of undergraduates. Relatedly, Williams (2011), in a study on nutrition labelling, found that majority of the respondents were within 18- 24 age bracket, a similar category. Additionally, in a related vein, Olumakaiye et al. (2019) in a study on the use of food labels among young people in a university community in Nigeria, reported a similar dominant age group (<19-25). Most of the respondents are single. This is plausible because the population is made up of mostly unmarried undergraduates and this is typical in the general African context considering the dominant age group. This is in tandem with Olumakaiye et al. (2019) whose respondents were mostly single. The findings here are also corroborated by Darkwa (2014), who studied knowledge of nutrition facts on food labels and their impact on food choices of consumers, which had it that out of hundred respondents, seven out of every ten were single, the reason being that students are mostly single. Williams (2011) in related findings indicated that the majority of his respondent that read food labels were single. The findings here, further, agree with the findings of Vemula et al. (2014), who analysed the use of food label information by

urban supermarket shoppers in India, that majority of the participants who read food labels were single.

Results show that all the items on the list were read at least four out of ten times. More detail indicated that, in descending order, that half of the most read items on the label of a food product were: name of the product, price, nutrition information and country of origin, manufacturing and expiry date; and list of ingredients and instructions for use. This outcome lends credence to the fact that a label, essentially, is a basis of health-associated material such as instructions for safe storage, handling, nutrition information and explicit data on products for distinct dietary practices (Donga and Patel, 2018). This is further explained by the fact that the use of food labels is possibly and statedly a constructive stimulus in the realization of public health aims, generally (Opara & Madukosiri, 2016) and better food choices, specifically (Pal Kaur et al., 2016; Oghojafor et al., 2012). In a different order, Asouzu and Iheme (2020), in a study that analysed the influence of consumers' food label knowledge and perception on utilization in South-South Nigeria, report the same five items as the most frequently viewed. In tandem with the outcome of this study,Henry-Unaeze & Ugwu (2022), having assessed the knowledge, attitude and practices of consumers related to health and diet Issues in a South-East state of Nigeria, reported that a little over two thirds and about a third of their respondents, in a study that assessed knowledge, attitude and practices among consumers concerning health and diet issues: check expiry dates and nutritional facts on labels respectively. In a similar vein, Adesina et al. (2022), having analysed consumers' knowledge and use of nutritional labelling information in a South-West state of Nigeria found that about 70% and slightly more than half of the respondents read nutrition information, dietary considerations and list of ingredients on food labels. Furthermore, Olatona et al. (2019), observing consumer knowledge and utilization of food labels in Lagos state of Nigeria; in concord found that expiry/best before dates and ingredients were the two most crucial reasons for checking labels by respondents. The corroboration by local studies can be tied to possible similarities of context viz geography, religion, culture. On the global frontier, empirical literature similarly highlights the fact that more than five and seven out of ten respondents, respectively, look specifically for manufacturing and expiry date (Pal Kaur et al., 2016; Vemula et al., 2014) about a third cited price as an important factor in determining the choice of food (Kempen et al., 2012). On a further world vista, Jain et al. (2018) reported that a similar set of items: cost (price), instruction for use, list of ingredients, manufacturing and expiry date were checked by the majority of the respondents. On the other hand, the concord observed globally may be related to the fact that humans, irrespective of their location, have ingrained unchanging social and economic behaviour that may be responsible for similar outcomes across the board.

Based on the mean as threshold score, the study found that about six out of ten respondents use food labels. This outcome is plausible because a food label has come to be accepted as an indispensable measure for ensuring that consumers are in the know concerning a gamut of information about the food product in consideration (Graham & Jefferey, 2012). This outcome is concurred by the findings of Norazlanshah et al. (2013) who found that a similar proportion of the students made moderate use of nutrition labels. Additionally, similar findings, for the use of the mean as the critical index to obtain percentage, were obtained by Mclean-Meyinsse et al. (2011) who found that about three-tenths of university students read food labels frequently and sometimes respectively. One of the findings of this study indicated that more than three-quarters of the students use food labels, given two-thirds of the mean as the critical index. Existing empirical literature, in corroboration, found that over three out of every four consumers read food labels (Chopera et al., 2014; Jain et al., 2018; Osei et al., 2012; Vemula et al., 2014) while three-quarters of the students were aware of food labels (Drichoutis et al.,

2006). The concord of global studies with a higher fraction of use of food labels, as indicated by using two-thirds of the mean index as threshold score, may be traceable to the earlier advancement of developed countries on all fronts and specifically concerning the introduction of the use of food labels.

In the Nigerian context, in tandem, Adesina et al. (2022) imply an overall use of labels of about six-tenths. Furthermore, Danilola et al. (2019) reported the same proportion of respondents as having high awareness and high level of use of labels, in a study that investigated consumers' awareness of the use of food safety labels in Lagos state, Nigeria. Relatedly, Olatona et al. (2019) further buttressed this outcome when they reported that almost nine out of every ten respondents used food labels occasionally. The consonance of local studies with the outcome of this study may be explained by the universality of the underlying factors and notions that tend to and support the use of food labels in Nigeria.

Generally, studies on the local scene and global frontier imply gaps or proportions of non-use and insufficient use of food labels. In the Nigerian parlance, there have been reports of just a third of good use of labels (Olatona et al., 2019); four-tenths rare and low use of labels, respectively (Danilola et al., 2019; Henry-Unaeze & Ugwu., 2022); poor food label knowledge by half the population (Asouzu & Iheme, 2020). Furthermore, in the same local context, about seven out of ten were rated low in awareness of the content of pre-packaged food labels (Olumakaiye et al., 2019) while Adesina et al. (2022) report that three-tenths of the population do not read the information on labels. On the global vista, Pal Kaur et al. (2016), in an assessment of consumer awareness about the usage of food labels in India, report low use of information on food labels during the purchase of packaged food. In a similar vein, Chopera et al. (2014), analyzing food label reading and understanding in parts of rural and urban Zimbabwe, have findings that suggest that two out of every ten respondents do not read food labels; an equal proportion did not look at food labels (Darkwa, 2014). This study, however, in escalated detail; following Udoh (2020) reports the gap between those who use food labels and those who don't; deduced from the measure; disaggregated mean prevalence. It additionally, presents the difference between those who use food labels and those just on the threshold of using it; expressed by the parameter, mean margin. These measures, in corresponding precision, provide clear insight on how the gaps should be bridged and the differences made up for.

This study perceived price and country of origin, as the most and least important item on the food label respectively. This result is in clear alignment with the principle of demand which implies that price is the major precursor of demand and is in tandem with the notion that food label information is usually expected to influence purchase decisions. In the extant literature, Darkwa (2014) corroborates both findings while the outcome of a study by Misra (2007) is only in consonance with the former. Within an indigenous framework, Falola (2014) similarly found that the majority of respondents, in a study geared towards nutrition security food label use among Nigerians, opined that price is an important item on a food label. Furthermore, Pal Kaur et al. (2016) in closely related findings reported that expiry and manufacturing date are perceived as the most important and penultimate in importance respectively, of food label information while the result of this study places both in second place. This outcome may not be unrelated to the fact that respondents are aware of the possibility of purchasing expired goods and the attendant potential unsavoury outcomes of consuming the same (Olumakaiye et al., 2019). On average, barely a quarter of respondents in this study find the stated food label information items very important whereas Olumakaiye et al. (2019) report that three-quarters of respondents consider these items, with a few differences, just as important. This disparity

may be traced to the fact that the results of this study were computed from the response for specific food label items, thus providing a truer picture; on the other hand, the latter reported a single figure for a single response, hence shrouding the detail that may have engendered the clear situation in that instance.

5. CONCLUSION

This study concludes that more than half of the population uses food labels. It further found that on average, using the mean as a critical score, students who did not use food labels perused at most four (4) items on the labels and those who did read about eight (8) items. It additionally submits that it would require, using the mean as the critical index, three (3) more items to be perused to ensure that all students use food labels particularly if programmes are geared towards only those who do not use food labels. The study further concludes that deviation from the use of food labels is more critical when the mean *ufli* is adopted as critical score. The price of the food is perceived to be the most information on the food labels while the name of the food is the most frequently sought information. Summarily, the results of this study provide a more detailed description of the use of food labels than if descriptive analysis had been restricted to percentage and the conventional mean only. There is a need for Government and non-governmental organizations to enlighten the students on the use of food labels to bridge the gap between those that do not use food labels and those that use them. Such programmes may be through radio, television as well as dailies. Based on the findings of this study will translate to students being encouraged to view three more items on a typical food label. Specifically, it would be useful for these items to include the following: Net content, brand name, and instructions for use. These three items are those most infrequently viewed. Additionally, through programmes geared at emphasizing the importance of all items on a food label and similar tools, the respondents' perception of the importance of items on a typical food label should be increased with specific reference to the country of origin, net content and brand; the items perceived as least important.

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