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Research Article

Knowledge and use of food labels among outpatients with nutrition-related non-communicable diseases in selected public and private hospitals in Ibadan Metropolis, Nigeria

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Highlights/Key Messages

- Most outpatients with NR-NCDs in this study poorly understood food labels
- Poor food label use was found even among well-educated patients
- Better label knowledge strongly predicted better label use
- Hospital type and care setting shaped label knowledge and use
- Tailored nutrition education on labels is urgently needed among outpatients with NR-NCDs

Background
Food labels are vital tools for healthy dietary decisions, particularly for individuals with Nutrition-Related Non-Communicable Diseases (NR-NCDs). Despite the rising prevalence of NR-NCDs in Nigeria, knowledge and use of food labels remain low among this population.

Objective
This study assessed food label knowledge and use among outpatients with NR-NCDs in selected public and private hospitals in Ibadan, Nigeria.

Methods
This cross-sectional survey involved 340 outpatients from selected hospitals in Ibadan using a validated semi-structured questionnaire. Knowledge of food labels was assessed using ten 3-point questions, categorised as poor or good, while food label use was evaluated using fifteen 5-point Likert questions, grouped as poor, fair, or good. Data were analysed using descriptive statistics, chi-square tests, Jonckheere-Terpstra trend tests, and binary logistic regression ($p < 0.05$ was considered significant).

Results
Participants' mean age was 62.4 ± 12.7 years; 49.7% had tertiary education, and 74% were on diet modification plans. Consumption of pre-packaged foods was relatively low in the 24 hours before the survey. Most respondents (85.3%) had poor knowledge of food labels, while 54.7% reported seldom using food labels. Educational level was significantly associated with both knowledge ($p = 0.012$) and use ($p < 0.001$) of food labels. A significant positive trend existed between knowledge and use ($p < 0.001$), and higher educational attainment independently predicted food label use (OR = 1.946; 95% CI: 1.432–2.645; $p < 0.001$).

Conclusions
Knowledge and use of food labels among outpatients with NR-NCDs in Ibadan Metropolis were poor. Interventions targeting practical label interpretation skills are needed to support dietary self-management

Keywords: food labels, nutrition-related non-communicable diseases, dietary intake, outpatients

Introduction

The burden of Non-Communicable Diseases (NCDs) has risen significantly over time and is now among the top 10 global causes of death (GBD, 2021). According to WHO (2024), in 2021, 18 million people died from an NCD before age 70 years, and 82% of these untimely deaths occurred in low-and middle-income countries. Also, 75% of non-pandemic-related deaths globally were from NCDs, out of which 73% were in low-and middle-income countries (WHO, 2024). In Nigeria, according to the WHO Country Disease Outlook (2023), 27% of deaths recorded in 2019 were due to NCDs.

Non-communicable diseases are diet-related and driven by poor nutritional choices, poor diet quality and high consumption of ultra-processed and energy-dense foods (Fanelli et al., 2020; Global Burden of Disease, 2021). In Nigeria, urbanisation, sedentary lifestyles, and the increased availability of pre-packaged foods have contributed to a nutrition transition, in which diets high in salt, sugar, and unhealthy fats have become more prevalent (Asaolu et al., 2024). One public health policy aimed at improving dietary habits is the use of front-of-pack nutrition labels (FoPLs), as recommended by the World Health Organization (WHO, 2022).

Food labelling is a vital public health tool for addressing poor dietary habits. It provides essential, detailed information about a product's nutritional content, ingredients, portion sizes, and potential allergens (FAO, 2024). For patients managing NCDs and chronic diseases, food labels are also strategic tools for dietary control and disease management beyond basic information (Giró-Candanedo et al., 2022). For instance, individuals with diabetes can track carbohydrate intake, while those with hypertension can monitor sodium intake to align with health guidelines and support sustained behaviour change (Campos et al., 2011).

Effective utilisation of food labels depends on a person's ability to interpret and apply the information. Studies have shown that individuals who regularly use food labels tend to have better dietary quality, lower intake of saturated fats and sodium, and improved health outcomes (Crockett et al., 2018; Anastasiou et al., 2019). Barriers such as low educational attainment, poor health literacy, and inconsistencies in labelling standards further limit the practical use of food labels in nutrition care (Talati et al., 2017; Liu et al., 2023).

However, in the Nigerian context, many consumers, especially those in urban and low-literacy settings, lack awareness of food labelling or cannot interpret label information effectively (Adesina et al., 2022). Despite the increasing reliance on packaged foods in urban Nigerian settings and the rising prevalence of nutrition-related NCDs (Asaolu et al., 2024; Casari et al., 2022), most existing studies have focused on general consumer populations, with a dearth of information on food label use among patients with chronic conditions. This creates a significant knowledge gap, as individuals living with chronic diseases have specific dietary needs that can be supported through food label literacy. Understanding how these patients interact with food labels is essential for improving health outcomes, reducing disease burden, and guiding policy interventions. Therefore, this study evaluated the knowledge and use of food labels among outpatients with nutrition-related non-communicable diseases (NR-NCDs) at hospitals in Ibadan, Oyo State, Nigeria, including the contribution of packaged foods to respondents' dietary intake, barriers, and the enablers of food label use.

Methods

Study Design

The study adopted a cross-sectional design. It was conducted at selected public and private hospitals in Ibadan, including the University College Hospital, Ring Road State Hospital, Jericho Specialist Hospital, Bella Hospital, and Ibadan Central Hospital.

Study Population

Participants included in the study were;

1. Adult outpatients who visited the dietetics unit at the Medical Outpatients Clinic and the Geriatrics centre (where available) in selected hospitals
2. Adult outpatients who gave consent to participate in the study.

Participants who were excluded from the study were;

3. Adult patients who visited dietetic units other than the medical outpatient clinic and the Geriatrics centre in selected hospitals
4. Adult outpatients who visited the dietetics unit at the Medical Outpatients Clinic and the Geriatrics centre (where available) outside of the hours of data collection.
5. Patients who did not give consent to participate in the study.
6. Patients who provided incomplete and inconsistent responses (n = 46).

Assuming a 65% prevalence of knowledge (Adesina et al., 2022), Cochran's formula for sample size estimation yielded a value of 351. With a 10% attrition rate, this gives 386. Of the 386 participants approached, 340 provided complete and consistent responses and were included in the final analysis (88.1% response rate). Forty-six participants (11.9%) were excluded due to incomplete or inconsistent responses.

Within each selected hospital, the Medical Outpatient Clinic and Geriatrics Clinic (where available) were purposively selected because they often provide care for patients with NR-NCDs. Eligible outpatients attending these clinics during the study period were recruited using consecutive sampling. All patients who met the inclusion criteria and consented to participate were approached consecutively during clinic sessions when a researcher was present until the required sample size for each facility was attained. Of the total participants, 172 were recruited from the Medical Outpatient Clinics and 168 from the Geriatrics Clinics.

Data Collection

This study used a semi-structured, validated questionnaire to collect data from October 2024 to February 2025. The questionnaire was developed based on the study objectives and the existing literature on food label knowledge, use, barriers, and facilitators. It underwent expert review to

establish content validity. Revisions were made based on the reviewers' comments to improve the wording of items and the questionnaire flow. The instrument was pilot-tested among 30 outpatients with NCDs (Varakumari et al, 2025) at a university-based health clinic, and internal consistency was assessed using Cronbach's alpha ($\alpha = 0.78$).

The questionnaire comprised five sections that collected information on sociodemographic characteristics, knowledge, use, and factors facilitating or hindering the use of food labels among respondents. An e-version of the questionnaire was created using KoBoCollect Form, through which the questions were administered to the respondents.

Section A contained the respondents' demographic characteristics and medical information.

Section B consisted of the consumer's awareness and knowledge of food labels. Awareness of food labels was assessed using a yes-or-no question. Knowledge of food labels was tested by 10 questions in the knowledge section of the questionnaire, which consisted of a 3-point scale – 'true', 'false', and 'I don't know'. Knowledge scores thus ranged from 0 to 10. Respondents who got 0-4 questions were categorised as having 'poor knowledge', while respondents who got 5-10 questions were categorised as having 'good knowledge'.

Section C assessed respondents' use of food labels. The Use section of the questionnaire assessed food label use using 15 questions, each on a 5-point Likert scale. 'Always' was assigned 4 points, 'most of the time' 3 points, 'sometimes' 2 points, 'rarely' 1 point, and 'never' 0 points. The use score thus ranged from 0 to 60. Respondents with 0-20 points were categorised as having 'poor use', those with 21-40 points as having 'fair use', and those with 41-60 points as having 'good use'.

The cut-off points used to classify knowledge and use of food labels were based on the total obtainable scores and the distribution of responses (Campos et al, 2011; Liao & Yang, 2023). The thresholds were adopted to facilitate interpretation and comparison of respondent categories.

Section D contained a single, interviewer-administered 24-hour dietary recall sheet. Three trained nutritionists conducted the interviews using a standardised multiple-pass method, with probing for forgotten foods, snacks, and beverages, and using portion-size aids (food models, household measures) to improve quantity estimation. Completed recalls were reviewed for plausibility and coded using the Nigerian Food Composition Database (Sanusi et al, 2017) by qualified personnel.

The information was used to investigate the prevalence of pre-packaged food consumption. The contribution of pre-packaged foods to dietary intake among those who consumed them was evaluated by converting the number of pre-packaged foods consumed by each respondent in the last 24 hours into percentages of total energy intake/day and calculating the mean.

Section E investigated factors influencing respondents' use of food labels (barriers and enablers). It included 10 items on barriers and 6 on enablers of food label use. The results are presented in frequencies and percentages.

Data Analysis

Data were analysed using IBM SPSS Statistics for Windows, Version 26.0. Descriptive statistics such as frequencies, percentages, and means were used; chi-square tests and Jonckheere-Terpstra trend tests were used for ordinal variables (age group and educational level) to assess whether knowledge and use showed a monotonic trend across ordered categories.

Barriers and facilitators were analysed descriptively by calculating frequencies and percentages for each reported item, and no analytical exercise was performed.

Binary logistic regression with backward stepwise selection was performed to identify independent predictors of food label knowledge and usage, controlling for potential confounders. Statistical significance was set at $P<0.05$.

Ethical Considerations

Ethical approval was secured from the University of Ibadan/University College Hospital (UI/UCH) Research and Ethical Review Committee, with registration numbers NHREC/05/01/2008a and UI/EC/24/0924. Additionally, the Oyo State Ministry of Health, Department of Planning, Research, and Statistics Division, granted ethical clearance under clearance number NHREC/OYOSHRIEC/10/11/22. Informed consent was obtained from participants before the study, and confidentiality of information was maintained throughout.

Results

Table 1 presents the demographic characteristics of the 340 respondents in this study.

Table 1. Socio-demographic characteristics of respondents (N= 340)

Variable	Mean±SD	Frequency (N)	Percentage (%)
Gender			
Male		97	28.5
Female		243	71.5
Age Group (Years)			
<25		2	0.6
26-50		57	16.8
51-75		232	68.2
>76		49	14.4
Mean Age (years)	62.36±12.72		
Marital Status			
Single		6	1.8
Married		254	74.7
Widowed		75	22.1
Divorced		5	1.5
Ethnicity			
Yoruba		320	94.1
Igbo		12	3.5
Hausa		3	9
Others		5	1.5
Religion			
Christianity		231	67.9
Islam		104	30.6

Variable	Mean±SD	Frequency (N)	Percentage (%)
Traditional		2	0.6
Others		3	0.9
Highest Level of Education			
No formal education		24	7.1
Primary		58	17.1
Secondary		89	26.2
Tertiary		169	49.7
Average Monthly Income (Naira)			
<70,000		158	46.5
70,000 - 119,999		103	30.3
120,000 - 169,999		27	7.9
170,000 - 219,999		17	5.0
>220,000		35	10.3
Type of Hospital			
Tertiary		112	32.9
Secondary public		118	34.7
Secondary public		34	10
Secondary private		35	10.3
Secondary private		41	12.1

*Naira to US$ Equivalent of the average monthly income as at Oct 2024- Feb 2025 was about (1,400 – 1,600 Naira) to 1US$.

Table 2 presents the level of knowledge and use of food labels, showing that the majority (85.3%) had poor knowledge. More than half (54.7%) reported seldom using food labels.

Table 2. Level of knowledge and use of food labels among respondents (N= 340)

	Frequency (N)	Percentage (%)
Level of Knowledge of Food Labels		
Poor	290	85.3
Good	50	14.7
Level of Food Label Use		
Seldom	186	54.7
Sometimes	101	29.7
Often	53	15.6

Figure 1 shows the contribution of pre-packaged foods to respondents' dietary intake in the previous 24 hours. Over 70% had consumed packaged foods. However, for only about 8% of the sample, pre-packaged foods accounted for more than 50% of their energy intake/day.

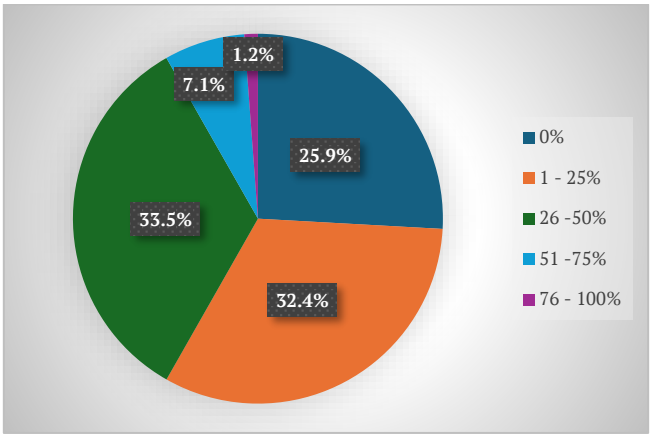


Figure 1. Self-reported Estimates of Pre-packaged Foods in the Energy Intake of Respondents during the previous 24 hours

Table 3 shows that just under half (49.7%) of participants had tertiary education, yet even among them, 79.9% had poor knowledge of food labels. Nearly three-quarters (74.4%) of participants reported being on a dietary modification plan; however, only 11.9% had good knowledge of food labels. The majority (66.5%) reported self-knowledge as their source of information about food labels. While knowledge and use improved with education, even among respondents with tertiary education, only 23.7% reported often using food labels.

Both the patients' dietary modification plan (χ^2 p = 0.011) and the source of their knowledge about labels (χ^2 p < 0.001) were significantly associated with food-label knowledge. Hospital type was also significantly associated with food-label use (χ^2 p < 0.001).

Table 4 shows a significant positive trend between food-label knowledge and food-label use (standardised J-T statistic = 7.979, p < 0.001).

Table 5 shows that respondents with higher educational attainment were more likely to report greater use of food labels (B = 0.666, OR = 1.946; 95% CI: 1.432 – 2.645, P < 0.001). The hospital type was not significantly associatedwith food label use.

Table 6 shows that 32.6% of respondents said that consistently buying the same products hindered their ability to use food labels, while 20.6% stated that lack of time was a barrier. Table 7 presents the enablers of food label use.

Table 3. Association between variables, the level of knowledge and use of food labels

Variables	Level of Knowledge of Food Labels		P-value	Level of Usage of Food Labels			P-value
	Poor	Good		Seldom	Sometimes	Often	
GENDER			0.354				0.237
Male	80 (82.5%)	17 (17.5%)		48 (49.5%)	29 (29.9%)	20 (20.6%)	
Female	210 (86.4%)	33 (13.6%)		138 (57.0%)	71 (29.3%)	33 (13.6%)	
AGE (years)			0.318				0.062
<25	1 (50.0%)	1 (50.0%)		0 (0.0%)	2 (100.0%)	0 (0.0%)	
26–50	47 (82.5%)	10 (17.5%)		22 (38.6%)	26 (45.6%)	9 (15.8%)	
51–75	199 (85.8%)	33 (14.2%)		136 (58.6%)	59 (25.4%)	37 (15.9%)	
76–100	43 (87.8%)	6 (12.2%)		28 (57.1%)	14 (28.6%)	7 (14.3%)	
EDUCATIONAL LEVEL			0.012				<0.001
Primary	56 (96.6%)	2 (3.4%)		46 (79.3%)	10 (17.2%)	2 (3.4%)	
Secondary	76 (85.4%)	13 (14.6%)		54 (60.7%)	25 (28.1%)	10 (11.2%)	
Tertiary	135 (79.9%)	34 (20.1%)		86 (50.9%)	50 (29.6%)	33 (19.5%)	
AVERAGE MONTHLY INCOME (₦)			0.379				0.112

Variables	Level of Knowledge of Food Labels		P-value	Level of Usage of Food Labels			P-value
	Poor	Good		Seldom	Sometimes	Often	
<70,000	67 (79.8%)	17 (20.2%)		57 (50.0%)	31 (27.2%)	26 (22.8%)	
70,000–119,900	75 (83.3%)	15 (16.7%)		59 (69.4%)	13 (15.3%)	13 (15.3%)	
120,000–169,900	59 (88.1%)	8 (11.9%)		10 (37.0%)	9 (33.3%)	8 (29.6%)	
170,000–219,900	14 (73.7%)	5 (26.3%)		0 (0.0%)	0 (0.0%)	3 (100.0%)	
>220,000	28 (84.8%)	5 (15.2%)		4 (9.3%)	36 (83.7%)	3 (7.0%)	
MAJOR FOOD SHOPPER			0.830				0.970
Yes	181 (85.0%)	32 (15.0%)		116 (54.5%)	63 (29.6%)	34 (16.0%)	
No	109 (85.8%)	18 (14.2%)		70 (55.1%)	38 (29.9%)	19 (15.0%)	
MAJOR FOOD PLANNER			0.336				0.083
Yes	191 (86.8%)	29 (13.2%)		130 (59.1%)	58 (26.4%)	32 (14.5%)	
No	99 (82.5%)	21 (17.5%)		56 (47.5%)	43 (36.4%)	19 (16.1%)	
DIETARY MODIFICATION PLAN			0.011				0.449
Yes	223 (88.1%)	30 (11.9%)		139 (54.9%)	78 (30.8%)	36 (14.2%)	
No	67 (77.0%)	20 (23.0%)		47 (54.0%)	23 (26.4%)	17 (19.5%)	
TYPE OF HOSPITAL			0.343				<0.001
Tertiary	100 (89.3%)	12 (10.7%)		65 (58.0%)	37 (33.0%)	10 (8.9%)	
Secondary Public	127 (83.6%)	25 (16.4%)		95 (62.5%)	29 (19.1%)	28 (18.4%)	
Secondary Private	63 (82.9%)	13 (17.1%)		26 (34.2%)	35 (46.1%)	15 (19.7%)	
SOURCE OF KNOWLEDGE			<0.001				<0.001
Social Media	25 (86.2%)	4 (13.8%)		8 (27.6%)	12 (41.4%)	9 (31.0%)	
Family/Friend	39 (75.0%)	13 (25.0%)		37 (71.2%)	14 (26.9%)	1 (1.9%)	
Doctors/Nurses	8 (80.0%)	2 (20.0%)		8 (80.0%)	1 (10.0%)	1 (10.0%)	
Dietitians	16 (69.6%)	7 (30.4%)		22 (95.7%)	1 (4.3%)	0 (0.0%)	
Self-knowledge	202 (89.4%)	24 (10.6%)		111 (49.1%)	73 (32.3%)	42 (18.6%)	

* p-value < 0.05 indicates a statistically significant association

*For ordinal variables (age group and educational level), Jonckheere-Terpstra trend tests were used to evaluate trends across ordered categories. Chi-square tests were used for nominal variables.

Table 4. Association between the level of knowledge and the level of use of food labels

		Level of Food Label Use				
Variables		Seldom	Sometimes	Often	**Total**	**P-value (X^2)**
Level of Knowledge of Food Labels	Poor	182(62.8%)	79(27.2%)	29(10%)	290	<0.001
	Good	4(8.0%)	22(44.0%)	24(48.0%)	50	

*p-value was generated using the Jonckheere-Terpstra test

Table 5. The relationship between the use of food labels and significant covariates

Level of Use	B	df	P-value	Exp B	95% CI for Exp(B)	
					Lower	Upper
Highest education level	.666	1	**.000**	1.946	1.432	2.645
Type of Hospital	.359	1	.546	1.432	.140	4.596
Constant	-2.762	1	.000	.063		

*p-values were generated using binary logistic regression

Table 6. Barriers to the use of food labels (N=340)

S/N	Variable	Yes		No	
		N	%	N	%
1	I buy the same product all the time	111	32.6	229	67.4
2	I do not have the time to read the label	70	20.6	270	79.4
3	I always buy the cheapest product	2	0.6	338	99.4
4	I always buy the same brand all the time	33	9.7	307	90.3
5	I am not interested in the nutrition information provided	22	6.5	318	93.5
6	I find it difficult to read and understand the language used on the Food Labels	38	11.2	302	88.8
7	I find it difficult to understand the nutrition information provided in the nutrition table	57	16.8	283	83.2
8	Food products do not have nutrition information or provide incomplete Labelling	32	9.4	308	90.6
9	I did not know that there was nutrition information on food products	22	6.5	318	93.5
10	I buy food products without labels	31	9.1	309	90.9

Table 7. Enablers of food label use (N=340)

S/N	Variable	Yes		No	
		N	%	N	%
1	Price of food	83	24.4	257	75.6
2	Appearance/package design	41	12.1	299	87.9
3	I am trying to lose weight	46	13.5	294	86.5
4	Health consciousness/ medical condition	170	50	170	50
5	To know if the product has expired	143	42	197	58
6	Others	3	1	337	99

Discussion

Food labels remained vital in shaping dietary choices for patients with NR-NCDs. This study examined food label knowledge and use among outpatients at secondary and tertiary hospitals in Ibadan, Nigeria, and revealed patterns consistent with global nutrition literacy trends.

Most respondents were older adults and mainly female. This demographic pattern aligned with Adesina et al. (2022), who found similar gender distributions among Nigerian consumers, and with Liao and Yang (2023), who observed similar gender patterns among Asian NCD clinic attendees. Female dominance is associated with increased healthcare-seeking behaviour, as reported by Hamzah et al. (2024), particularly during periods of illness.

Most respondents reported low to moderate intake of pre-packaged foods. This agreed with Monye et al. (2020) and Adejumo et al. (2019), who noted limited dependence on processed foods among Nigerian clinic patients due to economic and availability constraints.

Many respondents learned about food labels informally, mainly through self-education and social media, with healthcare professionals playing a small role. This uncovered gaps in clinical education, similar to those found by Van der Merwe et al. (2014) among South African consumers who knew labels existed but struggled to interpret them. Although many patients followed dietary plans recommended by doctors and dietitians, they still lacked sufficient understanding of food labels, indicating that nutritional guidance from these health professionals often failed to provide patients with practical tools for interpreting them.

Most respondents showed poor knowledge of food labels, even those with a substantially higher level of education. This finding aligned with studies by Adejumo et al. (2019), Monye et al. (2020), and Falola (2014) among Nigerian populations but differs from Rabiei et al. (2022) and Dutta and Patel (2017), who found better knowledge among wealthier, educated consumers in the Middle East and India.

Nearly half of the respondents showed poor food-label usage patterns. This suboptimal usage aligned with findings from Van der Merwe et al. (2014) among South African consumers, Bhilwar et al. (2018) in India, and Al-Barqi et al. (2020) among Saudi patients. However, this differs from the higher usage rates reported by Zhang et al. (2016) among educated Chinese urban residents.

A statistically significant positive relationship was identified between food label knowledge and its usage among respondents. This conformed with the findings of Dutta and Patel (2017), Moore et al. (2018), and Al-Barqi et al. (2020), who identified knowledge as the key factor influencing label use across diverse global populations.

Moore et al. (2018) found that label usage reinforces nutrition literacy through experiential learning; Zhang et al. (2016) found similar reinforcement effects. The information source also significantly influenced knowledge, consistent with Van der Merwe et al. (2014), who identified media exposure as a key determinant of label literacy.

Educational attainment emerged as the strongest predictor of food label usage among all demographic variables examined. This finding supported Bhilwar et al. (2018), Rabiei et al. (2022), and Liao and Yang (2023), who identified education as the main factor affecting nutrition label behaviours, whereas age and gender showed no significant associations. Education usually provides individuals with the skills to understand labels and make decisions. Hence, interventions that improve food label health literacy can increase its use among low-education groups, leading to fairer public health outcomes in chronic disease prevention.

Although educational level was not significantly associated with food label knowledge, it was significantly associated with food label use and emerged as a predictor of food label use in the regression model. This suggested that respondents with higher education were more likely to use food labels, even when their specific knowledge of label content was limited. The finding suggested a difference between actual label use and detailed label comprehension, indicating that education may encourage label-checking behaviour without necessarily guaranteeing sufficient label literacy.

Primary barriers included difficulty understanding technical nutrition information, habitual purchasing patterns, and a lack of interest in labels. These obstacles echoed findings from Al-Barqi et al. (2020), Zhang et al. (2016), and Van der Merwe et al. (2014) across multiple continents. Health consciousness emerged as the primary enabler of usage, followed by price sensitivity, consistent with Dutta and Patel (2017), Falola (2014), and Dumisani et al. (2023). Other research has identified expiry date checking as predominant among label users, matching safety-focused behaviours reported across African studies (Falola, 2014; Monye et al., 2020).

Conclusions

This study revealed deficits in food-label knowledge and use among Nigerian NCD outpatients despite high educational attainment and exposure to clinical dietary counselling. Critical gaps in health provider guidance appeared to have left these patients to rely on informal sources of information. Targeted interventions that emphasise practical label interpretation and decision-making skills represent the most promising strategy for translating literacy into effective dietary self-management for patients with NCDs. Research is needed to determine if relevant health providers themselves need further training in label meanings and usage.

Limitations

This study featured a unique representation of the older population, with limited input from younger adults. While this is likely representative of typical NCD outpatients in Nigeria, including a broader age range could have strengthened the findings, enabled more comprehensive comparisons, and improved generalizability. Although chi-square was appropriate for nominal variables, it did not assess expected trends for ordinal variables such as age and education. Also, a single 24-hour dietary recall may not reflect typical diets over longer periods. Nonetheless, the results, which highlight distinct aspects of food label knowledge and use, align with prior research and offer valuable insights for healthcare professionals and policymakers seeking to support healthier dietary choices among patients with nutrition-related NR-NCDs.

Author Contributions

BOA: Methodology, Formal Analysis, Writing (Review & Editing), Resources, Supervision. TOA: Conceptualization, Methodology, Investigation, Formal Analysis, Writing (Original Draft), Writing (Review & Editing), Resources. AOO: Conceptualization, Methodology, Investigation, Formal Analysis, Writing (Original Draft), Writing (Review & Editing), Resources. IEA: Conceptualization, Methodology, Investigation, Formal Analysis, Writing (Original Draft). AFT: Conceptualization, Methodology, Writing (Review & Editing), Resources, Supervision. All authors approved the final version for submission.

Declaration of Generative AI and AI-Assisted Technologies in Scientific Writing

This research and the resulting manuscript were developed solely through the researcher's intellectual efforts. ChatGpt was used exclusively for language editing and to improve clarity.

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Data Availability Statement

The data used and analysed in this study will be made available based on a reasonable request.

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Conflict of Interest

The authors declare no conflict of interest.

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