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Knowledge and Perception of In-School Adolescents on the Role of Adequate Nutrition in the Prevention and Management of Non-Communicable Diseases in Ogun State, Nigeria

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Abstract

Non-communicable diseases (NCDs) have become a major public health challenge, especially among adolescents in low- and middle-income countries like Nigeria. Consuming unhealthy food is an important and modifiable behavioral risk factor for the development of NCDs later in life. To address the global NCD pandemic, which is responsible for 74% of deaths globally and 29% of deaths in Nigeria, nutrition literacy and healthy eating habits, particularly among adolescents and younger age groups must be encouraged. This cross sectional study assessed the knowledge and perception of in-school adolescents (N=480) aged 10-19 years in Ogun State, Nigeria regarding the role of adequate diet in the prevention and management of NCDs. Using a 23-item assessment scale, 302(63%) respondents demonstrated good knowledge of NCDs (scores ≥70%), 129(27.4%) showed fair knowledge (scores 50-70%), and 46(9.6%) showed poor knowledge (scores <50%). Using a 7-item scale to assess the knowledge of diet's role in NCD prevention, 274(57%) demonstrated good knowledge (scores ≥70%), 53(11%) showed fair knowledge (scores 50-70%), and 154(32%) showed poor knowledge (scores <50%). Regarding perceptions, 36% of respondents had a positive perception of the importance of diet in NCD prevention and management, while 64% had a negative perception. Correlation analyses revealed weak but significant positive associations between respondents' age (r=0.045, p=0.004), gender (r=0.016, p=0.029), and residential location (r=0.025, p=0.003) with more positive perceptions. Anthropometric measurements showed that 60.8% of respondents had normal weight, 23.3% were underweight, and 15.9% were overweight and obese. Despite a good overall understanding of NCDs and their dietary links, misconceptions persisted: 43.1% believed NCDs had supernatural causes, 72.1% viewed traditional cultural foods as inherently healthy, and 65% found consuming a balanced diet inconvenient and expensive. These findings underscore the importance of culturally tailored nutrition education programs to correct misconceptions and encourage healthier dietary practices among Nigerian adolescents.

Keywords

Knowledge, Perception, In-School Adolescents, Adequate Diet, Non-Communicable Diseases

1. Introduction

Non-Communicable Diseases (NCDs), which includes diabetes, cancer, chronic respiratory disorders, and cardiovascular disease, accounted for the majority of deaths globally in 2019 [1]. The prevalence of NCDs is rising significantly, particularly in low- and middle-income countries. The four core NCDs indicated above account for over 80% of all early NCD fatalities [1]. The primary behavioral risk factors for these illnesses include excessive alcohol intake, poor diet, insufficient physical activity, and tobacco use [2].

Childhood and adolescence are the times when eating habits and food preferences develop, and these inclinations usually persist throughout adulthood [3]. In particular, obesity in childhood is associated with a higher chance of developing NCDs such as diabetes and cardiovascular diseases later in life, as well as a higher chance of early death and disability [4].

Limiting saturated and trans fats, free sugars, and processed meats can help lower the incidence of obesity, diabetes, and cardiovascular disease. Reducing salt and sodium intake can also help avoid hypertension [5, 6].

NCDs account for approximately 20% of fatalities among adolescents aged 10 to 19, with a greater impact on females aged 10 to 14 (nearly 25% of deaths) than boys in the same age range [7]. In 2022, WHO estimated that 20% of children and adolescents aged 5 to 19 were overweight or obese worldwide, up from 8% in 1990 [8]. This clearly illustrates that childhood and adolescent obesity has become a serious global public health concern, with poor dietary patterns heavy in fats, carbohydrates, and salt becoming more widespread among young people worldwide.

Nigeria has a high burden of both communicable and non-communicable diseases, with the latter accounting for 29% of deaths in 2019 [7]. Over the last few decades, the frequency of risk factors for NCDs has increased dramatically, making NCDs a major health concern in Nigeria. In Nigeria, the age-standardized death rate across four main NCDs (cardiovascular disease, chronic respiratory disease, cancer, and diabetes) was 565 per 100,000 in males and 546 in females in 2021 [7].

A healthy diet, as defined by the WHO, consists of a balanced intake of fruits, vegetables, legumes, nuts, and whole grains, with limited consumption of free sugars, saturated and trans fats, and salt [9]. An adequate diet is the pattern of food consumption that provides in full all essential nutrients at levels that meet the recommended dietary allowances (RDA) for an individual's age, sex, and physiological state in order to support proper growth, development, and maintenance of body functions [10].

Nigeria is currently undergoing a nutrition transition, characterized by an increased consumption of processed foods, fats, and sugars [8]. This shift in dietary patterns is associated with rising rates of overweight, obesity, and di-

et-related NCDs [9]. For instance, the prevalence of obesity among Nigerians increased from 8.8% in 2000 to 14.5% in 2020. Along with this increase in obesity, there has been a growing incidence of hypercholesterolemia, hypertension, and diabetes, particularly in more affluent areas and urban centers [11].

Ogun State, one of the 36 states in Nigeria's south-western region, is characterized by a mixture of urban and rural settlements with a predicted population of 6,267,473 at a growth rate of 3.3% in 2022 [12]. The state has experienced rapid urbanization and industrialization in recent decades, leading to significant changes in lifestyle and dietary patterns. The state's proximity to Lagos, Nigeria's largest commercial center, has influenced its socioeconomic development and food environment.

In 2021, Ogun State, located in southwest Nigeria, contained 756,428 secondary school students [13]. The state's educational system is diverse, with both public and private schools serving students from various socioeconomic backgrounds. The school environment plays a crucial role in students' dietary choices, as many students spend a significant portion of their day at school and often purchase food from school vendors [14].

A recent school-based study conducted in Ikenne Local Government Area of Ogun State revealed a 12.7% prevalence of overweight and obesity among in-school adolescents, with factors such as younger age (10-14 years), attending private schools, and having parents with higher education levels all associated with an increased risk [15]. Processed meals high in fats, oils, and salt have also been reported to be widely available to children and adolescents in certain sections of Ogun state [13].

Considering the Ogun State Ministry of Health's emphasis on promoting "active living from childhood" and preventing NCDs in accordance with WHO guidelines, comprehensive state-wide data on adolescents' eating patterns and nutrition knowledge are desperately needed [16]. The purpose of this study is to assess the perception and knowledge of in-school adolescents in Ogun State on the importance of adequate diet in managing and preventing NCDs in some selected LGAs in Ogun State, South West, Nigeria. This research aims to fill knowledge gaps by examining adolescents' perceptions of important concepts like healthy diets, processed foods, NCDs, and the value of adequate diet. The findings will help develop age-appropriate health promotion initiatives and policies for Ogun State, addressing the current lack of nutrition education interventions. In the end, the results will offer insightful information for focused interventions and evidence-based policy creation, ultimately contributing to the state's efforts in combating NCDs among its younger populace.

2. Methodology

2.1. Research Design and Setting

In Ogun State, southwest Nigeria, a thorough cross-sectional study was carried out with a focus on adolescents from public and private secondary schools who were between the ages of 10 and 19. In a varied educational environment, the study sought to investigate adolescents' perspectives and knowledge of the role that diet plays in preventing non-communicable diseases. The southwestern Nigerian state of Ogun State offered a distinctive setting for research. The state, which has a projected population of 6,267,473 and 20 local government areas spread across three senatorial districts (Ogun Central, Ogun East, and Ogun West), is home to 756,428 secondary school students. The state provides a rich demographic background for nutritional study because it is home to many Yoruba ethnic groups, including Egbas, Yewas, Ijebus, and Remos.

2.2. Sampling Methodology

A complex multi-stage stratified cluster sampling technique was used by the researchers to choose 480 participants. Cochran's formula was used to determine the sample size, which was then significantly extended to improve statistical robustness with a 95% confidence level and 5% margin of error [17]. In order to ensure representative selection, the sampling technique included deliberate stratification across senatorial districts, with local government regions, schools, and classes being chosen through random sampling. Randomly selecting public and private secondary schools, urban and rural local government areas, and classes across grade levels were all part of the sample strategy's exact stratification approaches. This technique reduced the possibility of sample biases and ensured proportional representation.

2.3. Sample Size Determination

Using Cochran's formula for sample size calculation: $n = \frac{Z^2 pq}{e^2}$

Confidence level = 95% (Z = 1.96)

Maximum variability (p = 0.575, q = 1- 0.575)

Margin of error (e) = 0.05 (±5%) Prevalence of good knowledge on adequate nutrition [6] = 57.5%

Therefore; $n = \frac{1.96^2 \times 0.575 \times (1 - 0.575)}{0.05^2}$ n = 376

To account for potential non-response and incomplete data, the sample size was increased by 20%. Assuming an 80% response rate, the adjusted sample size would be:

n = 376 / 0.8

n = 470 adolescents.

Therefore minimum Target sample size is 470 adolescents enrolled in schools across Ogun State. However, the study recruited 480 participants (n=480), slightly exceeding the calculated minimum sample size of 470, to enhance statistical robustness and account for possible data attrition.

2.4. Study Instrument

The Food and Agriculture Organization's recommendations were used to create a well-planned questionnaire. The tool included five extensive parts that recorded demographic data, anthropometric measures, and closed-ended questions examining knowledge and perception of non-communicable diseases. Pilot testing, objective alignment, and supervisor review were among the procedures used to accomplish validation. Internal consistency and measurement precision were shown to be substantial with a Cronbach's alpha reliability coefficient of 0.82. To guarantee linguistic appropriateness, clarity, and connection with research objectives, the questionnaire was thoroughly refined.

2.5. Data Collection

The validated questionnaire was used by trained research assistants to collect data in a methodical manner. In-depth sociodemographic data, anthropometric measurements, nutrition knowledge evaluations, and perception assessments of the role of diet in preventing non-communicable diseases were all part of the procedure.

2.6. The Analytical Method

Statistical analysis was carried out using SPSS version 25.0, utilising advance methods such as frequency computations, correlation analyses, and descriptive statistics. Using recognised assessment instruments, the analysis concentrated on evaluating anthropometric status, perception assessments, and nutrition knowledge scores.

2.7. Ethical Approval

Ethical approval was obtained from the Lead City University Research Ethics Committee (LCU-REC/24/201).

3. Results

The 480 respondents' demographics provide a complex representation of the dynamics of the adolescent population. The largest group consisted of mid-adolescents (ages 14–16) at 63.1%, followed by early adolescents (ages 10–13) at 24.6%, and late adolescents (ages 17–19) at 12.3%. With females somewhat higher at 50.6% compared to males at 49.4%, the gender distribution was almost equal. The study allowed for thorough insights into the development of nutritional knowledge over educational stages with SSS1 (26.5%), JSS1 (25.4%), JSS2 (22.1%), and SSS2 (26.0%) represented across secondary school class levels. The distribution of school types revealed that 37.7% attended private schools and

62.3% attended public schools, allowing for a comparison of dietary knowledge in various educational settings. Christians made up the majority at 59.6%, followed by Muslims at 32.7% and followers of traditional religion at 7.7%, reflecting the demographics of southwest Nigeria. A balanced view of possible regional nutritional variances was provided by the geographic representation of the respondents, which included 54.0% urban and 46.0% rural respondents. Of those living with their parents, 82.1% lived with them, while 17.9% lived with guardians. With 63.1% of fathers having a tertiary education and 45.4% of mothers, parental educational attainment was unusually high. Given the socioeconomic diversity of the respondents' families, the paternal occupational status showed a range of job patterns, with 41.0% employed, 39.0% self-employed, 12.3% artisans, 7.1% unemployed, and 0.6% retired. (Table 1)

A complex dietary landscape was shown by the respondents' anthropometric status. A significant 23.3% of the individuals were underweight, suggesting possible issues with food and nutrition security, whereas 60.8% of the participants were classified as normal weight. 13.8% of the remaining participants were overweight, and 2.1% were obese, which reflects the dual burden of malnutrition facing developing countries like Nigeria. This distribution illustrates the complex nutritional transitions taking place in developing countries and emphasizes the urgent need for all-encompassing public health initiatives to address both undernutrition and the rising trend of adolescent obesity. (Table 2) According to the study, adolescents have a nuanced knowledge of non-communicable diseases (NCDs). Of the respondents, over 63% showed good knowledge, 27.4% showed fair knowledge, and 9.6% showed poor knowledge. Respondents had some misconceptions regarding NCDs classifications, despite their significant knowledge of major NCDs such as cancer, stroke, diabetes, and hypertension. Respondents showed a great deal of awareness into NCD risk factors by accurately recognizing smoking, alcohol use, dietary practices, stress, and physical inactivity as major contributors. The results indicate a generally strong grasp of NCDs among adolescents, despite some enduring misconceptions, underscoring the possibility of focused health education initiatives (Figure 1).

Adolescents' knowledge of the significance of diet in preventing NCDs was evaluated in the study, and the results showed a complex understanding. Of the respondents, about 57% showed good knowledge, 11% showed fair knowledge, and 32% showed poor knowledge. Participants demonstrated a high level of awareness regarding dietary risks with 64.6% demonstrated that nutrition affects long-term health, 83.5% recognizing the preventive advantages of fruits and vegetables, and 75.2% demonstrated the hazards of processed foods. Additionally, respondents showed sophisticated understanding of the connections between NCDs, obesity, and salt. Their moderate comprehension of alcohol's function in preventing NCDs, however, suggests that targeted nutritional education is necessary to improve adolescents' overall health awareness (Figure 2).

Furthermore, despite showing some understanding of health risks, the majority of participants (64%) had negative perception about the role of nutrition in preventing NCDs. Across a range of questions, 64.4% comprehended how lifestyle choices affect NCDs, 75.8% acknowledged the significance of maintaining a healthy weight through diet and exercise, and 73.5% acknowledge the damage of processed foods. Significant information gaps did exist, though, as 72.1% of respondents believed that traditional cultural foods were naturally protective and 80.2% mistakenly believed that physical activity was more important than nutrition in preventing NCDs. Notably, 63.8% expressed motivation to improve dietary habits, suggesting potential for targeted nutritional education and intervention strategies. (Figure 3)

The study revealed weak but significant correlations between demographic characteristics and perceptions of diet's role in NCD prevention. Age, gender, and residential location showed minimal positive correlations, suggesting that demographic factors had negligible practical influence on perceptions (Tables 3, 4 & 5).

Table 1. Socio-Demographic Characteristics of Respondents N= 480.

SN	Demographics		Frequency (%)	Mean (±SE)	SD
1	Age	10-13	118(24.6)		
		14-16	303(63.1)	1.88±0.027	0.595
		17-19	59(12.3)		
2	Gender	Female	243(50.6)		
		Male	237(49.4)	1.49±0.023	0.500
3	Class	JSS1	122(25.4)		
		JSS2	106(22.1)	2.53±052	1.132
		SSS1	127(26.5)		

SN	Demographics		Frequency (%)	Mean (±SE)	SD
4	School	SSS2	125(26.0)	1.49±0.023	0.500
		Private	181(37.7)		
		Public	299(62.3)		
5	Religion	Christianity	286(59.6)	1.48±0.029	0.636
		Islam	157(32.7)		
		Traditional	37(7.7)		
6	Residence	Urban	259(54)	1.46±0.023	0.499
		Rural	221(46)		
7	Who are you currently living with	Parents	394(82.1)	2.63±0.035	0.770
		Guardian	86(17.9)		
8	Mother's education status	Primary	77(16)	2.29±0.033	0.728
		Secondary	185(38.5)		
		Tertiary	218(45.4)		
9	Father's education status	Primary	56(11.7)	2.51±0.032	0.696
		Secondary	121(25.2)		
		Tertiary	303(63.1)		
10	Occupation of Father/Guardian	Artisans	59(12.3)	3.13±0.072	1.567
		Employed	197(41)		
		Unemployed	34(7.1)		
		Retired	3(0.6)		
		Self Employed	187(39)		

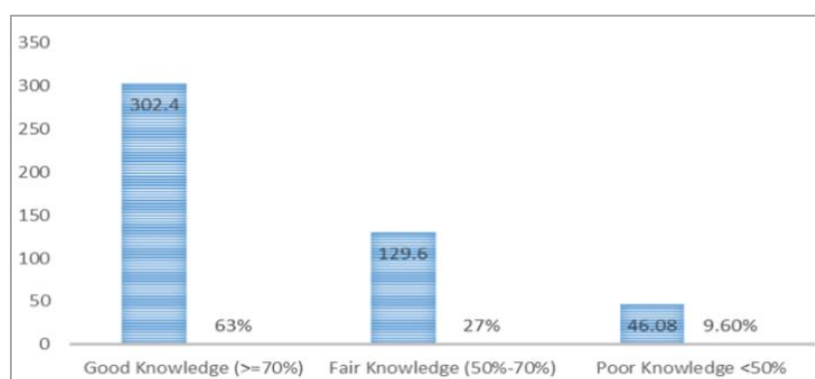*Figure 1. Respondents Knowledge of NCDs.*

Table 2. Anthropometric Status of Respondents.

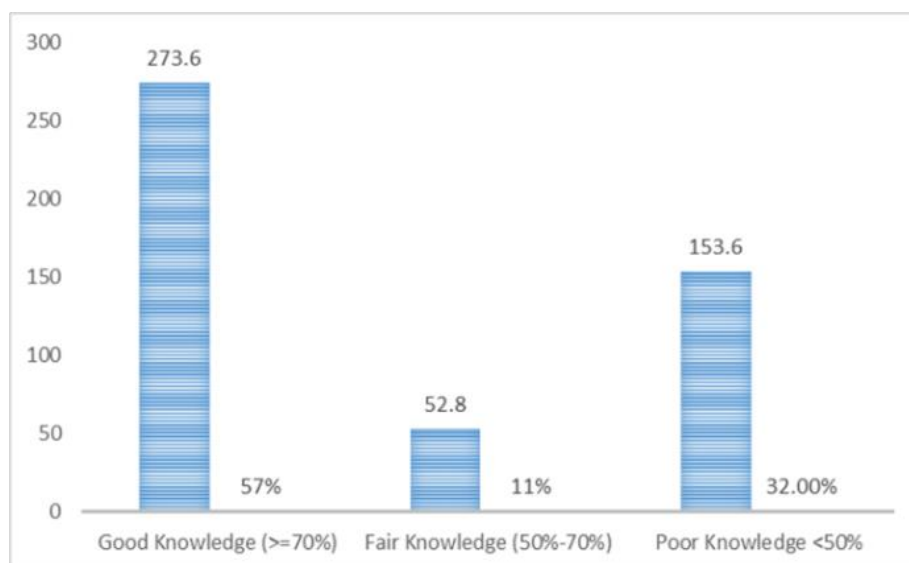| Weight Status	Frequency	Percent (%)
Underweight	112	23.3
Normal Weight	292	60.8
Overweight	66	13.8
Obese	10	2.1
Total	480	100

Figure 2. Knowledge of the role of adequate diet in NCDs prevention and management.

Table 3. Relationship Between Age Of Correspondent And The Perception Of Respondents On The Role Of Diet In The Prevention And Management Of NCD.
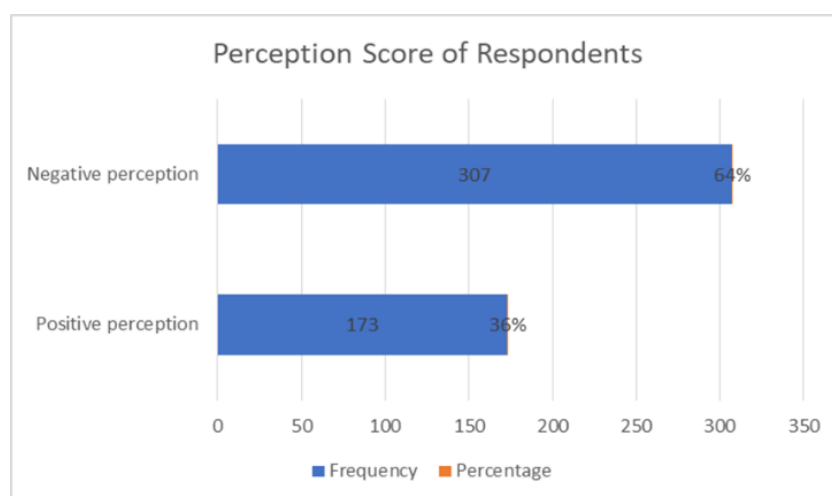
Correlations			
		age	Perception of Respondents on the Role Of Diet In The Prevention Management Of NCD
Age	Pearson Correlation	1	.045
	Sig. (2-tailed)		.004
	N	480	480
Perception of Respondents on the Role Of Diet In The Prevention And Management Of NCD	Pearson Correlation	.045	1
	Sig. (2-tailed)	.004	
	N	480	480

Table 4. Relationship between Gender of Correspondent and the Perception of Respondents on the Role of Diet in the Prevention and Management of NCDs.

		Perception of Respondents on the Role Of Diet In The Prevention And Management Of NCD	Gender
Perception of Respondents on the Role Of Diet In The Prevention And Management Of NCD	Pearson Correlation	1	.016
	Sig. (2-tailed)		.029
	N	480	480
Gender	Pearson Correlation	.016	1
	Sig. (2-tailed)	.029	
	N	480	480

Table 5. Relationship between Residence and the Perception of Respondents on the Role of Diet in the Prevention and Management of NCDs.

		Perception of Respondents on the Role Of Diet In The Prevention And Management Of NCD	Residence
Perception of Respondents on the Role of Diet In The Prevention And Management Of NCD	Pearson Correlation	1	.025
	Sig. (2-tailed)		.003
	N	480	480
residence	Pearson Correlation	.025	1
	Sig. (2-tailed)	.003	
	N	480	480

Figure 3. Perception of Respondents on the Role of Diet in the Prevention and Management of NCDs.

4. Discussion

This study revealed a notable understanding of non-communicable diseases (NCDs) and their dietary relationships among respondents. The findings align with previous research among undergraduates where 73.1% of respondents demonstrated good knowledge of NCDs [18]. The recognition of major NCDs corresponds with research conducted in Kenya where recognition among adolescents ranged from 74.2% to 81.8% [19].

Notable knowledge gaps emerged in specific areas. Mental health literacy was particularly low, with just over a quarter of respondents identifying anxiety as an NCD risk factor. This finding is consistent with global trends of poor mental health literacy among adolescents and highlights a critical area for educational intervention [20]. A significant finding was the persistence of traditional beliefs, with nearly half of respondents attributing NCDs to supernatural causes. This belief system, documented in various African contexts, presents a potential barrier to evidence-based prevention strategies and highlights the need for culturally competent health education

approaches that bridge traditional and biomedical understanding [21, 22]. Regarding dietary knowledge, the majority of respondents acknowledged the protective role of fruit and vegetable consumption against NCDs. This level of knowledge is slightly lower than a study on the nutritional and health values of fruits and vegetables among adolescents in Lagos State where 84.99% of respondents displayed good knowledge, potentially indicating successful local health promotion efforts [23]. The strong recognition of balanced diet's role in NCD prevention exceeded rates reported in other low- and middle-income countries, such as India's 61.2% [24]. Moreover, the study found that 75.2% of respondents recognized the importance of reducing processed food and sugary beverage consumption for NCD prevention. This knowledge is particularly relevant given Nigeria's ongoing nutrition transition, characterized by increasing consumption of energy-dense, nutrient-poor foods [25]. The study revealed weak but significant correlations between demographic characteristics and perceptions of diet's role in NCD prevention. Age, gender, and residential location showed minimal positive correlations, suggesting that demographic factors had negligible practical influence on perceptions. A notable finding

was the high level of motivation among respondents, with nearly two-thirds expressing willingness to improve their dietary habits to reduce future NCD risks. However, this motivation is partially offset by perceived barriers, as most respondents considered consuming a balanced diet to be inconvenient and expensive. This perception aligns with findings from similar studies in developing countries where cost and accessibility often emerge as significant barriers to healthy eating [26]. The study revealed an interesting cultural dimension, with nearly three-quarters of respondents believing that traditional cultural foods are generally healthy and protective against chronic diseases. While this perception could encourage consumption of nutritious traditional foods, it may also lead to overreliance on traditional dietary practices without critical evaluation of their nutritional value in relation to NCD prevention.

The anthropometric findings reveal a complex nutritional landscape among in-school adolescents in Ogun State, Nigeria. The concerning dual burden of malnutrition observed aligns with findings from similar studies in other parts of Nigeria. For instance, a study in Osun State reported 20.1% underweight prevalence among secondary school adolescents, and 21.3% in a similar study in Ogun State [27, 28]. The combined overweight and obesity prevalence findings are comparable to results from more urbanized Nigerian settings [29, 30]. Furthermore, a recent school-based study in Ikenne Local Government Area of Ogun State corroborates these findings, reporting a 12.7% prevalence of overweight and obesity among in-school adolescents [15]. An important public health concern is the coexistence of both underweight and overweight/obesity in the same population, which exemplifies the "double burden of malnutrition" that characterizes many LMICs undergoing nutrition transition. This pattern may be attributed to various factors including urbanization, changing dietary patterns, and socioeconomic disparities within the population [31]. The simultaneous presence of under- and over-nutrition emphasizes the complexity of managing NCDs and their risk factors, highlighting the necessity for nuanced, context-specific interventions that can address both overnutrition and food insecurity concurrently. These interventions must focus on improving overall diet quality rather than merely modifying caloric intake.

5. Conclusion

The thorough evaluation of in-school adolescents in Ogun State, Nigeria, regarding their knowledge and perception on the role that adequate diet plays in managing and preventing NCDs has produced insightful results. In a community undergoing a fast dietary change, this study offers a comprehensive understanding of the complex interactions between anthropometric status, perceptions, and nutrition knowledge. The results provide vital direction for upcoming public health actions and policy by highlighting both the strengths and weaknesses in adolescents'

knowledge of NCDs and associated risk factors. According to the study, adolescents in Ogun State have a generally good understanding of the main NCDs, including diabetes, cancer, stroke, and hypertension. This core knowledge is promising since it offers a framework for the development of more specific and useful health information. But the existence of false beliefs especially with regard to the cause of non-communicable diseases, highlights the necessity of focused educational initiatives. The opinion that a sizable percentage of respondents had that supernatural forces are to blame for NCDs highlights the significance of culturally responsive health education that takes into account both accepted cultural beliefs and scientific realities.

Respondents demonstrated strong knowledge of key NCD risk factors, including alcohol consumption, smoking, and physical inactivity, yet gaps remain in understanding the dietary aspects of prevention. This knowledge shows that certain public health programs have been successful in reaching this group and is consistent with the rhetoric around global health. The diminished acknowledgement of mental health variables as plausible risk factors for NCDs suggests a crucial domain for enhancing health education. Adolescents must comprehend the connection between mental and physical health as the world's health community becomes more aware of it to promote a more holistic approach to health and well-being. The study's findings about attitudes and understanding of nutrition are very insightful. A good indicator that messages about the value of plant-based diets are reaching this demographic is the high degree of knowledge of the preventive benefits of fruits and vegetables against NCDs. Similarly, the realization that cutting back on processed foods and sugary drinks might help avoid NCDs suggests that adolescents are becoming more aware of their health. These revelations offer a solid platform for encouraging better food choices.

However, nutritious eating practices are significantly hampered by the belief held by a sizable majority that eating a nutritious diet is costly and inconvenient. This result emphasizes how important it is to provide practical instruction on simple, reasonably priced healthy eating practices. Subsequent interventions must to centre not just on defining a balanced diet, but also on incorporating good eating habits within the limitations of everyday living and scarce resources. The respondents' strong appreciation for traditional meals offers both a chance and a difficulty. This perspective may be used to encourage healthy eating habits that are accepted in the culture, but it also calls for cautious education about the nutritional value of traditional foods and the possible risks associated with certain cooking techniques. In order to provide successful dietary recommendations, it will be imperative to strike a balance between cultural preferences and nutritional research. The study's anthropometric results show a complicated dietary environment that is similar to the larger nutrition shift taking place in many low- and middle-income nations. The fact that underweight

and overweight/obesity coexist in the same adolescent population emphasizes Ogun State's dual burden of malnutrition. This circumstance necessitates sophisticated, multi-dimensional solutions that can handle overnutrition and food insufficiency at the same time. It also emphasizes the need to provide individualized nutrition guidance that considers a person's risk factors and existing nutritional status. The high rate of underweight adolescents which is higher than the national average needs immediate action. This study implies that although tackling the increasing prevalence of obesity and associated NCDs is essential, efforts should not overlook the ongoing problem of undernutrition. One encouraging finding of the study was that adolescents were very motivated to change their eating habits in order to prevent NCDs. Initiatives aimed at promoting health have a great chance because of this readiness to adapt. It may be possible to significantly enhance eating habits and long-term health results by using this incentive through focused, age-appropriate treatments.

Abbreviations

NCDs	Non-Communicable Diseases
WHO	World Health Organization
LGAs	Local Government Areas
JSS1	Junior Secondary School 1
JSS2	Junior Secondary School 2
SSS1	Senior Secondary School 1
SSS2	Senior Secondary School 2
SPSS	Statistical Package for Social Sciences
FMOH	Federal Ministry of Health
LMICs	Low- and Middle-Income Countries

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Author Contributions

Olapo Gbemisola Taiwo: Conceptualization, Investigation (interviews), Data curation, Writing – original draft, Writing – review & editing.

Balogun Olanike Olubunmi: Conceptualization, Methodology, Supervision, Writing – review & editing, Validation.

Quadri, Jelili Akorede: Methodology, Validation, Writing – review & editing.

Koko Olusegun John: Data curation, Formal Analysis, Writing – original draft

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Data Availability Statement

The data is available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography

Olapo Gbemisola Taiwo is a Nutrition Officer at Ogun State Primary Health Care Development Board (OGPHECADEB), where she has served since 2019. She is currently pursuing her M.Sc. in Human Nutrition and Dietetics at Lead City University (expected 2024), building upon her B.Tech. in Food Science from Ladoke Akintola University of Technology (2015). A certified public health specialist, Olapo has completed numerous professional training programs, including the prestigious Leadership Development for Accelerated Progress in Nutrition in Nigeria (LEDA-NN) organized by the Bill and Melinda Gates Foundation. She specializes in nutritional epidemiology, program development, and health promotion, with particular expertise in maternal and child nutrition. Her current work focuses on implementing nutrition interventions, conducting community assessments, and providing technical assistance to Local Government Areas in Ogun State. She also serves as a State Technical facilitator for Maternal, Newborn, and Child Health initiatives.

Balogun Olanike Olubunmi is a Lecturer in Human Nutrition and Dietetics at Lead City University, Ibadan, where she also serves as the Head of Department. She holds her PhD in Human Nutrition and Dietetics and as a Registered Dietitian, Dr. Balogun brings practical clinical experience to her academic role. She has been an active member of the academic community since 2017, contributing to the development and delivery of nutrition and dietetics education programs. A Full Member of the Nutrition Society of Nigeria since 2019, a member of the Nutrition Society UK and American Society for Nutrition.she participates in advancing nutritional science and practice in Nigeria. Her research interests include community nutrition, dietetics education, adolescent, maternal and child health nutrition. Her leadership as HOD demonstrates her commitment to academic excellence and professional development in nutritional sciences.

Quadri Jelili Akorede is a lecturer and current Head of Department of Nutrition and Dietetics at Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria. He holds a PhD in Nutrition and Dietetics and is a registered dietitian in both Nigeria and the United Kingdom. Dr. Akorede teaches core Dietetics courses at undergraduate and postgraduate levels. His research interests include community nutrition, dietetics education, maternal and child health and nutrition, and the nutritional assessment of vulnerable populations. He has published widely in reputable national and international journals. His current research focuses on the nutrient composition of commonly consumed complementary foods in Ogbomoso North, Oyo State.

Koko John Olusegun is a multidisciplinary health professional, academic writer, and data analyst with a robust foundation in microbiological sciences and public health. He holds a B.Sc. in Microbiology from Lagos State University and an M.Sc. in Food and Industrial Microbiology from the Federal University of Agriculture, Abeokuta (FUNAAB). Currently serving with the Ogun State Primary Health Care Board Ogun State, he applies his expertise in Food microbiology, nutrition, clinical services, and public health to drive evidence-based healthcare initiatives at the community level. With a strong command of scientific research, data interpretation, and program evaluation, Koko contributes to the design and implementation of impactful health interventions. As a professional academic writer, he engages in scholarly research and publication, with interests spanning food safety, epidemiology, and health systems strengthening. His proficiency in data analytics enhances his ability to monitor health trends, inform policy, and support strategic decision-making in primary healthcare delivery.

Research Field

Olapo Gbemisola Taiwo: Public health, Adolescents, Community Nutrition, Food Science, Nutrition assessment
Balogun Olanike Olubunmi: Infant, Adolescents, Clinical, Community, Diet therapy
Quadri Jelili Akorede: Diet therapy, Maternal, Infant, Clinical, Community
Koko John Olusegun: Health, Nutrition, Food, Microbiology, Epidemiology