American Journal of Nursing and Community Care (AJNCC)

VOLUME 1 ISSUE 1 (2026)



PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

American Journal of Nursing and Community Care (AJNCC)
Volume 1 Issue 1, Year 2026
https://journals.e-palli.com/home/index.php/ajncc

Factors Affecting Students' Nutritional Knowledge on Food Served in Boarding Secondary Schools, Jos North Area of Plateau State

Muhammad Nafisat Gonto[1*], Nerat Sonia Gyendeng[2], Elizabeth Onyi Okoh[3], Abubakar Faiza Sani[4], Ezekiel Tamdi Ayuba[1]

Article Information

Received: June 22, 2026
Accepted: November 03, 2026
Published: November 16, 2026

Keywords
Adolescents, Boarding Secondary School, Food.Nutritional Knowledge, Students

ABSTRACT

Adolescent nutrition remains a critical public health concern across sub-Saharan Africa, particularly within institutional settings such as boarding schools where students depend almost entirely on school-provided meals. In Nigeria, boarding-school students constitute a vulnerable population whose dietary knowledge and practices are shaped by a complex interplay of individual, interpersonal, institutional, and policy-level factors. Despite growing evidence on adolescent nutrition knowledge in various Nigerian states, no study has specifically examined the determinants of nutritional knowledge among boarding-school students in Jos North Local Government Area of Plateau State. It is for this reason that we want to assess the factors affecting nutritional knowledge among boarding-school students in Jos North Local Government Area, with particular attention to socioeconomic conditions that interact to shape students' understanding of nutrition. A descriptive cross-sectional study was conducted among 180 students across four boarding schools (three private & one public) using proportionate sampling among fifteen boarding schools in Jos North Local Government Area of Plateau state, Nigeria. Data were analyzed using SPSS version 26 statistical software to identify factors affecting nutritional knowledge. A p-value ≤ 0.05 was considered statistically significant at 95% confidence interval. There was an association between class level and knowledge of food served highlighting the importance of strengthening school-based nutrition education especially in junior secondary schools. Ethnicity, sex, and maternal education shows nonsignificant associations.

INTRODUCTION

Adolescents are defined by the United Nations as those between the ages of 10- 19 and there are about 1.2 billion adolescents in the world today, making up 16% of the population (UNICEF DATA, 2026). Nutrition plays a very important role in the well-being of an adolescent and nutritional needs during adolescence are increased because of the increased growth rate and changes in body composition associated with puberty (Bello *et al.,* 2024). Helsin & McNulty, 2023 have shown that the dramatic increase in energy and nutrient requirements coincides with other factors that may affect adolescents' food choices and nutrient intake and thus, nutritional status. These factors, including the quest for independence and acceptance by peers, increased mobility, greater time spent at school, and preoccupation with self-image, contribute to the erratic and unhealthy eating behaviors that are common during adolescence (Li *et al.,* 2023, Medeiros *et al.,* 2022).

Adolescent nutrition remains a critical public health concern across sub-Saharan Africa, particularly within institutional settings such as boarding schools where students depend almost entirely on school-provided meals (Dolati *et al.,* 2021). According to Osasona, 2023, In Nigeria, boarding-school students constitute a vulnerable population whose dietary knowledge and practices are shaped by a complex interplay of individual, interpersonal, institutional, and policy-level factors.

Despite growing evidence on adolescent nutrition knowledge in various Nigerian states, (Balogun *et al.,* 2023, Gadanya *et al.,* 2021 & Osasona, 2023) no study has specifically examined the determinants of nutritional knowledge among boarding-school students in Jos North Local Government Area of Plateau State, creating a significant gap in the literature that this research seeks to address. It is for this reason that the objective of this research is to assess the factors affecting nutritional knowledge among boarding-school students in Jos North LGA, with particular attention to socioeconomic conditions that interact to shape students' understanding of nutrition.

This research is guided by the hypothesis that nutritional knowledge among boarding-school students is not merely an individual cognitive attribute but is significantly influenced by the layered socio-ecological context in which students live and eat. The significance of this investigation lies in its potential to inform evidence-based interventions that address both the educational and institutional dimensions of adolescent nutrition, ultimately contributing to improved dietary practices,

[1] Department of Anatomy & Physiology, Plateau State College of Nursing Sciences, Vom, Plateau State, Nigeria
[2] Nerat Sonia Gyendeng, Daniel Adejo Street, Karu, FCT Abuja, Nigeria
[3] Department of Community Medicine, Faculty of Clinical Sciences, College of Health Sciences, University of Jos, Plateau State, Nigeria
[4] Department of Nursing Sciences, Plateau State College of Nursing Sciences, Vom, Plateau State, Nigeria
[*] Corresponding author's email: nafisamuhammad221@gmail.com

academic performance, and long-term health outcomes for boarding-school students in Plateau State and comparable settings across Nigeria.

LITERATURE REVIEW

Globally, nutritional knowledge among adolescents is shaped by family education, parental feeding practices, food availability and exposure to nutrition information. A systematic review of 48 qualitative studies by Liu *et al.* (2021) identified parental nutrition education, parenting style, family food preferences, meal availability, time and food costs as important influences on adolescents' dietary knowledge and eating habits. Similarly, Amoah *et al.* (2024), in a systematic review, highlighted the role of culinary education in promoting nutritional awareness and informed food choices. These findings are relevant to boarding schools, where school authorities and food service providers partly assume food-related responsibilities ordinarily performed by parents.

In Sub-Saharan Africa, school-based nutrition education has been shown to improve students' nutrition knowledge, although improved knowledge does not always translate into healthier dietary practices. Kyere *et al.* (2020), in a systematic review of school-based nutrition interventions, reported that nutrition education could improve knowledge, but supportive school environments were necessary to facilitate behavioural change. Similarly, Noor *et al.* (2025) identified gaps in school nutrition policies, nutrition services and food environments, highlighting the importance of institutional support. These findings suggest that students' knowledge is influenced not only by classroom teaching but also by the availability, quality and nutritional composition of food provided within schools.

In Nigeria, parental education, socioeconomic circumstances, school curriculum and food accessibility are important influences on adolescents' nutrition knowledge and dietary choices. Olaoye (2024), in a study involving secondary-school students in Kwara State, examined students' knowledge of food labels and safe nutrition, highlighting the importance of nutrition education and access to relevant information. Conrad *et al.* (2024), studying adolescents in three northern Nigerian states, found that food choices were influenced by nutrition-related perceptions, taste preferences, affordability, gender norms and household food environments. Omowumi (2025), in a study among public secondary-school students in Ondo State, also examined students' knowledge and perceptions of malnutrition and its implications for academic performance. These studies reinforce the importance of nutrition literacy and the social and economic conditions that shape adolescents' understanding of food and nutrition.

In Jos North, school context and the quality of nutrition instruction may influence students' understanding of nutrition. John (2025), in a study of Senior Secondary School two students (SS2) in Jos North, identified difficulties with concepts including food tests, digestive enzymes, mineral requirements and modes of nutrition. Students in private schools performed better than those in public schools, while no significant sex difference was observed. Although the study examined nutrition-related concepts rather than knowledge of meals served in boarding schools, it highlights the possible influence of school context and teaching strategies. Furthermore, Afolaranmi *et al.* (2014) demonstrated that training significantly improved food safety and hygiene knowledge among food handlers in boarding secondary schools in Jos North, suggesting that the capacity of school food providers is an important component of the school nutrition environment.

Overall, existing literature indicates that students' nutritional knowledge is influenced by individual, family, educational and institutional factors. However, there is limited evidence specifically examining the factors associated with students' knowledge of the food served in boarding secondary schools in Jos North Local Government Area. The present study therefore seeks to address this gap by examining the relationship between students' sociodemographic characteristics and their knowledge of food served in selected boarding secondary schools.

MATERIALS AND METHODS

Study Area

The study was conducted in Jos North Local Government Area in Plateau State, Nigeria. It has an area of 291 km² and a population of 429,300 according to the national population commission census 2026 and an urban community with parts of it being an urban slum. The population was predominantly Christians, with majority of the tribes being Plateau indigenous tribes who work mostly with the civil service. Others were artisans, farmers or self-employed. Social amenities like schools, power supply, potable water and roads are good within the community while housing and waterways are fairly good. The literacy level of the is similar to that of the State (lower than the national average) and most residents are of the lower social status. Jos North has a total of about 15 boarding secondary schools and are registered with the State Ministry of Education, Area Directorate Office.

Study Design

The study was a descriptive cross-sectional study that involves collection of quantitative data on nutritional knowledge about food served among selected boarding schools.

Study Population

This study was carried out on secondary school students in registered boarding schools within Jos North Area of Plateau State. The study focused on students from JSS1 - SS3 in the registered selected schools.

Eligibility criteria

The study includes all students both male and female,

of selected boarding schools (that allow the use of provisions/extra snacks) from JSS1- SS3, who give consent/ assent to the study. While Students from selected boarding schools who are not boarding students for health/ personal reasons or those who do not consent for the study were excluded from the study.

Sample Size determination

The sample size was calculated using the Fisher's formula shown below:

$$n = \frac{(Z\alpha)^2 \times (p \times q)}{d^2}$$

were,

N= Sample size

Zα= Z- alpha, the value of Z from the probability tables if values are normally distributed, 95% falls within 2 standard errors of the mean, 1.96 from the standard normal variate tables,

p= The prevalence of nutritional knowledge among adolescents from a previous study, 12% (Gadanya *et al.,* 2021)

q= (When p is in %:100- p, when p is in decimal: 1- p)

d= The precision of the estimate (relative or absolute, 5% or 0.05)

Substituting into the Formula,

$$N = \frac{1.96^2 \times (0.12 \times (1 - 0.12))}{(0.05)^2}$$

$$N = \frac{3.8416 \times 0.12 \times 0.88}{0.0025}$$

$$N = \frac{3.8416 \times 0.1056}{0.0025}$$

$$N = \frac{0.4057}{0.0025}$$

N= 162.269 ~ 163.

For non- response rate, 10% of the sample size will be added;

× 163= 16

Therefore; 163 + 16 = 179 (This was rounded up to 180)

Sampling Technique

The study involved a two-stage sampling technique: At the first stage, The 15 boarding schools in Jos North LGA was stratified into private and government-owned schools. Convenience sampling was used to select 4 boarding schools based on the ratio of public and private boarding schools in the area. In the second stage, 180 students were selected using proportionate allocation. Based on the sampling allocation, 135 students were selected from private schools while 45 were selected from public schools. Subsequently, students were randomly selected by balloting from the list of all the students in the arm after determining the proportion of students to be selected per arm via proportionate sampling.

Table 1: Categorization of the registered schools in Jos North Local Government Area

Private schools	**Public schools**
St Louis College	Federal Government College, Jos
St Theresa Girls College	Government College, Jos
St John's College	
St Murumba Boys College	
ECWA Staff School	
Command Sec School	
Baptist High School	
Baptist Model School	
Omega High School	
Victoria Salem School	
Redeemed Peoples Academy	
COCIN Headquarters compound school	
Zion High School	

Table 2: List of selected schools in Jos North Local Government Area

Private Schools	**Public Schools**
ECWA Staff School	Federal Government. College, Jos
Victoria Salem School	
St Louis College	

Stage 2: Selection or respondents

The total number of students that were to be assessed from either the public or private sector was determined using proportionate allocation method as follows:

No. selected from either sector =

Total No. of students in the particular sector X Sample size

Total No. of students in the 2 sectors combined

In the ratio 3:1 for private to public sector, sample size of 180 will be 135:45

For Private Sector, $\frac{135}{180} \times 180$ =135 respondents

For Public Sector, $\frac{45}{180} \times 180$ = 45 respondents

For the public school, about 7 or 8 students were randomly selected across the six classes untl the sample size of 45 was gotten.

For the private schools, proportionate allocation was also used to determine the number of students that will be selected from each school.

Total No. to be selected per school =

Total No. in the selected school X Sample size

Total No. of students in all private schools

In selecting the respondents taking part in the study, students from JS 1- SS 3 were recruited. The number of respondents to be selected in each of these classes was determined as follows:

Total number of respondents in a selected school

Number of classes in a school= 6

Subsequently, students were randomly selected by balloting from the list of all the students in the arm after determining the proportion of students to be selected per arm.

Table 3: Selected school Total no of students No of selected respondents

Selected school	Total no of students	No of selected respondents.
ECWA Staff School	526	526 X 135 = 66
1080		
Victoria Salem School	20	20 X 135 = 3
1080		
St Louis College	534	534 X 135 = 66
1080		
Total	**1080**	**135**

Data Collection Technique

Three research assistants were trained on how to guide the respondents to fill in the questionnaires appropriately. The purpose of the study was given in details to all eligible participants. Verbal or written informed consent and assent was sought from each participant before the data collection began.

Data Instrument

The data collection instrument used in the study was a self- administered questionnaire, and an observational checklist on the type of meals made available. This questionnaire was also pretested among 16 students (10% of the sample size) in Educare Chosen High School in Jos South LGA to check mate errors and also proffer solutions during the data collection.

Data Analysis

Data was analyzed using SPSS version 26 statistical software to identify factors affecting knowledge such as age, type of school attended, ethnicity, parents' occupation etc. At a 95% confidence interval, all predictors with p-values less than 0.05 were considered statistically significant.

Independent variables

These will include socio-demographic characteristics of the students; such as age, parity, education and household socio-economic status.

Dependent variables

Nutritional knowledge of food served in school.

Ethical Consideration

An introductory letter was obtained from the Department of Community Medicine and Ethical clearance was obtained from the State Ministry of Education to allow the study to be conducted in boarding secondary schools in Jos North LGA. A verbal permission was also obtained from the school management of selected schools. Informed written and verbal assents and consent were obtained from selected students of ages below 10 and above 18 respectively with detailed information on the nature, purpose and all procedures involved in the study. An option was provided to them to opt out at any stage of the study if they so wished. The respondents were given assurance on strict confidentiality and anonymity during the study.

RESULTS AND DISCUSSION

Table 4: Socio-demographic characteristics of respondents.

A large portion of the study participants were between the ages 10-14 (81.6%) of which Christians (94.4%) who reside in Plateau state (80%). 85.5% and 85.6% had fathers and mothers with tertiary education. A large proportion of the students were females (61.1%) and attended private schools (55.6%). About 51% of the participants were

found in the senior secondary classes, who belonged to Plateau ethnic groups (52.2%). Study participants who had fathers and mothers who are civil servants was found to be 72.8% and 62.8% respectively.

Table 5: Factors associated with knowledge of food served in boarding secondary schools among respondents

Table 4: Socio-demographic characteristics of respondents (n = 180).

Characteristic	Frequency	%
Age group		
10- 14 years	147	81.6
15- 19	33	18.3
Sex		
Female	110	61.1
Male	70	38.9
School type		
Private	135	75.0
Public	45	25.0
Class		
JS 1	21	11.7
JS 2	31	17.3
JS 3	36	20.0
SS 1	22	12.2
SS 2	35	19.4
SS 3	35	19.4
Ethnicity		
Plateau indigenous	94	52.2
Hausa	13	7.2
Yoruba	7	3.9
Others	66	36.7
Religion		
Christian	170	94.4
Islam	10	5.6
Father's occupation		
Civil servant	131	72.8
Business	27	15.0
Others#	22	12.2
Mother's occupation		
Civil servant	113	62.8
Business	46	25.5
Others+	21	11.7
Father's educational level		
None	12	6.7
Primary	3	1.7
Secondary	11	6.1
Tertiary	154	85.5
Mother's educational level		
None	8	4.4
Primary	3	1.7
Secondary	15	8.3
Tertiary	154	85.6
State of residence		
Plateau	144	80.0
Other states	36	20.0

**Clergy, Artisan, Farmer + Housewife, Artisan, Farmer*

Table 5: Factors associated with knowledge of food served in boarding secondary schools among respondents (n = 180).

Characteristic	Knowledge of food		Total f (%) 147	χ2	df	p-value
	Poor f (%)	Good f (%)				
Age group (years)						1.000
10- 14	44 (33.3)	103 (66.7)	147 (100.0)	0.0001	1	
15-19	9 (33.3)	24 (66.7)	33 (100.0)			
Sex						
Female	32 (29.1)	78 (70.9)	110 (100.0)	2.291	1	0.130
Male	28 (40.0)	42 (60.0)	70 (100.0)			
School type						0.144
Private	41 (30.4)	94 (69.6)	135 (100.0)	2.133	1	
Public	19 (42.2)	26 (57.8)	45 (100.0)			
Class				18.105		
JS 1	15 (71.4)	6 (28.6)	21 (100.0)		5	0.003*
JS 2	11 (35.5)	20 (64.5)	31 (100.0)			
JS 3	9 (25.0)	27 (75.0)	36 (100.0)			
SS 1	4 (18.2)	18 (81.8)	22 (100.0)			
SS 2	9 (25.7)	26 (74.3)	35 (100.0)			
SS 3	12 (34.3)	23 (65.7)	35 (100.0)			
Ethnicity					1	0.246
Plateau indigenous	35 (37.2)	59 (62.8)	94 (100.0)	1.347		
Non-indigenous	25 (29.1)	61 (70.9)	86 (100.0)			
Father's occupation						
Civil servant	42 (32.1)	89 (67.9)	131 (100.0)	0.353	2	0.838
Business	10 (37.0)	17 (63.0)	27 (100.0)			
Others#	8 (36.4)	14 (63.6)	22 (100.0)			
Father's education				1.342+		
None	4 (33.3)	8 (66.7)	12 (100.0)		3	0.719
Primary	1 (33.3)	2 (66.7)	3 (100.0)			
Secondary	2 (18.2)	9 (81.8)	11 (100.0)			
Tertiary	53 (34.4)	101 (65.6)	154 (100.0)			
Mother's occupation				0.296		
Civil servant	39 (34.5)	74 (65.5)	113 (100.0)		2	0.862
Business	15 (32.6)	31 (67.4)	46 (100.0)			
Others@	6 (28.6)	15 (71.4)	21 (100.0)			
Mother's education						0.286
None	4 (50.0)	4 (50.0)	8 (100.0)		3	
Primary	1 (33.3)	2 (66.7)	3 (100.0)	3.781+		
Secondary	2 (13.3)	13 (86.7)	15 (100.0)			
Tertiary	53 (34.4)	101 (65.6)	154 (100.0)			
State of residence						0.236
Plateau	45 (31.3)	99 (68.2)	144 (100.0)	1.406	1	
Other States	15 (41.7)	21 (58.3)	36 (100.0)			

* *Variable for logistic regression, + Corrected Chi-square, # Clergy, Artisan, Farmer, @ Housewife, Artisan, Farmer*

Chi-square test found sex, ethnicity, mother's education, and state of residence were not associated with knowledge of food served in boarding schools. Only class level showed significant association with $p \leq 0.05$.

Discussion

A large portion of the study participants were between the ages 10-14 (81.6%) of which majority were Christians (94.4%) who reside in Plateau state (80%). 85.5% and 85.6% had fathers and mothers with tertiary education. This is similar to a study done in Calabar state, Nigeria by Danjuma *et al.,* 2025. A large proportion of the students were females (61.1%) similar to a study done in Sokoto State, Nigeria by Muhammad *et al.,* 2024 and attended

private schools (75%). About 52.2% of the participants belonged to Plateau ethnic groups. Study participants who had fathers and mothers who are civil servants was found to be 72.8% and 62.8% respectively.

Class of students was significantly associated with knowledge of food served in boarding secondary schools. Students in Junior Secondary School 1 (JSS 1) had 78% lower odds of possessing good knowledge than students in senior secondary school (SSS). This may be possible because students in higher classes have accumulated more learning experiences and may have encountered more nutrition-related information through formal education. However, the cross-sectional design does not establish that progression through school caused the observed difference. Nigerian evidence supports the potential contribution of structured nutrition education to adolescents' knowledge. Ibeanu *et al.* (2020) evaluated locally developed nutrition education materials among 869 adolescents aged 13–17 years in public secondary schools. Mean scores for general nutrition knowledge increased from 39.61% before the intervention to 65.77% after it, while scores on food sources of nutrients increased from 66.87% to 82.26%. These findings show that nutrition knowledge can improve following educational exposure, although the study did not compare junior and senior classes directly. Similarly, Adeoya *et al.* (2023) reported that a six-week nutrition education intervention significantly improved pupils' knowledge concerning the choice of school midday meals in Ibadan.

Ethnicity was not a statistically significant predictor of knowledge of food served in boarding secondary schools, although non-indigenes had better observed knowledge than Plateau indigenes. Conrad *et al.* (2024) highlighted the roles of food-related knowledge, preferences, social norms, household food environments, and affordability in shaping adolescents' food choices. However, the study did not establish ethnicity as an independent predictor of nutritional knowledge.

Sex was not significantly associated with knowledge of food served in boarding secondary schools. Nevertheless, 70.9% of female students and 60.0% of male students were reported to have good knowledge. In contrast, Adeoya *et al.* (2023) reported higher mean nutritional knowledge scores among male pupils than female pupils in their Nigerian study of school midday meals. These differing findings indicate that sex differences are not necessarily consistent across populations or study instruments.

Maternal education was not significantly associated with students' knowledge of food served in boarding secondary schools, although students whose mothers had higher educational attainment appeared to have better knowledge. School-based nutrition research suggests that knowledge can be developed through channels beyond the family (Ibeanu *et al.*, 2020 & Adeoya *et al.*, 2023). Therefore, this study may suggest a relationship, but not establish a statistically significant association.

CONCLUSION

This study assessed factors associated with students' knowledge of food served in boarding schools in Jos North Local government area of Plateau state, Nigeria. The study showed a statistically significant association between class level and knowledge of food served. However, other factors such as ethnicity, sex, and maternal education shows nonsignificant associations. This study supports the importance of nutrition education particularly in lower junior secondary school classes. School administrators and relevant health professionals should promote structured nutrition education, encourage healthy food choices and ensure information about balanced diets is incorporated inro school health programs. Similar studies should be carried out in other parts of the country on the same topic for more insight of the subject matter. Studies should also be done on role of public health Practitioners in promoting Knowledge of food in secondary schools.

REFERENCES

Adeoya, A. A., Akinwusi, A. T., & Nagatomi, R. (2023). Effectiveness of nutrition education in enhancing knowledge and attitude of pupils on choice of school mid-day meal in Ibadan, Nigeria. *Food Science & Nutrition, 11*(7), 3758–3766. https://doi.org/10.1002/fsn3.3359

Adolescents Statistics [Internet]. *UNICEF DATA*. 2026. Available from: https://data.unicef.org/topic/adolescents/overview. Accessed 20th October, 2026.

Amoah, A. S., Twumwaa, N. A., Braimah, B. E., & Gadogbe, M. (2024). The role of culinary education in promoting nutritional awareness: A systematic review. *American Journal of Multidisciplinary Research and Innovation, 3*(1), 29–34. https://doi.org/10.54536/ajmri.v3i1.2464

Balogun, O. O., Oluwatosin, M. O., Akinpelu, A. O. Meal pattern and micronutrient adequacy of food consumed by secondary school female adolescents in Ibadan, Oyo State, Nigeria. *J Food Nutr Sci. 2023, 11*(1), 1-10. https://doi.org/10.11648/j.jfns.20231101.11

Bello, Z. A., Obebe, S. F., Ayilara, T. T., Sulaiman, M. M., Abdulazeez, B. T-A., & Ambali, Rasheed, O. (2024). Impact of nutrition on academic performance of boarding science students in selected secondary *schools in Ilorin Metropolis, Kwara State, Nigeria. FNAS Journal of Health, Sports Science and Recreation,2*(1), 97-110.

Conrad, A., Singh, A., Mysore, S., Nwosu, S., Eveshoyan, M. D., & Ibraheem, U. (2024). Food choice, embodied knowledge and circumscribed agency: Factors influencing adolescent girls' and boys' dietary practices in three states in northern Nigeria. *Public Health Nutrition, 27*(1), Article e208. https://doi.org/10.1017/S1368980024001460

Conrad, A., Singh, A., Mysore, S., Nwosu, S., Eveshoyan, M. D., & Ibraheem, U. (2024). Food choice, embodied knowledge and circumscribed agency:

Factors influencing adolescent girls' and boys' dietary practices in three states in northern Nigeria. *Public Health Nutrition, 27*(1), Article e208. https://doi.org/10.1017/S1368980024001460

Danjuma, D. S., Odiba, E. E., Fele, V. O., & Onyenweaku, E. O. Nutritional knowledge and behaviours among adolescents in Calabar: towards prevention of diet-related noncommunicable diseases. *Ibom Med J. 2025, 18*(3), 405-413. doi:10.61386/imj.v18i3.697

Dolati, S., Namiranian, K., & Abdollahi, Z. (2021). Global Assessing Quality of Nutrition in Boarding Schools: A Review. *Nutrition and Food Sciences Research, 8*(4), 5-11.

Gadanya, A. M., Hamza, B., & Abubakar, S. M. Assessment of nutritional status, knowledge, attitude and practices of secondary school students in Kano, Nigeria. *Bayero J Pure Appl Sci. 2021, 14*(2), 214-217. https://doi.org/10.4314/bajopas.v14i2.26

Heslin, A. M., & McNulty, B. (2023). Adolescent nutrition and health: Characteristics, risk factors and opportunities of an overlooked life stage. *Proceedings of the Nutrition Society, 82*(2), 142–156.

Ibeanu, V. N., Edeh, C. G., & Ani, P. N. (2020). Evidence-based strategy for prevention of hidden hunger among adolescents in a suburb of Nigeria. *BMC Public Health,* 20, *Article* 1683. https://doi.org/10.1186/s12889-020-09729-8

John, F. (2025). Analysis of concepts in nutrition perceived as difficult among senior secondary two students in Jos North Local Government Area, Plateau State. *UniJos Journal of Contemporary Studies in Education, 1*(2), 343-349.

Kyere, P., Veerman, J. L., Lee, P., & Stewart, D. E. (2020). Effectiveness of school-based nutrition interventions in sub-Saharan Africa: A systematic review. *Public Health Nutrition, 23*(14), 2626–2636. https://doi.org/10.1017/S1368980020000506

Li, Y., Zhao, G., Li, Y., & Luo, L. (2023). School boarding and students' prosocial behaviors: Evidence from rural China. *China & World Economy, 3*1(3), 115–139.

Liu, K. S. N., Chen, J. Y., Ng, M. Y. C., Yeung, M. H. Y., Bedford, L. E., & Lam, C. L. K. (2021). How does the family influence adolescent eating habits in terms of knowledge, attitudes and practices? A global systematic review of qualitative studies. *Nutrients, 13*(11), Article 3717. https://doi.org/10.3390/nu13113717

Medeiros, G. C. B. S. d., Azevedo, K. P. M. d., Garcia, D., Oliveira Segundo, V. H., Mata, Á. N. d. S., Fernandes, A. K. P., & others. (2022). Effect of school-based food and nutrition education interventions on the food consumption of adolescents: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health, 19*(17), 10522.

Mohammad, A. U., & Jiya F. B. Nutritional knowledge of in-school adolescents in Sokoto, North-Western Nigeria. *Int J Sci Rep. 2024, 10*(5), 165-172. doi:10.18203/issn.2454-2156.IntJSciRep20240980

National Population Commission. *Federal Republic of Nigeria Official Gazette. 2009 Feb 2, 96*(2), B1-B42. Available from: https://archive.gazettes.africa/archive/ng/2009/ng-government-gazette-dated-2009-02-02-no-2.pdf.

Noor, A. R., Paulo, H. A., Shinde, S., Tadesse, A. W., Tinkasimile, A., Hussen, Y., Ngeba, J., Sherfi, H., Drysdale, R., Mwanyika-Sando, M., Codjia, P., Chitekwe, S., Barnighausen, T., Sharma, D., & Fawzi, W. W. (2025). School Health and Nutrition Environments: A Multicountry Survey in Five Countries of Sub-Saharan Africa Region—Burkina Faso, Ethiopia, South Africa, Sudan, and Tanzania. *Maternal & Child Nutrition. Jul, 21*(Suppl 1), e13614. https://doi.org/10.1111/mcn.13614

Olaoye, I. J. (2024). Knowledge and perception of secondary students on food labels and safe nutrition in Kwara State, Nigeria. *Journal of Agriculture, Food and Environment, 5*(1). https://doi.org/10.47440/JAFE.2024.5105

Omowumi, A. O. (2025). A systematic study of the knowledge and perception of malnutrition on academic performance among public secondary school students in Ondo State, Nigeria. *American Journal of Physical Education and Health Science, 3*(1),20–29. https://doi.org/10.54536/ajpehs.v3i1.2040

Osasona, F. Adedoyin. 2023. Adolescent Students' Nutritional Knowledge in Boarding Schools and Strategies for Improving their Nutritional Status. *International Journal of Home Economics, Hospitality and Allied Research, 2*(2), 219-228. https://doi.org/10.57012/ijhhr.v2n2.017