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ASSESSMENT OF AFRICAN WALNUT CONSUMPTION ON HEALTH STATUS OF HOUSEHOLD HEADS IN AYEDAADE LOCAL GOVERNMENT AREA, OSUN STATE

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ABSTRACT

The preservation and utilization of indigenous knowledge on medicinal plants play a crucial .role in promoting health and nutritional well-being, particularly in rural communities. This study assessed the effect of african walnut consumption on health status of household heads in ayedaade local government area, osun state, Nigeria. The study described the socio-economic characteristics of respondents, determined their awareness of the health benefits of African walnut, identified perceived health benefits, examined the effect of walnut consumption on health status, and documented constraints to its utilization. A multistage sampling technique was used to select 120 rural household farmers. Data were collected through structured questionnaires and interviews and analyzed using descriptive statistics and Tobit regression. Results revealed that the majority of respondents were middle-aged, married males with low educational attainment and modest monthly income. Awareness of African walnut's health benefits was high (91.67%): with herbal practitioners (35%) being the primary source of information. Key perceived benefits included improved brain function (25%) and enhanced fertility (30%). Body Mass Index (BMI) analysis indicated that 51.67% of respondents had normal weight, while 41.67% were overweight. Regression results showed that gender, age, marital status, education, and extension contact significantly influenced BMI, while walnut consumption had a negative and significant relationship with BMI. Major constraints to utilization included Western influence (90%): lack of documentation (80%): and youth disinterest (65.83%). The study concluded that African walnut is widely recognized for its health benefits, but consumption frequency remains suboptimal. It recommends intensified nutrition education, value-chain development, and integration of indigenous knowledge into public health and agricultural extension programs to enhance the consumption and benefits of African walnut in rural communities.

Keywords: Awareness, walnut, health benefits, BMI, Tobit regression model

INTRODUCTION

The usage of medicinal plants in curing many ailments has been a tradition in different parts of the world. African walnut (*Tetracarpidium conophorum*) belong to the family of Euphorbiaceae and is found in South east and south west Nigeria and Cameroon (Ayedun and Eyitayo, 2023). It is commonly referred to as African walnut because of its West African origin. It is known as 'Ekporo' by Efik and Ibibios of Cross River and Akwa Ibom, as 'Ukpa' in Igbo, 'Awusa' or 'Asala' in Yoruba, 'Okwe' in Edo and 'Gwandi bairi' in Hausa (Akpuaka and Nwankwor, 2000).

The importance of African walnut as an indigenous fruit is enormous as it is a multi-purpose crop in West Africa, especially in Nigeria and Cameroon (Olajide et al., 2020). The fruits provide income to the rural people thereby improving their economy. African Walnut, like many plants in Africa and other parts of the world has been proven to be nutritious medicinal Agricultural and Industrial values over the years (Baily et. al., 2019). *TetraCorpidium, Conophorum* (African Walnut) Seed is commonly eaten because of its distinct flavour and alleged health advantages.

The use of traditional medicine and medicinal plant in most developing countries has been widely observed. (UNESCO 1996) It was estimated that nearly three-fourth of the plants derived prescription drugs used worldwide were discovered following leads from local medicine (Walkdikar, 2004). African walnut (*TetraCorpidium, Conophorum*) is atypical rambling perennial woody plant.

The plant is rich in essential nutrients, including proteins, vitamins and minerals making it a valuable component of a healthy diet. African walnut has been reported to have various health benefit including antioxidants, anti-inflammatory, and antimicrobial properties. The plant has been used in traditional medicinal treatment for various ailments including diabetes, hypertension, and digestive disorders (Kapitl et al., in 2015) worked on the nutritional and health values of African walnut (*Tetracarpidum Conophorum*) and Concluded that the nutritional analysis of *Tetracarpidium Conophorum* (African walnut) revealed it as a fair source of carbohydrate and fibre with appreciable protein contents significantly rich in edible and industrially useful oil as well as dependable quality of essential dietary materials for both children and adults and also has amazing medicinal benefits.

Plant materials such as roots, stems, leaves fruit and seeds provide food medicine and other economic uses to man (Okupbi et al., 2024) most importantly, Fruits of most tropical trees are good sources of minerals, fibre, protein fat and vitamins. African walnut is a climbing shrub native to tropical western and Central Africa. It is abundant and widely distributed and consumed by the inhabitants of Africa. It has a long history as a food plant and is mostly cultivated by peasant farmers. For its nuts, which are cooked, consumed as snacks and sold as a source of income, The importance of Africa walnuts as an indigenous fruit is enormous as they are a multi-purpose crop power to have decorative, medicinal industrial, and agricultural value over the year (Folare and Risikat, 2023).

Obata et al. 2021 worked on some nutritional and medicinal importance of Nigerian walnut (*Tetracarpidium Conophorum*) and concluded that Nigerian walnut is an emerging plant or fruit that has great potentials for nutrients and drugs. They discovered that it has shown anti-oxidant, anti-inflammatory, antimicrobial properties. Despite the widespread use of African walnut, there is limited sciencetific documentation on its indigenous knowledge and utilization in Ayedade Local Government Area of Osun State. This study aims to bridge this knowledge gap by exploring the effect of African walnut consumption on health status of households' head in the region.

In many parts of Nigeria, malnutrition and diet-related health problems remain significant public health challenges, particularly among rural populations. Household heads, who often represent the most economically active members of the family, are not exempt from the growing burden of poor dietary habits, nutrient deficiencies, and rising cases of non-communicable diseases such as hypertension, diabetes, and obesity. These health issues are

largely linked to monotonous diets low in micronutrients and essential fatty acids. Although African walnut is an indigenous crop rich in omega-3 fatty acids, proteins, vitamins, and antioxidants with proven medicinal and nutritional properties, its consumption has declined due to changing dietary preferences, low awareness of its health benefits, and poor market promotion.

Existing research has largely focused on the biochemical composition and pharmacological potential of African walnut, with limited empirical studies examining its actual consumption patterns and health impacts at the household level. This knowledge gap hampers the integration of African walnut into public nutrition strategies and local food systems aimed at improving health outcomes. Moreover, there is a lack of community-level data on how the frequency, quantity, and socio-economic determinants of walnut consumption relate to measurable health indicators among adult populations. Consequently, illness and even death are widespread due to malnutrition (Fan *et al*., 2022). The use of fruits to provide these nutrients has decreased over the years and the knowledge of their benefits is vanishing at an alarming rate. Therefore, this study seeks to investigate the effect of African walnut consumption on the health status of household heads in Ayedaade Local Government Area, Osun State. Findings from this study will provide evidence-based insights into the potential of indigenous foods in enhancing community health and promoting sustainable dietary diversification.

The main objective of the study is to assess the effect of African Walnut consumption on health status of household in Ayedaade Local Government Area, Osun.

The objectives are to: describe the socio-economic characteristics of the respondents, determine the awareness of health benefit among the households in the study area, determine the perceived effects of health benefit on walnut in the study area and to identify the constraints faced in preserving utilizing knowledge related to walnut.

Osun State is one of the thirty-six states in Nigeria, located in the south-western part of the country. It was created on August 27, 1991, with Osogbo as its capital. The state lies within latitudes 7°30′N and 8°10′N and longitudes 4°00′E and 5°10′E, and it covers a land area of approximately 9,251 km². Geographically, Osun State is bounded by Oyo State to the north, Kwara State to the northeast, Ekiti and Ondo States to the east, Ogun State to the south, and Lagos State to the southwest. A multistage sampling technique was employed in selecting 120 respondents for this study. In the first stage, three towns namely, Gbongan, Ode-Omu, and Orile-Owu, were purposively selected from Osun State due to their predominantly agrarian nature and the concentration of rural households. In the second stage, farming communities were identified within each town, and lists of rural farmers were obtained with the assistance of local leaders and agricultural extension officers. In the third stage, simple random sampling was applied to select 40 respondents proportionately across the three towns to ensure fair representation.

A total of 120 respondents were sampled, with respondents chosen equally among the selected towns. This sample size was considered adequate to capture the variations in socio-economic characteristics of respondents, while remaining manageable for effective data collection, analysis, and interpretation. Data for the study were obtained mainly from primary sources using a set of questionnaires assisted with an interview schedule to take care of the illiterate respondents. The questionnaire and interview schedule were developed based on the

objectives of the study and used to collect relevant information necessary for this study from the respondents

Method of Data Analysis

Descriptive statistics such as frequency count and percentage were used a to describe the assessment of African Walnut consumption while tobit regression waw used to determined walnut consumption on health status of the respondents.

The Tobit model combines a probit component (for the probability of censoring) and a linear

regression (for non-censored observations). The latent variable formulation is:

Let y_i^*be the latent health outcome (BMI of the respondents):

$$y_i^* = \mathrm{X}_i\beta + \varepsilon_i, \varepsilon_i \sim N(0, \sigma^2)$$

Observed $y_i$is censored between lower limit $L$and upper limit U:

$$y_i = \begin{cases} L & \text{if } y_i^* \le L \\ y_i^* & \text{if } L < y_i^* < U \\ U & \text{if } y_i^* \ge U \end{cases}$$

Dependent variable (observed):

So, the model is:

$$\text{HealthScore}_i^* = \beta_0 + \beta_1\,\text{WalnutQty}_i + \beta_2 \mathrm{Z}_i + u_i$$

with $u_i \sim N(0, \sigma^2)$, observed via Tobit censoring rules above.

Results and Discussion

Socioeconomic Characteristics of the Respondents

The age distribution revealed the mean age of 47.2years. The dominant group (31.67%) falls within 41–50 years, while only 2.5% are above 60. This implies that majority of the households are in economic age and expected to be productive with available. However, gender distribution shows that males (60.83%) are more than females (39.17%). This male dominance contrasts with findings in some contexts where women play the larger role in food production. Income levels among rural households are modest, with an average monthly income of ₦167,890.15. Majority (64.17%) earn below ₦200,000, suggesting that most households operate at subsistence or small-scale levels with limited profitability.

Marital status distribution shows that 72.5% of respondents are married while 20.83% are widowed, separated, or divorced farmers. Results showed that 31.67% of households have no

formal education, while 38.33% attained secondary school education and only 10% have tertiary education. This low literacy level poses a barrier to effective use of extension advice, market information, and adoption of modern technologies. Household size distribution shows that majority (61.67%) maintain medium-sized households of 4–8 persons, with an average of 5.2 members. In terms of primary occupation, farming remains the major livelihood activity (42.5%): but a significant proportion of respondents also engage in artisanal work (35%) and trading (16.67%).

Table 1: Distribution of the Socioeconomic Characteristics of Rural Households in the Study Area (n= 120)

Socio-economic Characteristics	Frequency	Percentage	Mean
Age (years)			
Less than 30	26	21.66	
30 – 40	33	27.50	
41 – 50	38	31.67	47.2 ±21.4
51 – 60	20	16.67	
Above 60	3	2.50	
Sex			
Female	47	39.17	
Male	73	60.83	
Income (₦)			
Less than 100,000	33	27.50	
100,000 – 200,000	44	36.67	167,890.15 ±98,762.12
200,001 – 300,000	25	20.83	
Above 300,000	18	15.00	
Marital status			
Single	8	6.67	
Married	87	72.50	
Widowed/Separated/Divorce	25	20.83	
Educational status			
No formal	38	31.67	
Primary	24	20.00	
Secondary	46	38.33	
Tertiary	12	10.00	
Household size			
Less than 4	38	31.66	
4 – 8	74	61.67	5.2 ±3.1
Above 8	8	6.67	
Primary occupation			
Trading	20	16.67	
Farming	51	42.50	
Artisan	42	35.00	
Food processing	3	2.50	
Civil servant	4	3.33	
Contact extension agent			
Yes	96	80.00	
No	24	20.00	
Total	**120**	**100.00**	

Source: Field Survey, 2025

Awareness, Information Source and Perceived Health Benefits of African Walnut

The results (Table 2) showed a very high level of awareness about the health benefits of African walnut, with 91.67% of respondents acknowledging its value. This suggests that African walnut is widely recognized as a functional food among the sampled population. Awareness appears to be largely spread through herbal practitioners (35%): followed by family/friends (23.33%) and social media (23.33%): while markets account for 18.34%. This indicates that both traditional and modern information channels are critical in disseminating knowledge on walnut's benefits, though herbal practitioners remain the most trusted or influential source. In terms of perceived benefits, the respondents most frequently associated African walnut with improving brain function (25%) and boosting fertility (30%): followed by regulating blood pressure (18.33%) and aiding digestion (16.67%). Reducing inflammation was the least cited benefit (10%). These perceptions align with scientific evidence (Iyiola et al., 2023; Popp et al., 2013), suggesting that walnuts are rich in omega-3 fatty acids, antioxidants, and minerals that contribute to brain health, reproductive health, and cardiovascular wellness.

Economic considerations also emerged, as the majority of respondents (71.67%) reported spending between ₦500 – ₦1000 on walnuts, while only 11.67% spent above ₦1000. This indicates affordability and accessibility for most consumers, though relatively higher spending by a small group may reflect either higher household consumption or greater valuation of walnuts' nutritional benefits. On consumption frequency, the largest share of respondents (44.17%) consumes walnuts weekly, while 32.5% consume them monthly, and only 23.33% consume them daily. This suggests that while awareness and perceived benefits are high, regular daily consumption remains relatively low. This may be due to factors such as seasonal availability, affordability, or dietary preferences. The findings highlight that African walnut is well-known and valued for its multiple health benefits among rural households, but its consumption is not yet fully optimized for maximum nutritional impact. Strengthening awareness campaigns through both modern platforms (social media, health extension services) and traditional networks (herbal practitioners, local markets) could promote higher consumption.

Table 2: Distribution of the Respondents Based on Awareness, Information Source and Health Benefits of African Walnut (n=120)

Awareness of health benefit	Frequency	Percentage
Yes	110	91.67
No	10	8.33
Accessibility of African Walnut		
Yes	78	65.00
No	42	35.00
Sources of information on health benefits		
Family/friends	28	23.33
Social media	28	23.33
Market	22	18.34
Herbal practitioners	42	35.00
Perceived health benefits of African walnut		

Boost fertility	26	30.00
Regulates blood pressure	22	18.33
Aids digestion	20	16.67
Reduce inflammation	12	10.00
Improves brain function	30	25.00
Amount spent on African Walnut (₦)		
Less than 500	20	16.66
500 – 1000	86	71.67
Above 1000	14	11.67
Frequency of consumption		
Daily	28	23.33
Weekly	53	44.17
Monthly	39	32.50
Total	**120**	**100.00**

Source: Field Survey, 2025

Body Mass Index (BMI) – Measurement of Health Status

Body Mass Index (BMI) is widely recognized as a reliable measure of nutritional and health well-being, and its variations reflect the combined influence of dietary intake, socio-economic characteristics, and lifestyle factors. The BMI distribution of respondents showed that 51.67% fall within the normal weight category, suggesting that just over half of the sampled population maintain a relatively healthy weight status. This indicates some level of balance between food consumption, energy expenditure and African walnut consumption among these respondents, reflecting moderate dietary habits. However, a substantial proportion (41.67%) of respondents were classified as overweight, which is a cause for concern given the potential health risks associated with excess body weight. Being overweight is strongly linked to non-communicable diseases such as hypertension, type 2 diabetes, and cardiovascular disorders, which are increasingly becoming public health burdens in Nigeria (FAO, 2018). This relatively high prevalence may reflect lifestyle changes, dietary shifts towards calorie-dense foods, and reduced physical activity among rural populations.

On the other hand, 4.16% of respondents were obese, while 2.5% were underweight. The presence of underweight individuals highlights lingering issues of undernutrition and possibly food insecurity in some households, while the small but notable obesity rate demonstrates the coexistence of undernutrition and overnutrition within the same community, a phenomenon often described as the "double burden of malnutrition. The BMI is used as a proxy for health status, which revealed that the higher BMI often indicates poorer health outcomes (particularly when it exceeds normal ranges). The findings suggest that while most respondents fall within a healthy BMI range, a large proportion being overweight indicates an emerging nutrition transition. This points to the need for nutrition education, dietary diversification, and lifestyle interventions to promote healthier eating patterns and prevent weight-related health problems in the population.

Table 3: Distribution of the Respondents Based on BMI in the Study Area (n=120)

Categories	BMI range (kg/m^2)	Frequency	Percentage
Underweight	<18.5	3	2.50
Normal weight	18.5 – 24.9	62	51.67

Overweight	25.0 – 29.9	50	41.67
Obese	>30	5	4.16
Total		120	100.00

Source: Field Survey, 2025

Table 4 presents the regression estimates of the determinants of respondents' health status, with BMI serving as the proxy indicator. The results show that gender is positively and significantly associated with BMI (β = 2.8256; p < 0.01). This suggests that one gender, likely females in this context, tends to have higher BMI levels than their male counterparts. Women may engage less in energy-demanding farm work compared to men or adopt different dietary patterns, resulting in relatively higher body mass. This finding aligns with (FAO, 2018; Iyiola et al., 2023) that gender differences influence nutritional outcomes in rural communities. Age also has a positive and highly significant effect on BMI (β = 0.1993; p < 0.01). As individuals age, they are more likely to experience increased body mass due to reduced metabolic rate, decreased physical activity, and cumulative dietary habits. This indicates a trend toward higher BMI with advancing age, consistent with global nutrition transitions in rural populations. Marital status significantly increases BMI (β= 2.1923; p < 0.01). Educational status has a positive and significant effect (β= 0.7358; p < 0.05).

Extension contact shows a strong positive effect (β= 4.7011; p < 0.01): highlighting the importance of agricultural extension services in shaping dietary and health practices. Farmers who receive extension advice are likely exposed to nutrition education, including information on African walnut's dietary benefits, which could translate into healthier BMI outcomes. Interestingly, both amounts spent on African walnut (β = -4.0136; p < 0.01) and frequency of African walnut consumption (β = -0.2523; p < 0.01) have significant negative effects on BMI. While African walnuts are nutrient-dense and rich in essential fatty acids, proteins, and antioxidants, excessive consumption may not translate into higher BMI. Instead, it could be associated with weight management benefits, given the nut's high fibre content and low digestible carbohydrate levels, which promote satiety and reduce overall calorie intake. Additionally, individuals with lower BMI (possibly underweight or health-conscious individuals) may consume walnuts more frequently in an effort to improve their health, thereby creating an inverse statistical relationship. This paradox reflects the dual role of walnuts as both a functional food and a dietary supplement for managing weight and metabolic health.

Table 4: Determinant of Health Status of the Respondents in the Study Area

Socio-Economic Characteristics	Coefficient	Std. Err.	t-value	P>/t/
Gender	2.8256	0.6232	4.53	0.000
Age	0.1993	0.0343	5.80	0.000
Marital status	2.1923	0.6393	3.43	0.012

Educational status	0.7358	0.3101	2.37	0.019
Occupation	0.1481	0.4212	0.36	0.000
Household size	0.2560	0.1769	1.45	0.000
Income	-0.0003	0.0023	0.07	0.012
Extension contact	4.7011	1.0066	4.67	0.005
Amount spent on African walnut	-4.0136	1.0182	3.94	0.000
Frequency of African walnut consumption	-0.2523	0.0129	6.12	0.000
Constant	25.0652	1.9307	12.98	0.000
Adj R^2	0.983			
R^2	0.984			
Prob > F	0.000			
Number of observations	120			

Source: Field Survey, 2025

Challenges and Constraint on African Walnut Utilization

Table 5 highlights the major challenges limiting the utilization of African walnut for health benefits in the study area. The most dominant constraints are western influence (90.0%) and lack of proper documentation (80.0%): both of which reflect systemic and cultural barriers. Western influence suggests that increasing reliance on imported and conventional foods has overshadowed the recognition of indigenous crops such as walnuts, leading to the erosion of traditional dietary practices. This finding resonates with earlier works (FAO, 2018; Zamora-Sequeira et al., 2019), which note that globalization and urbanization have contributed to declining interest in indigenous foods despite their proven nutritional and medicinal value. Similarly, lack of proper documentation (80.0%) suggests that research evidence, nutritional profiling, and clinical validations of African walnut's health benefits remain underdeveloped or poorly disseminated. Without scientific backing and standardized promotion, walnuts risk being undervalued in both policy and practice.

Another significant challenge identified is disinterest among youth (65.83%): which aligns with trends in indigenous knowledge systems where younger generations show less engagement with traditional crops and their health applications. This generational gap not only threatens the preservation of indigenous knowledge but also undermines the potential of walnuts as a sustainable food and health resource. Relatedly, poor indigenous knowledge about walnut (65.0%) further underscores the knowledge gap, suggesting that even within local communities, awareness of its nutritional, therapeutic, and medicinal value is limited. Additionally, inadequate government support (44.17%) highlights institutional neglect, as policy frameworks and extension programs rarely prioritize indigenous crops.

Table 5: Distribution of the Respondents Based on Challenges on African Walnut Consumption on Health Status (n=120)

S/N	Constraints	Frequency	Percentage
1	Lack of proper documentation	103	80.00
2	Western influence	108	90.00
3	Disinterest among youth	79	65.83
4	Inadequate support from government	53	44.17
5	Poor indigenous knowledge about Walnut	78	65.00

Source: Field Survey, 2025

Summary of Major Findings

The age distribution shows that majority of the respondents are in their economically active years, with a mean age of 47.2 years. The dominant group (31.67%) falls within 41–50 years, while only 2.5% are above 60. Gender distribution reveals male dominance (60.83%) in farming, contrasting with some contexts where women are more active in food production. This male dominance may be attributed to cultural norms and land ownership patterns that favor men. Income levels are modest, with an average monthly income of ₦167,890.15 and about two-thirds of farmers earning below ₦200,000. This reflects the prevalence of smallholder and subsistence farming systems with limited profitability.

Educational attainment is generally low, with 31.67% of households having no formal education and only 10% attaining tertiary education. Low literacy levels may constrain access to extension advice, modern technologies, and market information. Average household size is 5 persons, with most households (61.67%) falling within 4–8 members, suggesting availability of family labor but also increased dependency pressures.

Findings on awareness and health benefits of African walnut show that 91.67% of respondents are aware of its nutritional and medicinal value. This indicates that walnuts are widely recognized as a functional food but not yet consumed on a daily basis, possibly due to seasonal availability or cost. BMI distribution indicates that slightly more than half of the respondents (51.67%) fall within the normal weight category, while 41.67% are overweight, 4.16% obese, and 2.5% underweight. The high prevalence of overweight and the presence of both undernutrition and obesity highlight a "double burden of malnutrition" within the community. This suggests an ongoing nutrition transition where both under- and over-nutrition coexist. Regression analysis further reveals that gender, age, marital status, educational status, and extension contact positively and significantly influence health status (BMI). This underscores the role of socio-demographic characteristics and access to information in shaping nutritional outcomes. By contrast, occupation, household size, and income showed no significant effects. Interestingly, both the amount spent on walnuts and the frequency of walnut consumption were negatively associated with BMI. This counterintuitive result suggests that while walnuts are nutrient-rich, their high fiber and low carbohydrate content may support weight management and reduce BMI rather than increase it. It may also reflect a self-selection effect, where individuals with lower BMI or health concerns consume walnuts more frequently for perceived therapeutic purposes.

Conclusion

This study examined the socioeconomic characteristics of the respondents, their awareness and utilization of African walnut, and its effects on health status proxied by BMI. The findings reveal that the respondents are predominantly middle-aged, married men with modest incomes and relatively low levels of formal education. Household sizes are moderate, and farming remains the principal occupation, though many households diversify into artisanal work and trading to supplement income. Access to extension services is fairly widespread, providing a potential channel for nutrition and health education. Awareness of the health benefits of African walnut is remarkably high, with the majority of respondents recognizing its role in fertility, brain function, blood pressure regulation, and digestion. However, regular daily consumption remains limited, likely due to seasonal availability, affordability, and dietary preferences. BMI analysis shows that just over half of the respondents maintain a healthy weight, but a substantial proportion are overweight, with small shares of underweight and obese individuals. This points to the emerging double burden of malnutrition in rural areas, where undernutrition and overnutrition coexist. Regression analysis indicates that gender, age, marital status, education, and extension contact significantly shape health outcomes, while walnut consumption both in terms of expenditure and frequency, shows a negative relationship with BMI. This suggests that walnuts may play a role in weight management rather than weight gain, reflecting their fibre-rich, nutrient-dense composition.

The findings highlight that African walnut is widely recognized as a functional food with potential to improve nutrition and health outcomes. However, socio-economic constraints, low literacy levels, and moderate consumption patterns limit its impact. Strengthening nutrition education, promoting dietary diversity, and enhancing access through both modern and traditional information channels will be critical to maximizing the health benefits of African walnut while addressing the rising challenge of overweight and related non-communicable diseases in rural populations.

Recommendations

Based on the findings, the following policy recommendations are proposed:

Government and NGOs should design targeted nutrition education programs that emphasize the role of African walnut as part of a balanced diet. Awareness campaigns should focus on the benefits of moderate and regular consumption for brain function, fertility, and cardiovascular health, while also cautioning against over-reliance on a single food source. Given that extension contact significantly improves health outcomes, scaling up access to extension in underserved areas will improve both farming productivity and household health. Policies should encourage the development of value chains for African walnut, including processing, storage, and distribution, to ensure year-round availability at affordable prices. Support for small-scale walnut processors and traders can enhance value addition, income generation, and wider consumption. Incorporating indigenous food knowledge, such as the benefits of walnuts, into school curricula can strengthen intergenerational awareness, Public health campaigns should integrate indigenous foods like walnuts into broader strategies for combating malnutrition in its dual forms (undernutrition and overnutrition).

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