

Socioeconomics Determinants of Household Consumption of Bitter Kola (*Garcinia Kola*) and Health Benefits in Ogbomoso Metropolis, Oyo State.

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ABSTRACT

Garcinia kola (*G.kola*) is one of the medicinal plants, which has been used in Africa ethno medicine because of its purgative, ant parasitic, antimicrobial properties. The research tried to assess the perceived health benefits of bitter kola (*Garcinia kola*) among rural household in Ogbomoso town of Oyo State. One hundred and twenty (120) household were sampled and subject to various analysis, such as OLS regression and descriptive statistics. It is obvious from the regression model estimation of the most important variables (age, gender, marital status, education level, extension agent, amount spent, quantity consumed) that independent variables are main influencing the likelihood of bitter kola. The age has positive coefficient (994) suggesting that the more they consume bitter kola the more health benefit they derived. The age is significant at 1% probability level. Gender and education level has a positive coefficient suggesting that higher educational level among the household leads to increase in health benefits. Education likely equips household with better knowledge of advancing health benefits practices, problem-solving skills, and resource management. More efforts should be intensity by health workers in all our government parastatal, this will increase life expectancy. Few respondents got information just through family members. Among those that have significant impacts extension visit and education. This outcome suggests that education and awareness are vital variables to be considered seriously when policy makers deliberate on way to increase life expectancy of household

Keywords: Determinants, bitter kola, health benefits, OLS regression model

INTRODUCTION

Indigenous knowledge (IK) refers to the unique, traditional knowledge developed by indigenous and local communities over centuries through their interaction with their environment. It is embedded in the cultural

practices, beliefs, and lifestyles of these communities and is passed down orally from one generation to the next. This knowledge, rooted in local experiences and practices, provides solutions to everyday challenges and ensures the sustainable use of resources. According to Warren (1991), IK is dynamic and continually evolving, adapting to the changing environmental and social contexts in which it is applied. These practices are tailored to the local environment and are designed to maintain soil fertility, conserve biodiversity, and ensure long-term productivity. Richards (1985) emphasizes that such locally specific practices help sustain ecosystems and foster community resilience in the face of environmental challenges.

The importance of indigenous knowledge extends beyond agriculture into areas like natural resource management, health care, and environmental conservation.. These systems also promote sustainable development by utilizing renewable local resources and preserving cultural heritage.

Various studies on the traditional uses and folk knowledge of species in many regions of the world have shown that the survival and the development of mankind depend on the ability to explore and exploit the environment (Abdurrahman, Fajemiroye, Oladele, & 2006; Anisuzzaman, Rahman, & Islam, 2007)

In recent years, scientific research has increasingly turned its attention toward validating the health benefits traditionally attributed to bitter kola (*Garcinia kola*), particularly in the areas of antimicrobial, anti-inflammatory, and antioxidant activities. Several studies have provided evidence supporting the traditional claims made by indigenous populations regarding the medicinal value of the plant.

One of the most widely studied aspects of bitter kola is its antibacterial and antiviral properties. According to Akinmoladun et al. (2007), extracts from *Garcinia kola* have shown significant antimicrobial activity against a variety of bacterial and fungal pathogens. This supports its traditional use in treating infections such as sore throat, diarrhea, and skin infections. The antimicrobial compounds identified in bitter kola, such as kolaviron, have been shown to inhibit

the growth of harmful microorganisms, providing a scientific basis for its application in ethno medicine.

Furthermore, bitter kola possesses notable anti-inflammatory properties, which are beneficial for the management of conditions involving inflammation, such as arthritis, swelling, and other inflammatory diseases. These properties are linked to the presence of bioactive flavonoids and other phytochemicals that help reduce pain and inflammation by inhibiting the release of pro-inflammatory enzymes (Farombi & Owoeye, 2011).

Bitter kola is also rich in antioxidants, which are crucial in protecting the body against oxidative stress a key factor in aging and chronic diseases such as cancer, diabetes, and cardiovascular disorders. The antioxidant potential of bitter kola has been attributed to the presence of polyphenols and other phytochemicals that help neutralize free radicals and prevent cellular damage (Adaramoye et al., 2005). These findings give credibility to its use as a general health tonic in many rural communities.

An interesting development in the scientific interest in bitter kola occurred during the 2014 Ebola virus outbreak in West Africa, when a widespread rumor suggested that the plant could cure or prevent the virus. Although this claim was later debunked due to a lack of scientific evidence, it nonetheless drew global attention to *Garcinia kola* and triggered more research interest into its antiviral potentials (Okorosobo et al., 2015). While no conclusive results have emerged regarding its use for Ebola or other viral infections like COVID-19, preliminary studies have continued to explore its bioactive components.

The integration of traditional medicine into modern healthcare systems has become increasingly recognized as a viable strategy to enhance health service delivery, especially in rural and underserved communities. The World Health Organization (WHO) supports the incorporation of

traditional medicine into national healthcare frameworks, provided it is backed by research, standardization, and proper training (WHO, 2013). Despite the rich repository of indigenous knowledge in African societies such as the use of *Garcinia kola* (bitter kola) for treating various ailments there remains a significant disconnect between traditional and contemporary medical practices.

One of the major barriers to integration is the lack of scientific validation of many traditional health practices. Modern healthcare systems often prioritize empirical, evidence-based methods, while traditional medicine is rooted in centuries of oral transmission and cultural trust. However, rather than dismissing indigenous practices as unscientific, modern medicine should engage in respectful, rigorous investigation of such knowledge systems. Studies that evaluate the biochemical properties, safety, and dosage of medicinal plants like bitter kola can provide the scientific foundation needed to bridge this gap (Tilburt & Kaptchuk, 2008)

Elders who are custodians of this knowledge are aging, and the younger generation often shows less interest in preserving or utilizing these traditional practices, resulting in a critical gap in intergenerational knowledge transfer (World Health Organization [WHO], 2013). Furthermore, while bitter kola is widely consumed and believed to offer several health benefits—such as treatment for coughs, digestive problems, infections, and immune system boosting—there is a significant lack of scientific documentation and local data that validates these claims within the context of Ido Local Government. Most existing studies focus on the general phytochemical and pharmacological properties of *Garcinia kola* (Akinmoladun et al., 2007), but few explore how these benefits are perceived and utilized by rural households based on indigenous knowledge systems.

This gap between traditional beliefs and modern scientific understanding creates a dilemma for healthcare practitioners and policymakers. On one hand, traditional users continue to rely on bitter kola for health-related purposes. On the other hand, the absence of localized, evidence-based data limits its integration into national or community health systems. Without proper assessment, the medicinal value of bitter kola may be undervalued, and its potential to contribute to rural healthcare systems overlooked (Tilburt & Kaptchuk, 2008).

In addition, there are very few empirical studies that assess the depth of indigenous knowledge, usage patterns, and health perceptions of bitter kola among rural communities in Ogbomoso town. This lack of local evidence makes it difficult to develop policies and programs that recognize, preserve, and safely integrate indigenous knowledge into modern healthcare practice. Hence, this study aims to determine consumption of socioeconomics, with the goal of bridging traditional practices and scientific understanding.

Therefore, this study seeks to provide answers to the following research questions: What are the socio-economic characteristics of household bitter kola consumption in the study area?

What the perceived health benefits of bitter kola are as understood by the households in Ogbomoso?

What are the determinants of bitter kola on health status of household, Base on highlighted research questions, the following research objectives aims to bridge the gap between traditional beliefs and scientific understanding, thereby contributing to the preservation and potential integration of indigenous medicinal practices into modern healthcare systems. Specific objectives includes to identify the socio-economic characteristics of households consumption of bitter kola in the study area , ,to evaluate the perceived health benefits of bitter kola as understood by the local population. , and to determine the effects of bitter kola on health benefits of the household

The population of Ogbomosho is estimated to be between 655,517 and 682,789 for 2024/2025, depending on the source. Recent estimates project the population to be around 682,789 in 2025, which includes adjacent suburban areas. Older census data from 2006 provides a figure of 602,690 for the city itself.

- 2025 Estimate: Approximately 682,789 (including urban agglomeration)
- 2024 Estimate: Approximately 655,517 (according to a source that updates population)
- 2006 Census: 602,690 (urban population)
- Ogbomosho Population 2025 - World Population Review
- Ogbomoso city

The population of this study comprises of all the identified inhabitants of Ogbomoso town that comprises of both North and South. A multistage design that involved random sampling technique was employed in the selection of respondents for the study.

In Ogbomoso town there are North and South Local Government Area (LGA) of Oyo State, Nigeria, with ten (10) political wards each making a total of 20wards'

80% of the wards were randomly selected, resulting in the inclusion of eight ward,

48 person per local government were selected making a total of 96 respondents in the study area.

The data for this study were collected using quantitative method.. Therefore, the use of random sampling technique in this study is intended to give every member in the population frame equal chance of being selected and thereby produce a sample that is representative.

The OLS regression formula is a model of the form

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p + \varepsilon$$

Y= The dependent variable.

$X_1, X_2, \dots, X_p$: The independent variables.

$\beta_1, \beta_2, \dots, \beta_p$: The slope coefficients for each independent variable, showing the change in Y

: The random error.

The OLS principle

Minimize the sum of squared residuals: The "least squares" part of the formula comes from the process of minimizing the sum of the squared differences between the observed data points and the regression line.

RESULTS AND DICUSSION

The results of the socioeconomic characteristics of respondents, such as age, gender, marital status, occupation, education level, monthly income, household size, extension agent, were capture in the table1 below. The average age of respondents was 38 years, indicating that most respondent were in their middle age, a period often associated with a balance of physical capability and experience.

The result of finding revealed that with an average household size of 5 person, most families had moderate-sized households, which could affect their wellbeing.

The average amount money spent on bitter kola by the respondent was ~~N~~973.33 indicating that moderate amount is set aside monthly by the respondents to consume bitter kola

This indicates that the gender distribution of respondent in the study area in which 36.67% of respondents were found to be males and 63% were females.

Trading was the highest occupational distribution of respondents in the study area, while, while farming, civil servant, food processing, Artisans and others were 26.67%,24.17%,7.50% and 0.83% respectively. More half of the respondents are married (56.67%), while (35.00%) were single

Table 1: Distribution of socio-economic characteristics of the respondents (n=120)

Socio-economic Characteristics	Frequency	Percentage	Mean	SD
Age(Year)				
Less than 30	48	40		
30-40	21	17		
41-50	24	20	38	±

51-60	20	16.67		
Above 60	7	5.83		
Marital Status				
Single	42	35.00		
Married	68	56.67		
Divorced	7	5.83		
Widow	3	2.50		
Household size				
Less than 4	97	80.83		
4-8	22	18.33	5±	
>8	1	0.83		
Monthly income				
Less than 100,000	66	55.00		
100,000-200,000	31	25.83	125661	±
200,000-300,000	14	11.67		
Above 300,000	9	7.50		
Amount spent on bitter kola				
Less than 1000	92	76.67		
1000-2000	16	13.33	973.33	
Above 2000	12	10.00		
Quantity consumed				
Less than 5	83	69.17		
5-8	33	27.50		
Above 8	4	3.33		
Gender				
Male	44	36.67		
Female	76	63		
Occupation				
Farming	32	26.67		
Trading	41	34.17		
Civil servant	29	24.5		
Artisan	8	6.67		
Food Processing	9	7.50		
Extension Agent				
Yes	82	68.3		
No	38	32.67		

Field Survey, 2025

The result of socio economics determinants of bitter kola consumption on health status among the household in ogbomoso town reveals that age,gender, marital status, education and extension agent has positive coefficient , suggesting that the more they consume bitter kola the more health benefit they derived. The extension agent is significant at 5% probability level.

The positive coefficient of Gender and education suggesting that higher educational level among the household leads to increase in health benefits. Education likely equips household with better knowledge of advancing health benefits practices, problem-solving skills, and resource management.

The quantity of bitter kola consumes as negative coefficient (-.6705) significant at 1% to health status. This implies that bitter kola consumed by the household increases, the better the health status (lower BMI)

Moreover, marital status, occupation, amount spent, monthly income and extension agent are all positive and significant at 10%. Extension service contact of is positive which implies that access to extension service positively influences health benefit of the household. This on line with the submission of Onu (2006) that opined thatfarmers who had access to extension contact adopt easily.

Table 2 Socio-economic determinants of health status among household in the studying area

Source	SS	df	MS	Number of obs =	120
F(8, 88)	= 658.19				
Model	71536.0204	10	7153.60204	Prob > F	= 0.0000
Residual	1143.42966	110	10.3948151	R-squared	= 0.9843
Adj R-squared	= 0.9828				
Total	72679.4501	120	605.662084	Root MSE	= 3.2241
bmi	Coef.	Std. Err.		t	P> t
gender	2.825645	.6231563		4.53	0.000

age	.1993706	.0343856	5.80	0.000	.
mstatus	2.192316	.6393521	3.43	0.001	
education	.7358826	.3100577	2.37	0.019	
occupation	.1481468	.4121409	0.36	0.720	
housesize	.2560659	.1769958	1.45	0.151	
income	-1.43e-07	2.15e-06	-0.07	0.947	
extension agent	4.701143	1.006629	4.67	0.000	
cons	25.06524	1.930761	12.98	0.000	
Qty consumed	-6705385	.2801602	- 2.39	0.017	

Source Field survey,2025

Awareness of Bitter kola among the household in Ido Local Government Area

The information on awareness of bitter kola revealed that 113 respondents (94.17%) knew that it while 5.83% deduced of not heard before. This shows how popular the bitter kola is. Family was playing a vital role in awareness of bitter kola, follows by friends (30.83%). The family is the biggest source of information followed by friends while media contributes less. This shows that awareness is mainly spread through informal, interpersonal channel rather than mass media. A large majority (over 80%) actually use bitter kola for health purposes, which means awareness strongly translates to practice. Only a few respondents (17.5%) do not use it for health reasons.

Body Mass Index Result

TABLE 3 shows Body Mass Index (BMI) This is interpreted in categories (for adults), this indicates that 66.6% (80) that used bitter kola enjoying normal body weight which improved their health status

BMI issue for Healthcare professionals to screen for potential health problems associated with being underweight or overweight. It serves as an indicator of potential increased risk for conditions like heart disease, type 2 diabetes, high blood pressure, and certain cancers.

Table 3 BODY MASS INDEX (BMI) WEIGHT STATUS

Age	BMI	WEIGHT	STATUS	FREQUENCY	PERCENT
Below 18.5					
18.5-24.9			Underweight	17	14.7
25.0-29.9			Normal weight	80	66.67
30.0-34.9			Overweight	17	14.17
35.0-39.9			Obesity Class	6	5.00

Source : **Field Survey,2025**

Conclusion/Recommendations

The results shows that age, gender, marital status, occupation, education level, extension agents, amount spent and quantity consumed are all significant at various levels and are key determinants of consumption of bitter kola in the study area

The Body Mass Index indicates that 66.67% of the respondents has normal body weight. This was in line with the findings of Vincent, I *et al* 2018 opined that bitter kola support long time claimed of medicinal properties of flavonoid as anti-bacteria, anti-cancer and viral agent.

The awareness of bitter kola health benefit is minimal compared to benefit derived. More efforts should be intensity by health workers in all our government parastatal. This will increase life expectancy. Few respondents got the information just through family members. Among those that have significant impact is extension visit and education level. This outcome suggests that education and awareness are vital variables to be considered seriously when policy makers deliberate on way to increase life expectancy of household.

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