



Evaluation of Socio-Economic and Medicinal Benefits of *Picralima nitida* in Ibadan South East Local Government Area, Oyo State, Nigeria

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ABSTRACT: *Picralima nitida* is medicinal plant that is highly valued for its wide medicinal properties throughout its distribution areas. Hence, the objective of this paper is to evaluate the socio-economic and medicinal benefits of *Picralima nitida* in Ibadan South East Local Government Area, Oyo State, Nigeria using appropriate standard methods. Results showed that the respondents were dominated by females (86.0%), married (66.0%) with no formal education (29.0%). Based on the likert scale rating, nine perceptual statements were agreed to except combining *Picralima nitida* with synthetic drug for use was disagreed to. Fourteen medicinal uses of *Picralima nitida* were identified. These included treatment of cancer, diabetes, fever, fibroid, gastrointestinal, hypertension, jaundice, malaria, menstrual pain, pile, pneumonia, sexual weakness, stomach ache and typhoid with different methods of preparation and usage. The logit model showed that education and gender had the likelihood of significantly influencing the supply of honey at $p < 0.01$. The study concluded that *Picralima nitida* have wide acceptability and perception among the population of study.

DOI: <https://dx.doi.org/10.4314/jasem.v28i12.9>

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Cite this Article as: ODEYALE, O. C; OLAWUYI, E. B; ADETUNJI, A. S; AKEREDOLU, O. A. (2024). Evaluation of Socio-Economic and Medicinal Benefits of *Picralima nitida* in Ibadan South East Local Government Area, Oyo State, Nigeria. *J. Appl. Sci. Environ. Manage.* 28 (12) 4019-4025

Dates: Received: 22 October 2024; Revised: 20 November 2024; Accepted: 08 December 2024; Published: 18 December 2024

Keywords: Socio-economic; Medicinal benefits; Evaluation; *Picralima nitida*

Forests provide resources that are utilized differently at both household and industrial scale (Suleiman *et al.*, 2017). These resources are classified into timber and non-timber forest products (NTFPs). Apart from timber forest products that are largely valued worldwide, the non-timber forest products also play an indispensable role in contributing to household income, health care and food security in developing countries (Jimoh *et al.*, 2013). *Picralima nitida* (Stapf.) T. Durand and H. Durand is a valuable NTFPs native to Nigeria and widely distributed in the high forest zones of West Tropical Africa.

Picralima nitida is a medicinal plant from the genus *Picralima* and plant family *Apocynaceae*. It is found in tropical African countries such as Ivory Coast, Nigeria, Uganda, and Gabon, and it is popularly known as *Abeere* in the Southwestern part of Nigeria among the Yoruba people (Amaeze *et al.*, 2018; Erharuyi *et al.*, 2014; Olajide *et al.*, 2014) and it grows to a height of 4 - 35 m as an understorey tree with a dense crown and bole diameter of about 60 cm. *Picralima nitida* is highly valued for its wide medicinal properties throughout its distribution areas. All the plant parts; roots, leaves, fruits, seeds and stem bark are utilised extensively for treatment of

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pneumonia, malaria, stomach disorder, pain relief and intestinal worms (Burkill, 1995). In Ghana and Nigeria, the fruit shell is infused with palm wine and taken as fever remedy while the seed decoction and oral ingestion is used as an enema, pneumonia and gastrointestinal disorder treatment respectively (Olaniyi *et al.*, 2021). The leaves are utilised as a vermifuge and the leaf sap is dripped in to the ear to treat otitis (Iwu 1993) while the bark is used as a laxative or purgative, anti-inflammatory, antipyretic, anthelmintic and treatment of venereal diseases (Ezeamuzie *et al.*, 1994). The seeds are also used as external applications for abscesses treatment in Gabon. The ethno-medicinal and nutritional uses of wild plant are as old as men as they were sources of treatment, food security and income generation (Akubugwo *et al.*, 2007a, b; Anita *et al.*, 2006). These wild plants serve not only as indispensable constituents of human diet but also as important medicinal tools for the treatment of various disease conditions (Aguwu *et al.*, 2010; Ogunnowo *et al.*, 2010; Suresh *et al.*, 2008). Traditional societies have over the years employed medicinal plants in ethno-medicine for the treatment of various diseases without scientific knowledge of the physiologically active ingredients called phytochemicals which were responsible the plants' medicinal and pharmacological potentials (Aja *et al.*, 2010; Akubugwo *et al.*, 2007a).

Medicinal plants are plants or plant parts used for therapeutic purposes or containing substances that may provide drugs through synthetic or semi-synthetic ways (Sofowora, 1996). They are the most-used category of plant resources in terms of species diversity. An estimate of Hamilton (2004) indicates that 10 % of plants are more or less collected for therapeutic reasons in Anapurna (Nepal). Rural populations depend most on medicinal plants. According to Ayensu (1996), demographic studies conducted by various national and international organizations such as the World Health Organization (WHO) show that for 75 to 90 % of the world's rural populations, the traditional healer is the only doctor, curing by plants. This means that medicinal plants are essential for the health care of many people (Sofowora, 1996).

For instance, infectious diseases like typhoid transmitted by animal vectors are largely spread in the world (Aquado, 2005). The same author argues that more than 21 million people worldwide are infected and about 200,000 die annually, with 45 % of cases from Africa. These deaths are due to *Salmonella enterica* serotype typhi (vector of typhoid). Roumagnac *et al.* (2006) declared that this

is a bacterium strictly adapted to humans and transmitted by fecal-oral way. Given the relative persistence of the disease, a major study of population genetics of *Salmonella typhi* was conducted by WHO in collaboration with the Pasteur Institute in Paris, the Wellcome Trust Sanger Institute in Britain and several medical research centers in Asia, including Vietnam (Acosta *et al.*, 2006). *Picralima nitida* has great usefulness in African traditional medicine especially in Nigeria. Although few studies have shown the medicinal benefit of *Picralima nitida*, there is, however, a paucity of information on the scientific validation of the potential of this plant against medicinal benefits and the usage. In addition to its medicinal virtue, *P. nitida* is a source of cash income for rural and urban households, thus contributing to drastic reduction of poverty among some sellers. Though, little information about the resource management, medicinal properties and socioeconomic contribution of *P. nitida* to household welfare is available. Non-Timber Forest Products (NTFPs) used for medicinal purposes, *P. nitida* has not yet attracted the attention of scientists in the field of domestication and/or conservation. The contribution of medicinal plants in general and particularly *P. nitida* to fight tropical diseases is an aspect that has not been much investigated until now.

Picralima nitida has widely varied applications in West Africa folk medicine. Different parts of the plant; the leaves, seeds, stem bark and roots are used for the treatment of different ailments such as diabetes, fever, hypertension, jaundice and so on. The active ingredient in concentrated form from different parts of the plant have been found to exhibit a broad range of pharmacological activities which lends confidence to its medicinal uses. The pharmacological potential of these active ingredients have only partially been investigated. Therefore more research is required to completely explore their socio-economic and medicinal potentials, research into this becomes imperative. Hence, the objective of this paper is to evaluate the socio-economic and medicinal benefits of *Picralima nitida* in Ibadan South East Local Government Area, Oyo State, Nigeria.

MATERIALS AND METHODS

Study location: Ibadan South East Local Government with headquarters at Mapo was among five local government areas carved out of Ibadan Municipal Government (IMG). It comprises 12 political wards. It is made up of older residential districts located at the central area of the city. They are occupied largely by the indigenous Ibadan population and the early

non-Ibadan Yoruba immigrants. Some of the districts in the area. The major sources of employment for the residents are mostly retail trade, public administration, service and repair industries, and educational services (CASSAD, 1994)

Sampling procedure: From the reconnaissance survey carried out, purposive sampling techniques was used to select Bode market as one of the major market for selling herbal plants in Ibadan Southeast. There are over one hundred herbal sellers in the market both the hawkers and those that have shops. Simple random sampling techniques were adopted to select the respondents for this study. A market and community were randomly selected from Local Government Area (LGA) and purposive selection of respondents from this market and community due to their knowledge about the plant. A total number of one hundred respondents were selected randomly, 50% from the market making a number of 55 (fifty-five) respondents while the remaining 45 (forty-five) were the users and the respondents with indigenous knowledge of *Picralima nitida*.

Method of data collection: The questionnaire was designed to capture the targeted respondents along with interview guide. Primary data was obtained, collated and analysed using Statistical Packaging for Social Sciences (SPSS). Inferential statistics such as logit regression model and Likert scale rating was used for the study.

Data analysis: Descriptive statistics such as frequencies, means, modes, cross tabulation percentages were used. Results were presented in tables where appropriate. Likert scale rating was used based on respondents' perception towards the plant. This was adopted to evaluate respondents' perception towards the plant in the study area. This is an ordered one dimensional scale from which respondents chooses one option that best aligns with their view out of five available options. This was done by applying ten (10) validated Perceptual statements against a five (5) point Likert scale ranging from strongly agree (5), agree (4), undecided (3), disagree (2) and strongly disagree (1). The logit model was used to determine the socio-economic factors that influence the availability of the plant. The model is specified as follows;

$$Y = \frac{1}{1 + \exp^{-z}} \dots (1)$$

Where:

Y = dependent variable (responses of respondents to availability of the plant which is either 1 if available or 0 if not available)

$$Z = \beta_0 + \beta_1 V_1 + \beta_2 V_2 + \dots + \beta_6 V_6$$

β_0 = constant, $\beta_1 \dots \beta_6$ = coefficients of $V_1 \dots V_6$

V_1 = Age; V_2 = Gender; V_3 = Education; V_4 = Marital status; V_5 = Religion; V_6 = Household size

RESULTS AND DISCUSSION

The result in Table 1 showed that (1.0 %) of the respondents were in the age group of 18-24 years, 11.0 % were in the age group of 25-34 years, 40.0% were in the age groups of 35-44, 28.0 % were in the age group 45-54 years while 20.0 % were above 54 years.

Table 1: Socio-economic characteristics of the respondents

Variables	Frequency	Percentage (%)
Age (years)		
18-24	1	1.0
25-34	11	11.0
35-44	40	40.0
45-54	28	28.0
>54	20	20.0
Gender		
Female	86	86.0
Male	14	14.0
Marital status		
Single	7	7.0
Married	66	66.0
Widowed	14	14.0
Separated	13	13.0
Education		
No formal	29	29.0
Adult	21	21.0
Primary	11	11.0
Secondary	23	23.0
OND/NCE	11	11.0
Bachelor/HND	5	5.0
Religion		
Christianity	26	26.0
Islam	38	38.0
Traditional	36	36.0
Household size		
<3	22	22.0
4-6	25	25.0
7-9	44	44.0
>9	9	9.0
Income		
<20000	5	5.0
20001-40000	28	28.0
40001-60000	29	29.0
60001-80000	38	38.0

Source: Field Survey, 2024

This implies majority of the respondents were still in their active and productive age. The productivity of a population is dependent on a number of factors of which age which reflects the agility of the population is important, this finding holds that the population has potential for increased productivity. Majority (86.0 %) of the respondents were female and 14.0 %

male. This could be as a result that women are more predisposed to buying and selling. Also, most of the respondents were married (66.0 %), followed by widowed (14.0 %), separated (13.0 %) and 7.0 % single. The distribution holds implication that the respondents that are married will probably have a household size that will provide household labour. Furthermore, education showed that (29.0 %) had no formal education, 21.0 % had adult education, 11.0 % had primary education, 23.0 % had OND/NCE while 5.0 % had Bachelor/HND.

This agreed with Ihekwoaba (2014) who stated that traditional medicine practitioners are people mostly without education, who have rather received knowledge of medicinal plants and their effects on the human body from their forebears. Based on religion, most of the respondents were Muslims (38.0

%), 36.0% were Traditionalists while 26.0 % were Christians. The household size showed that (44.0 %) of the household had 7-9 persons, 25.0 % recorded 4-6 persons, <3persons recorded 22.0 % while 9.0 % had >9 persons. This implied that the household size has implication for labour provision which increases productivity but it has the negative impact of causing overcrowding in the home. From the result, 5.0 % earned < ₦ 20,000, 28.0 % earned between ₦20,00- ₦40,001, 29.0% earned between ₦40,001- ₦60,000 while 38.0 % earned between ₦ 60,001- ₦ 80,000. This is above the minimum wage by the government employees. This is an indication that trade of NTFP could provide full time employment if well developed. Oluwalana *et al.*, 2007 made similar observation in sales of medicinal forest tree barks in Ogun State.

Table 2: Perception of respondents towards *Picralima nitida*

S/N	Perception Statements	SA (%)	A (%)	UD (%)	D (%)	SD (%)	Mean
1	The belief in the effectiveness of <i>Picralima nitida</i> is sure	39 (39.0)	61(61.0)	0(0.0)	0(0.0)	0(0.0)	4.39
2	<i>Picralima nitida</i> usage are always safe	32 (32.0)	68(68.0)	0(0.0)	0(0.0)	0(0.0)	4.32
3	<i>Picralima nitida</i> can cure all disease state	52 (52.0)	34(34.0)	12(12.0)	1(1.0)	1(1.0)	4.35
4	<i>Picralima nitida</i> can aid the action of synthetic drugs	39 (39.0)	31(31.0)	27(27.0)	3(3.0)	0(0.0)	4.05
5	<i>Picralima nitida</i> and conventional have no side effects	12 (12.0)	84(84.0)	3(3.0)	0(0.0)	1(1.0)	4.06
6	The usage of <i>Picralima nitida</i> and convectional drugs improves health	27 (27.0)	65(65.0)	5(5.0)	3(3.0)	0(0.0)	4.16
7	<i>Picralima nitida</i> should be combine with synthetic drug for use	19 (19.0)	6(6.0)	7(7.0)	31(31.0)	37(37.0)	2.39
8	Drugs used for treating ailment that <i>Picralima nitida</i> cures has certain percentage of <i>Picralima nitida</i>	12 (12.0)	63(63.0)	22(22.0)	3(3.0)	0(0.0)	3.84
9	<i>Picralima nitida</i> are always natural	43 (43.0)	56(56.0)	1(1.0)	0(0.0)	0(0.0)	4.42
10	<i>Picralima nitida</i> can easily be used without prescription or direction of usage	37 (37.0)	54(54.0)	7(7.0)	0(0.0)	2(2.0)	4.24

The result in Table 2 indicates that 61.0% agreed and 39.0% strongly agreed to the statement “the belief in the effectiveness of *Picralima nitida* is sure”. Also, “*Picralima nitida* usage are always safe” 68.0% agreed and 32.0% strongly agreed. The statement “*Picralima nitida* can cure all disease state”, 52.0% strongly agreed, 34.0% agreed, 12.0% were undecided, 1.0% disagreed while 1.0% as well strongly disagreed. Furthermore, the statement “*Picralima nitida* can aid the action of synthetic drugs”, 39.0% strongly agreed, 31.0% agreed, 27.0% were undecided while 3.0% disagreed. Also, “*Picralima nitida* and conventional have no side effects”, 84.0% agreed, 12.0% strongly agreed, 3.0% were undecided while 1.0% strongly disagreed. Based on the statement “the usage of *Picralima nitida* and convectional drugs improves health”, 65.0% agreed, 27.0% strongly agreed, 5.0% were undecided while 3.0% disagreed.

About 37.0% strongly disagreed, 31.0% disagreed, 7.0% were undecided, 19.0% strongly agreed while

6.0% agreed to the statement “*Picralima nitida* should be combine with synthetic drug for use”. Furthermore, 63.0% agreed, 12.0% strongly agreed, 22.0% were undecided while 3.0% disagreed to the statement “drugs used for treating ailment that *Picralima nitida* cures has certain percentage of *Picralima nitida*”. More than half 56.0% agreed, 43.0% strongly agreed while 1.0% were undecided to the statement “*Picralima nitida* are always natural”.

Lastly, 54.0% agreed, 37.0% strongly agreed, 7.0% were undecided while 2.0% strongly disagreed to “*Picralima nitida* can easily be used without prescription or direction of usage”.

The result showed that respondents strongly agreed and agreed to the perceptual statements except the statement “*Picralima nitida* should be combine with synthetic drug for use” that was disagreed. This implies that *Picralima nitida* as a medicinal is safe for consumption and usage.

Table 3: Medicinal benefits of *Picralima nitida* seed

No	Medicinal uses	Preparation	Frequency	Percentage
1	Cancer	Soaking	1	0.30
2i	Diabetes	Soaking	20	5.92
2ii	Diabetes	Soak with garlic and water	13	3.85
2iii	Diabetes	Boiling	7	2.07
2iv	Diabetes	Grind and boil with pap water	3	0.89
2v	Diabetes	Decoction	4	1.18
3i	Fever	Grind and boil with pap water	1	0.30
3ii	Fever	Soaking	10	2.96
4i	Fibroid	Boiling	3	0.89
4ii	Fibroid	Soaking	3	0.89
4iii	Fibroid	Decoction	2	0.59
5i	Gastrointestine	Decoction	1	0.30
5ii	Gastrointestine	Soaking	5	1.48
6i	Hypertension	Boiling	22	6.51
6ii	Hypertension	Boil with garlic and water	5	1.48
6iii	Hypertension	Decoction	7	2.07
6iv	Hypertension	Soaking	13	3.85
6v	Hypertension	Soak with garlic and water	9	2.66
6vi	Hypertension	Grind and boil with pap water	1	0.30
7i	Jaundice	Decoction	3	0.89
7ii	Jaundice	Soaking	15	4.44
8i	Malaria	Boiling	11	3.25
8ii	Malaria	Boil with garlic and water	4	1.18
8iii	Malaria	Decoction	4	1.18
8iv	Malaria	Soaking	29	8.58
9i	Menstrual pain	Boiling	12	3.55
9ii	Menstrual pain	Boil with garlic and water	7	2.07
9iii	Menstrual pain	Decoction	5	1.48
9iv	Menstrual pain	Grind and boil with pap water	5	1.48
9v	Menstrual pain	Soak with water	4	1.18
9vi	Menstrual pain	Soak with garlic and water	14	4.14
10i	Pile	Boil with garlic and water	1	0.30
10ii	Pile	Decoction	4	1.18
10iii	Pile	Grind and boil with pap water	1	0.30
10iv	Pile	Soaking	12	3.55
11i	Pneumonia	Boiling	1	0.30
11ii	Pneumonia	Decoction	1	0.30
11iii	Pneumonia	Soaking	7	2.07
12i	Sexual weakness	Grind and boil with pap water	1	0.30
12ii	Sexual weakness	Soaking	4	1.18
13i	Stomach ache	Boil with ginger and water	18	5.33
13ii	Stomach ache	Decoction	4	1.18
14iii	Stomach ache	Grind and boil with pap water	3	0.89
14iv	Stomach ache	Soaking	5	1.48
14v	Stomach ache	Soak with water and turmeric	26	7.69
15i	Typhoid	Decoction	3	0.89
15ii	Typhoid	Soaking	4	1.18

Source: Field Survey, 2024.

Table 4: Socio-economic factors influencing availability of *Picralima nitida*

Variables	Co-efficient	Standard error	T-ratio	Marginal effect
Gender	2.13637***	0.58061	3.68	0.474217
Education	6.01843***	1.53885	3.91	1.327264
Marital status	0.38990	0.57250	0.68	0.087254
Religion	0.57508	0.63897	0.90	0.125768
Age	0.216769	1.89093	0.11	0.047803
Household size	0.11556	0.61093	0.19	0.0254709
Constant	-17.45508***	8.38241	-2.08	
Number of obs	100			
LR chi² (6)	45.74			
Prob > Chi²	0.0000			
Pseudo R²	0.5444			
Log likelihood	-43.53653***			

***Coefficients significant at 1%, **Coefficients significant at 5%, *Coefficients significant at 10%

For medicinal purposes, the *P. nitida* seed have of *P. nitida* including the method of preparations various usages across in the study area. Fourteen uses were cited by the respondents (Table 3). The

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medicinal uses include cancer (0.30%), diabetes (13.91%), fever (3.26%), fibroid (2.37%), gastrointestinal (1.78%), hypertension (16.87%), jaundice (5.33%), malaria (14.19%), menstrual pain (13.90%), pile (5.33%), pneumonia (2.67%), sexual weakness (1.48%), stomach ache (16.57%) and fibroid (2.07%). The seeds were the most important organ used, this is in line with the study of Akabassi *et al.* (2021). The species is highly threatened since the removal of this organ causes the species death and this can lead to the extinction of wild populations of *P. nitida*, as already reported by Akabassi *et al.* (2017). The result in Table 4 shows the socio-economic factors influencing availability of *Picralima nitida* in the study area using logit regression. The LRchi² (6) value is 45.74 which is statistically significant at 10%, Pseudo R²= 0.5444 and the Log likelihood = -43.53653. The calculated Chisquare value associated with the Likelihood Ratio (LR) test was significant at (p<0.01) which indicate the goodness of fit. The sign of the coefficient shows the direction of the variables in relation with the dependent variable, while the marginal effects describe the magnitude of the change in a unit of the independent variable on the dependent variable. The variable education was found to have a positive and significant effect (p<0.01). The marginal effect of probability on education of respondents knowing the availability of *Picralima nitida* with respect to 1.327264. This could be attributed to the fact that level of education attained by respondents has effect on knowing the availability of *Picralima nitida*. The variable gender was also found to have a positive and significant effect (p<0.01). The marginal effect of probability on gender of respondents knowing the availability of *Picralima nitida* with respect to 0.474217. This could be attributed to the fact that gender has effect on knowing the availability of *Picralima nitida*. The variables marital status, religion, age and household size had a positive correlation with the likelihood of knowing the availability of *Picralima nitida* although not statistically significant.

Conclusion: The study concluded that respondents are still in their active age with no formal education, dominated by female while majority are married. *P. nitida* have wide acceptability and perception among the population of study. *P. nitida* plant has great usefulness in African traditional medicine. The seeds are employed ethno-medicinally as remedy for a variety of human diseases such as malaria, diabetes, hypertension, fever, pain and various conditions. Gender and education had a positive influence of knowing the availability of *Picralima nitida*.

Declarations: The authors declare no conflict of interest.

Data Availability Statement: Data are available upon request from the first author.

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