

Full Length Research Paper

Assessment of the factors influencing utilization of medicinal plants among Hausa communities in Makurdi metropolis, Benue State, Nigeria

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Abstract

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The study was conducted to assess the factors influencing the utilization of medicinal plants among Hausa Communities in Makurdi metropolis, Benue State. The population for the study comprised the Hausa communities. A purposive sampling technique was used to select Hausa residential areas, thus, 120 adults each were sampled in the North Bank and Wadata areas giving a total of 240 respondents. Data for the study was obtained through a semi-structured questionnaire, interview, and personal observation. The study data was analyzed using descriptive statistics, Likert scale rating, logistic regression models, and Spearman rank correlation. The analysis of the field data shows that most (83.9%) of the respondents utilized medicinal plants to treat ailments. The respondents' main reasons for utilizing medicinal plants were; the plants' efficacy (46.9%), affordability (20.6%), and availability (20.2%). Correlation analysis between the ages of respondents and utilization of medicinal plants had non-significant positive correlation ($r_s=0.08$, $p>0.22$), a significant positive correlation between years of schooling and utilization of medicinal plants among the respondents in the study area ($r_s=0.18$, $p>0.01$) and a non-significant negative correlation between the income of the respondents and utilization of medicinal plants in the study area ($r_s= -0.08$, $p>0.10$). The result also shows that male and female respondents do not differ significantly ($U=5946$, $P>0.05$) in using medicinal plants in the study area. On the extent of utilization of medicinal plants, the result showed a moderate level of utilization of medicinal plants in the study area. The logistic regression analysis shows that age, years of residence, and annual income, had no significant influence ($p>0.05$) on the utilization of medicinal plants while the educational status of the respondents in terms of years of schooling had a significant positive influence ($p<0.05$) on utilization of medicinal plants. The most important factor influencing medicinal plant utilization in the study area based on Exp (B) values was education (1.78) followed by age (1.05) years of residence (1.02) and annual income (0.18). Therefore, the conservation of the preferred medicinal tree species should be encouraged by the Government, Non-governmental organizations (NGOs), and private individuals to enhance the sustainability of the resource.

Keywords: Medicinal plants, utilization, factors, influence, Hausa community.

1.0 Background Information

Africans and Nigerians in particular are endowed with a rich source of medicinal plants that have been used historically for maintaining health (Taiye, 2015). In sub-

Saharan Africa about 80% of the ever-increasing population depends on ethno-medicine for their healthcare since conventional medicine is mostly expensive or unavailable in rural homesteads (Ochora *et al.*, 2012), and also because herbal medicine is regarded as an effective

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system for treating many illnesses (Ondicho *et al.*, 2015). Traditional Medicine is a practice by which ailments are cured or treated by the use of raw materials from plants. (Silvester *et al.*, 2012). According to the World Health Organization (WHO), more than 80% of the world's population relies on traditional medicine for their primary health care (Ondicho *et al.*, 2015). The practice of traditional medicine is believed to be a source by which ailments are cured or treated by the use of raw materials from plants. Indigenous people believe that for every disease there is an herb for its cure (Pesek *et al.*, 2005).

The growing importance of traditional medicine has made the Federal Government of Nigeria formulate a traditional medicine policy and establish a Traditional Medicine Council to regulate the practice and encourage research in five core areas (herbal medicine, bone setting, mental health, traditional birth attendance, and sale of traditional medicine ingredients) (Gideon *et al.*, 2016).

Traditional Medicine is an aspect of ethnobotany and ethno-medical studies. Ethno-botany is a very broad discipline and it includes all sorts of human-plant interactions. It is a study of how people of a particular culture and region make use of indigenous plants. Ethno-medical study therefore is conceptualized as ethno-botany based on the medicinal use of plants and epidemiology (Silvester *et al.*, 2012).

According to FEPA (1992), there are approximately 205 medicinal plants that are commonly found in Nigerian forests.

Africans, particularly Nigerians, have a long history of utilizing medicinal plants for healthcare needs (Taiye, 2015). Studies have shown that factors like affordability and cultural beliefs contribute to the widespread use of herbal remedies across sub-Saharan Africa (Ochora *et al.*, 2012). However, there are still gaps in our understanding of how these practices vary within specific communities. According to Nwachukwu *et al.*, (2010), the traditional use of medicinal plants for curing and preventing illnesses, including the promotion of both physical and spiritual well-being among human beings particularly the Hausa people has become paramount in almost every household.

Although the knowledge of medicinal plants is sometimes kept secret, the present generation through research efforts can still learn from the indigenous people. (Fasola, 2015). The Indigenous knowledge of medicinal plants can be a valuable resource for health management and also the fact that ethno-medical practice is primarily based on locally available plants and is cost-effective since modern health care delivery is more costly and often out of reach of many Africans, their recourse to herbal medicines is justifiable as Indigenous people often say that "our knowledge is holistic, and cannot be separated from our lands and resources"(Taiye, 2015). Therefore, it becomes the responsibility of the scientific community to unravel this information and to document it for availability to the whole world for the benefit of human beings (Sani

and Aliyu, 2011).

However, these medicinal potentials in plant resources can only be scientifically best harnessed into useful products by exploring the dynamics of local indigenous medicinal plant knowledge (Silvester *et al.*, 2012).

While Several studies have identified a correlation between medicinal plant use with socioeconomic factors (Onyapat *et al.*, 2011; Nxumalo *et al.*, 2011; Chintamunnee and Mahomoodally, 2012 and Usifoh and Udezi, 2013) a study from Ethiopia found no such sociodemographic differences among medicinal plant users (Bayisa *et al.*, 2014)

This study focuses on the Hausa community in Makurdi, Nigeria to establish the association of socio-economic factors with the use of medicinal plants. Also, while research has previously explored medicinal plant use in Nigeria, there is a lack of data on the factors influencing these practices within this community. This study aims to address this gap by identifying the most commonly used medicinal plants by the Hausa community in Makurdi, exploring the perceived benefits and culture associated with these plants, and also investigating the socioeconomic factors influencing the use of medicinal plants within the community and analyze the level of medicinal plant use within the Hausa community.

Therefore, this study seeks to provide information on the factors influencing the utilization of medicinal plants among the Hausas in Makurdi metropolis, with a view of providing insight into conservation and development approaches for sustainable development.

2.0 METHODOLOGY

2.1 Study Area

The study area is Makurdi metropolis, Makurdi local government (LGA), of Benue State, Nigeria. The town is located between latitude 7°38'N - 7°50'N, and longitude 8°24'E and 8°38'E. It is located in the Benue Valley of Nigeria's North Central region. It is traversed by the second largest river in the country, the River Benue (Abah, 2013). Makurdi is bounded by Guma LGA to the North, Gwer LGA to the South, Gwer-west LGA to the South-West and Doma LGA of Nasarawa state to the North-West (Shabu and Tyonum, 2013). The map of the study area is shown in Figure 1. Makurdi town has a tropical wet and dry climate. There are five months of rainy season which lasts from April to October and also 5 months of dry season from November to March. Makurdi town experiences regular high rainfall, with an average annual total of about 1173 mm (Abah, 2012). Nonetheless, Makurdi experiences high temperatures throughout the year, with February and March being the hottest times of the year.

The temperature in Makurdi varies from a daily of 22.5°C and a maximum of 40°C (Ologunorisa and Tor, 2006). Makurdi falls within the Guinea savannah vegetation which

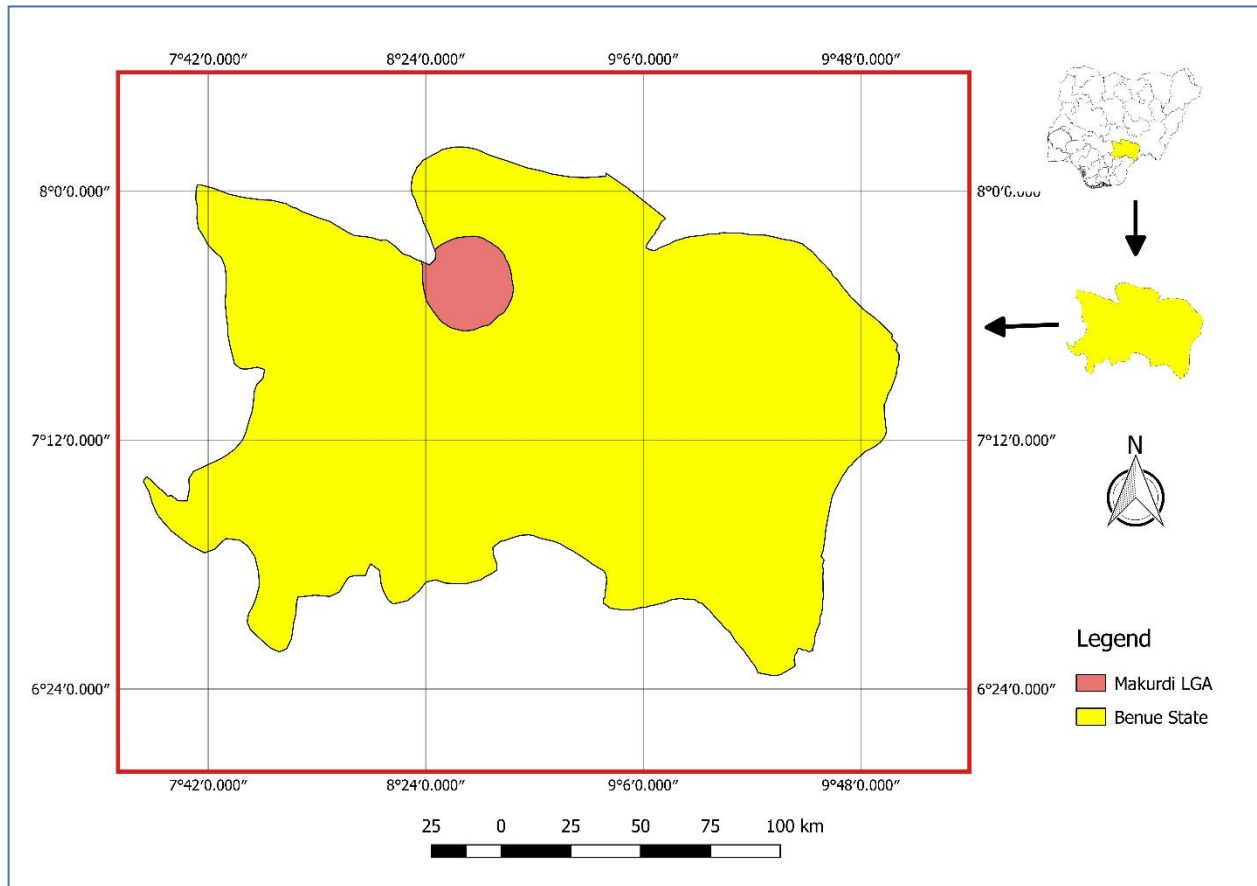


Fig. 1. Map of the Study Area.

Source: Drawn from QGIS 2.16.3 with GRASS 7.0.4 Software, 2021.

has been adversely affected by anthropogenic activities which has greatly reduced tree cover in many parts of its area. This has led to natural secondary vegetation being replaced by artificial vegetation.

Makurdi town is inhabited with a population of 297,398 comprising Tivs, Idomas, Etilos, Jukuns, Egede, Hausas, Yorubas and Ibos (FGN, 2007). The Tivs are the dominant tribe. Makurdi town is largely inhabited by people who engage in civil service duties, commercial activities, and agrarian peasantry. Makurdi town is predominantly inhabited by people who engage in civil service work, commercial activities, and agrarian peasantry. The built-up area has the highest concentration of people mainly in High level and Wadata locations of the town.

2.2 Population, Sampling Procedure

The population for the study comprised the Hausa communities in Makurdi metropolis. A purposive sampling technique was used to select the areas where the Hausas are residents; these areas were North Bank and Wadata. A systematic random sampling technique was used to

select 60 households in each of the communities. The first household in each community was identified and selected for interview and thereafter every fourth household was selected. Two mature persons in each household were purposively selected for the interview as they could provide useful information for the study. This procedure was carried out for all the communities to obtain the sample size for the study.

Thus, 120 and 120 adults were sampled in North Bank and Wadata. A total of 240 respondents were sampled in the study area.

2.3 Data Collection

The data for the study was collected through the primary data sources. The primary data were collected with the aid of a semi-structured questionnaire which sought information on the age, sex, level of education, occupation, and religion of respondents. Informants involved during the interview were only Hausa ethnic group. Before the questionnaire was administered, consent was obtained from each informant. For the informants who were

illiterate, an oral interview was arranged, and the questionnaire was filled out on their behalf. Each medicinal plant revealed by the respondent was recorded in the local names commonly recognized in the study area.

2.4 Data Analysis

Descriptive statistics such as frequency tables, percentages, and charts were employed to analyze the data. The respondents' age, education, years of residence in the locality, and income were correlated against the utilization of medicinal plants using Spearman Rank correlation analysis. The Spearman Rank correlation is expressed as:

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Where :

r_s = Spearman Rank Correlation Coefficient

d = The difference between the two ranks of each observation

n = Number of observations

Positive correlated variables indicate that the variables move in the same direction, meaning that an increase in one variable leads to an increase in the other variable. Negatively correlated variables indicate that the two variables move in the opposite direction, meaning that an increase in one variable will lead to a decrease in the other variable.

A Five-point Likert rating scale as used by Dagba et al. (2017) was adopted to ascertain the respondents' extent of utilization of medicinal plants. The weighting scale was derived from the following values for the utilization of medicinal plants; Very Large Extent (VLE) = 5, Large Extent (LE) = 4, Moderate Extent (ME) = 3, Low Extent (LE) = 2, Very Low Extent (VLE) = 1.

The Likert rating Mean Score (MS) of utilization of medicinal

plants is expressed as: $MS = \frac{\sum f}{n}$

Where :

f = Sumation of the five point rating scale and

n = Number of points

Therefore, MS is represented as follows on a five-point Likert scale:

$$MS = \frac{1 + 2 + 3 + 4 + 5}{5}$$

$$MS = 3.0$$

The Likert Weighted Mean Score (WMS) of utilization of

medicinal plants is expressed as : $WMS = \frac{\sum_{i=1}^n f_i x_i}{N}$

Where :

f = Frequency of respondent

x = Likert scale point

N = Total Number of respondents

Using the interval scale of 0.05, the Upper Limit (UL) cut-off is $MS + 0.05$ ($3.0 + 0.05 = 3.05$). The Lower Limit (LL) cut-off is $MS - 0.05$ ($3.0 - 0.05 = 2.95$). Based on these two extreme

limits any variable with WMS below 2.95 ($WMS < 2.95$) was considered 'Low Extent'. Variable with MWS between 2.95 and 3.05, 'Moderate Extent' any variable MWS greater than 3.05 ($MWS > 3.05$), 'Large Extent'.

The binary logistic regression model (BLR) as used by Shomkegh *et al.* (2019) was used to determine the socio-economic factors influencing the utilization of medicinal plants in the study area.

The BLR analysis is expressed as:

$$Logit(y) = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + e$$

Where :

y = Dependent variable (binary variable) ; $y = 1$ if the people are utilized medicinal plants, $y = 0$ if otherwise.

a = Constant of the equation

$b_1 - b_n$ = coefficient of the independent variables

$x_1 - x_n$ = Independent variables

x_1 = Age of the respondents (Scale variable)

x_2 = Years of schooling of the respondents (Scale variable; Non formal=1. Primary=6, Secondary=12 and Tertiary = 17 years)

x_3 = Years of residence in the locality (scale variable)

x_4 = Annual Income (scale variable)

Explanation of variables in the Binary Logistic Regression Model

i Nagelkerke indicates the variation in the independent variable (DV) explained by the independent variables (IVs). The Nagelkerke's R^2 range from 0 – 1. The higher the R^2 the better the result, as it explains the strength of the relationship between prediction and groupings.

ii Exp (B): The exponential B as written as Exp (B) indicates the extent to which raising the corresponding measure (independent variables) by one unit influences the odds ratio. If the Exp (B) value exceeds 1, then, the odd of an outcome occurring increases; if the figure is less than 1, any increase in the prediction leads to a drop in the odd of the outcome occurring.

iii Effect Size: The odds (probability) ratio is a measure of effect size. The ratio of odds ratios of the independents is the ratio of the relative importance of the independent variables in terms of effect on the dependent variables' odds.

3.0 RESULT AND DISCUSSION

3.1 Socio-economic Characteristics of Respondents in the Study Area

The respondents' socioeconomic characteristics are presented in Table 1. The majority of the respondents interviewed were females 59.1% while 40.9% were males. The respondents' aged between 21 and 50 years old constituted the largest group (83.9%) with those between 51- above 80 years forming the smallest respondent group

Table 1. Socio-economic Characteristics of Respondents in Hausa Communities in Makurdi.

Characteristics	Category	F(n=230)	%
Sex	Male	94	40.9
	Female	136	59.1
Age	<21	17	7.4
	21-30	79	34.3
	31-40	61	26.6
	41-50	36	15.6
	51-60	20	8.7
	61-70	11	4.8
	71-80	5	2.2
	>81	1	0.4
Mean Age	37±14.11SD		
Religion	Christianity	0	0
	Islam	100	100
	Others	0	0
Educational Status	No Formal Education	65	28.3
	Primary	28	12.2
	Secondary	84	36.5
	Tertiary	53	23
	Others	0	0
Marital Status	Single	67	29.1
	Married	142	61.7
	Divorced	7	3
	Widow	13	5.7
	Widower	1	0.4
Occupation	Civil service	20	8.7
	Trading	58	25.2
	Business	77	33.5
	None	33	14.3
	Others	42	18.3

(16.1%). In terms of religion, 100% of the respondents were Muslims.

The educational status shows that most of the respondents had secondary school education (36.5%), followed by those with non-formal education (28.3%), tertiary education (23.0), and primary education (12.2%).

The marital status of the respondents shows that the majority of the respondents were married (61.7%) while 29.1% were single, 5.7% were widows, 0.4% were widowers and 3.0% were divorced.

In terms of major occupation of the respondents, those involved in business were the highest (33.5%), followed by trading (25.2%), others 18.3%, those without occupation (14.3), and civil service (8.7%).

The years of residence of the respondents in Makurdi shows that the category for less than 11 years of residence was the highest 32.2% and the mean years of residence of 20.6±14.54SD.

As for the monthly income of the respondents, the category between ₦0-50,000 was the highest (92%),

followed by ₦51, 000-100,000 (6.5%) and ₦101, 000-150,000 (0.9%).

3.2 Medicinal Plants Utilized in the Study Area

A total of 48 plant species used for the treatment of various ailments were recorded in the study area, with *Boswellia dalzielii* most frequently mentioned having a frequency of (148) followed by *Moringa oleifera* (97) and *Khaya senegalensis* (92) and *Guirera senegalensis* (89) and then *Mangifera indica* (69) Table 2.

3.3 Utilization of Medicinal Plants for Treatment of Ailments in the Study Area

Table 3 shows that 83.9% of the respondents utilized medicinal plants for treatment of ailments in the study area.

3.4 Reasons for Utilization of Medicinal Plants for Treatment of Ailments

The majority of the respondents utilize medicinal plants for the treatment of ailments because they believe in their efficacy (46.9%). Other respondents (23.9%) utilized medicinal plants because of their affordability, and availability (20.2%) while 9.0% utilized them for no particular reason.

3.5 Relationship between Respondents Socio-economic Variables and Utilization of Medicinal Plants

Table 5 shows that correlation analysis between the ages of respondents and utilization of medicinal plants had a non-significant positive correlation ($r_s = 0.08$, $p > 0.05$) in the study. However, there was a significant positive correlation between years of schooling and utilization of medicinal plants among the respondents in the study area ($r_s = 0.18$, $p < 0.05$). Correlation analysis between years of residence of the respondents and utilization was a non-significant positive relationship ($r_s = 0.02$, $p > 0.05$). Also, a non-significant negative correlation ($r_s = -0.08$, $p > 0.05$) was observed between the income of the respondents and the utilization of medicinal plants in the study area.

3.6 Gender and Utilization of Medicinal Plants

Table 6 shows that Male and female respondents do not differ significantly ($U = 5946$, $P > 0.05$) in the utilization of medicinal plants in the study area.

3.7 Extent of Utilization of Medicinal Plants for Treatment of Ailments

Table 7 shows the extent to which medicinal plants are utilized in the study area. The result shows that the people in the study areas utilize medicinal plants on a moderate scale.

3.8 Socio-Economic Factors Influencing Utilization of Medicinal Plants in the Study Areas

Table 8 shows that the education status of the respondents in terms of years of schooling had a significant positive influence ($p < 0.05$) on the utilization of medicinal plants. The coefficient (B) = 0.58 indicates that a unit increase in years of schooling will increase the utilization of medicinal plants by the factors of 0.05. The odds ratio $\text{Exp}(B)$ values of the variables indicate the relative importance of the variables in influencing the utilization of medicinal plants in the area. Therefore $\text{Exp}(B) = 1.78$ implies that education was the most important factor influencing utilization of medicinal plants in the area and is ranked 1st.

The age of the respondent had a non-significant positive influence $p > 0.05$ on the utilization of medicinal plants for the treatment of ailments in the study area. The regression coefficient (B=0.05), indicated that a unit increase in the age of the respondents will lead to an increase in utilization of medicinal plants by the factor of 0.05. The age $\text{Exp}(B) = 1.05$ implies that age was the second most important factor that influenced the utilization of medicinal plants in the study area and was ranked 2nd.

Years of residence by the respondents in the locality also had a non-significant positive influence ($P > 0.05$) on the utilization of medicinal plants in the study area. The coefficient (B) = 0.02 indicated that a unit increase in years of residence will increase the utilization of medicinal plants by a factor of 0.02. The $\text{Exp}(B) = 1.02$ implies that years of residence was the third most important factor that influenced the utilization of medicinal plants in the study area and was ranked 3rd.

The annual income of the respondents had a non-significant negative influence ($p > 0.05$) on the utilization of medicinal plants in the study area. The co-efficient (B) = -1.73 indicated that a unit increase in income of the respondents will decrease the utilization of medicinal plants by a factor of 1.73. The $\text{Exp}(B) = 0.18$ implies that the income of the respondents was the fourth and least important factor that influenced the utilization of medicinal plants in the study area and was ranked 4th.

Number of Cases = 230, model Chi-Square = 10.91, ($P > 0.05$) -2LL ± 190.89. overall percentage = 83.9%, Nagelkerke (R^2) = 0.09.

4.0 DISCUSSION

4.1 Socio-economic Characteristics of Respondents in the Study Area

The high proportion of female gender over the males in this study could be due to the consumption pattern of Nigerian women which can be linked to the long age tradition and beliefs of how health products are culturally consumed within a social context. Although researchers in Nigeria have reported different findings on the trend of utilization by both genders, Low's (2009) study reveals that the con-

Table 1. Cont'd

Characteristics	Category	F(n=230)	%
Years of Residence	<10	74	32.2
	11-20	55	23.9
	21-30	54	23.5
	31-40	29	12.6
	41-50	11	4.8
	51-60	5	2.2
	61-70	1	0.4
	>70	1	0.4
Mean years of Residence	20.6±14.54SD		
Monthly income	0-50,000	213	92
	51,000-100,000	15	6.5
	101,000-150,000	2	0.9
Mean monthly income	18058.9±23811.21SD		

n = Number of Respondents, SD= Standard deviation.

Table 2: Medicinal Plants Used in for the Treatment of Ailments in the Study Area.

S/N	Local Name	Scientific Name	F	Ailment Treated
1	Ararrabi	<i>Boswellia dalziella</i>	148	Cancer, Pile, toothache, boils
2	Zogale	<i>Moringa oleifera</i>	97	Hypertension, diabetes, Female infection
3	Madaci	<i>Khaya senegalensis</i>	92	Stomach ache
4	Sabara	<i>Guirera senegalensis</i>	89	Rashes, cancer, Pile
5	Mangoro	<i>Mangifera indica</i>	69	Blood shortage, Typhoid, Malaria
6	Dogonyaro	<i>Azadirachta indica</i>	58	Pubic itching, Fever, Stomach worms, Malaria
7	Kiryra	<i>Prosopis africana</i>	52	Typhoid, pile
8	Gwanda	<i>Carica papaya</i>	47	Fever
9	Lemon tsami	<i>Citrus aurantifolia</i>	44	Measles, typhoid
10	Madobiya	<i>Pterocarpus erinaceus</i>	33	Anemia
11	Raidore	<i>Senna occidentalis</i>	24	Stomach ache, Typhoid
12	Yatsa biyar	<i>Paullinia pinnata</i>	21	Jedi-Jedi
13	Shuwaka	<i>Vernonia amygdalina</i>	18	Diabetes
14	Lalle	<i>Lawsonia inermis</i>	16	Chicken pox
15	Zinzina	<i>Cochlospermum planchonii</i>	16	Typhoid
16	Runhu	<i>Senna singueana</i>	14	Breastmilk enhancement
17	Zobo	<i>Hibiscus sabdariffa</i>	14	Flushes digestive system
18	Bagaruwa	<i>Acacia nilotica</i>	13	Ulcer
19	Dorawa	<i>Parkia biglobosa</i>	11	Pile
20	Tsamiya	<i>Tamarindus indica</i>	11	Vomiting
21	Marke	<i>Anogeissus leiocarpus</i>	11	Cough
22	Bambami	<i>Alchornea cordifolia</i>	9	Jedi-jedi

Table 2. Cont.

23	Wuyan damo	<i>Combretium glutinosum</i>	8	Purging in children
24	Aduwa	<i>Balanites aegyptiaca</i>	7	Pile
25	Baure	<i>Ficus sycomorus</i>	6	Pile
26	Tafashiya	<i>Sarcocephalus latifolius</i>	6	Chicken pox, stomachache
27	Chediya	<i>Ficus thonningii</i>	4	Jedi-jedi
28	Kalgo	<i>Piliostigma thonningii</i>	4	Typhoid Dizziness
29	Kurdi	<i>Burkia africana</i>	4	Dysentary
30	Gwandan daji	<i>Annona senegalensis</i>	3	Insect Sting
31	Chediya	<i>Ficus thonningii</i>	3	Typhoid
32	Kuka	<i>Parkia biglobosa</i>	2	Jedi-jedi
33	Rimi	<i>Ceiba pentandra</i>	2	Stooling in children
34	Tunna	<i>Pseudocedrela kotschy</i>	2	Dysentry, stomach ache
35	Tafarnuwa	<i>Allium sativum</i>	2	Cough and cold
36	Daddoya	<i>Ocimum basilicum</i>	2	Cough
37	Minjirya	<i>Erythrina senegalensis</i>	2	Jedi jedi
38	Taura	<i>Detarium microcarpum</i>	1	Head ache
39	Geza	<i>Combretum micranthum</i>	1	Stomache ache
40	Aloe vera		1	Typhoid
41	Yadiya	<i>Leptadenia hastata</i>	1	Pregnant women
42	Durimi	<i>Ficus polita</i>	1	Purging
43	Sutura		1	Earache
44	Kurna	<i>Ziziphus sina-christi</i>	1	Body rashes
45	Tagargade		1	Vomiting
46	Auduga	<i>Gossypium spp.</i>	1	Anemia
47	Kurya	<i>Bombax costatum</i>	1	Jedi-jedi
48	Kelkera	<i>Suagia madagaskaria</i>	1	Typhoid

F= Frequency of mention of plant by respondents

sumption of herbal and complementary and alternative medicine prevails more among women and also that they are the major consumers of healthcare products due to their physiology and care for nature. Similarly, Okoronkwo *et al.*, (2014) identified a higher prevalence among women, in contrast, Onyapat *et al.*, (2011) reported a male-dominant trend. This inconsistency may reflect regional variations or differing cultural practices. However, globally, studies suggest women are more frequently involved in traditional medicine due to intergenerational knowledge transfer (James *et al.*, 2018). This, coupled with their primary caregiver roles within families, and particularly among the Hausas could explain the observed higher female utilization of herbal remedies in the present study. The fact that the majority of the respondents were within their active ages could be because traditional medicines are consumed by people more in these ages and also due

to the efficacy of the medicinal plants on their health. A study by Logiel *et al.*, (2021) on the Prevalence and socio-economic factors affecting the use of traditional medicine among adults of Katikekile Subcounty, Moroto District, Uganda also reported similar findings. Other studies such as Odeyemi, (2014) and NPC, (2006) have previously reported on younger (20-50 years) ages in urban or semi-urban settings on the use of traditional medicine, while EKSG, (2016) and Cochran (2007) reported that in rural settings older people (>50 years) are more likely to use medicinal plants. The fact that a greater proportion of the respondents are in their active ages could be attributable to their exposure to injuries and illnesses and partly due to their responsibilities in providing health care needs to members of the family because most of the being married. This aligns with previous research suggesting individuals in these age groups are more likely to experience

Table 3: Utilization of Medicinal Plants for Treatment of Ailments in the Study Area.

	F	%
Yes	193	83.9
No	37	16.1
Total	230	100

Table 4: Reasons for Utilization of Medicinal Plants for Treatment of Ailments in the Study Area.

Response	F*	%
Efficacy	114	46.9
Availability	49	20.2
Affordability	58	23.9
None of the above	22	9.0
Total	243	100

F* = Multi-choice responses

Table 5: Spearman Rank Correlation Analysis between Respondents Socio-economic Variables and Utilization of Medicinal Plants in the Study Area.

Variables Tested	r _s Value	P. Value
Age VS utilization MP	0.08	0.22
Years Schooling VS Utilization of MP	0.18	0.01
Years of Residence VS Utilization of MP	0.02	0.82
Income VS Utilization of MP	-0.08	0.23

Significant level = 0.05, MP= Medicinal plants

Table 6: Mann Whitney Test of Difference between Gender and Utilization of Medicinal Plants in the Study Area.

Test variable	U. Value	P. Value
Gender VS Utilization of MP	5946.00	0.16

Significant level = 0.05, MP= Medicinal plants.

injuries and illnesses, potentially leading them to explore diverse treatment options, including herbal remedies (Nxumalo *et al.*, 2011; Usifoh and Udezi, 2013). Conversely, studies conducted in rural settings have reported a higher prevalence of medicinal plant use among older adults (Ladele and Bisi-Amosun, 2014). This difference might be attributed to a combination of cultural factors and the increased susceptibility to health conditions experienced by older populations, leading to a greater need for healthcare options.

The reason for all respondents being Muslims could be attributable to the fact the Hausa communities in Makurdi

are predominantly Muslims and also that medicinal plants are used for their cultural and Islamic practices to cure diseases and illnesses (Tursunova *et al.*, 2014, and Kankara *et al.*, 2014).

The fact that most of the respondents had formal education implies that medicines from plants are consumed by the respondents irrespective of their educational status. This could not be unconnected with the impact of culture on the respondents. According to Zukin *et al.* (2004), consumption patterns are influenced by factors such as culture and beliefs about the efficacy of medicinal plants. Also, individuals with higher levels of education and income

Table 7: Extent of Utilization of Medicinal Plants in Makurdi Town.

Variable	Very large	Large	Moderate	Low	Very low	N	Weight Score	Mean Weight Score	Remark
Extent of utilization of medicinal plants	14(70)	41(164)	100(300)	75(150)	0(0)	230	680	2.97	Moderate

Note: Values outside the parenthesis are the frequency of the respondents, values inside the parenthesis are Likert-rated scores (frequency x Likert rating scale point), Mean score (MS) =3.0, Upper Limit (UL) =3.05, Lower Limit (LL) =2.95.

Table 8. Socio-economic Factors Influencing Utilization of Medicinal Plants in the Study Area.

Variable	B	SE	Wald	df	P.Value	Exp(B)	Rank
X ₁ (Age)	0.05	0.30	0.03	1	0.86	1.05	2
X ₂ (Years of Schooling)	0.58	0.20	8.01	1	0.01	1.78	1
X ₃ (Years of Residence)	0.02	0.26	0.01	1	0.93	1.02	3
X ₄ (Annual Income)	-1.73	1.07	2.61	1	0.11	0.18	4
Constant	-1.54						

Significant Level = 0.05.

may possess greater knowledge and resources for self-care, potentially leading to increased investment in their health compared to those with lower educational attainment and income. Furthermore, formal education may be associated with a greater receptiveness to information on both traditional and modern medicine, potentially leading to an integrative approach to healthcare (Logiel *et al.*, 2021)

The marital status indicates that respondents irrespective of their marital status consume herbal medicines. In terms of the major occupation of the respondents, the result implies that consumption of herbal medicines cuts across different occupations.

The years of residence of the respondents in Makurdi show that the majority of the respondents have lived in the study area for a long time and hence their knowledge of plants used for herbal medicines in the study area.

The fact that the majority of the respondents are among low-income earners attributed to the inability to access conventional medicines and therefore the dependency on herbal medicine for health care needs (Ekanem and Udoh, 2009)

4.2 Utilization of Medicinal Plants for Treatment of Ailments in the Study Area

The utilization of medicinal plants by the majority of the Hausas in the study area could be attributable to cultural background, ethnic orientation, religious beliefs, and social and economic factors. Studies by Akhagba (2017); Imber, (2008); Zukin & Maguire (2004); and Moussalhy, (2008) correlate the consumption pattern of medicinal plants to the aforementioned factors. A Study by Shinkafi, (2015) on

the Integration of Medicinal Plants into the Traditional System of Medicines for Treatment of Cancer in Sokoto State, Nigeria, posited that the use of herbal medicine has long been practiced among the indigenous ethnic groups. Apart from cultural background, ethnic orientation, religious beliefs, and social and economic factors influenced the utilization of medicinal plants. According to Sofowora *et al.* (2013), the lack of healthcare, extremely limited resources, poor communications, vast distances, low levels of education, and individual and community poverty in developing countries influenced the use of medicinal plants for the treatment of ailments. In addition to these; the high cost or unavailability of drugs, fake drugs, non-effectiveness of synthetic drugs, poor distribution, and inadequate qualified medical practitioners, influence the increasing consumption of medicinal plants for healthcare needs (Ojua *et al.*, 2013, Opatola *et al.*, 2014, Shinkafi *et al.*, 2015). This finding is also in line with the findings by the World Health Organization (WHO) which stated that more than 80% of the world population relies on traditional medicine for their primary health care (Veeramuthu, 2006, Msomi and Simelane, 2018; Carvalho, 2020). In a similar study, the traditional use of medicinal plants for cancer treatment around Borno State in the far Eastern region of Nigeria has been reported (Ngulde *et al.*, 2014).

4.3 Reasons for Utilization of Medicinal Plants for Treatment of Ailments

The efficacy, availability, and cost-effectiveness indicated as reasons for utilizing medicinal plants for healthcare needs are consistent with the findings of Opara and Osayi

(2016). Research studies conducted among pregnant women in Nigeria and Kenya by Fakaye *et al.*, (2009). and Ondicho *et al.*, (2015) revealed that herbal medicines are commonly used due to their perceived effectiveness in treating various ailments. This finding is further supported by Ohemu *et al.* (2021), who investigated the knowledge, attitudes, and practices of traditional medicine in Jos South Local Government Area of Plateau State, Nigeria. These studies collectively suggest that herbal remedies are a preferred treatment option for many individuals, particularly in rural or resource-constrained settings, where traditional medicine is often deeply rooted in cultural practices and beliefs.

4.4 Socio-economic Factor Influencing Utilization of Medicinal Plants in the Study Area

The non-significant positive correlation between the ages of respondents and the utilization of medicinal plants implies that as the age of the respondents increases, the utilization of medicinal plants also increases. The findings of (Gardiner *et al.*, 2007 and Logiel *et al.*, 2021) showed significant correlations which implies that as people get older their use of medicinal plants increases. That older people have higher use of medicines from plants could be related to both cultural issues, but also, that older people are more prone to suffer from medical conditions and hence require increased health care.

The significant positive correlation between years of schooling and utilization of medicinal plants among the respondents implies that as the respondent's level of education increases the utilization of medicinal plants also increases. This finding is in line with the study carried out by Francis (2014) in Kenya which stated that attaining a higher education positively influenced the decision to use herbs. This study suggests that in the absence of traditional knowledge regarding the medicinal use of herbs, a higher educational level may predispose an individual to greater access to general knowledge, particularly with increased exposure to the internet and other information sources, and this could be a factor influencing a person's choice to utilize medicinal herbs. This finding also agrees with the study done in Singapore (Lim, *et al.*, 2005) which found that those who tended to use medicinal plants had lower education levels. This could not be unconnected to the fact that higher levels of education tend to provide access to higher and better income opportunities. The low mean income level and a greater proportion of respondents possessing primary and secondary education lends credence to this finding. The findings of Olusanya *et al.*, (2011) and Sarmiento *et al.*, (2016) associated medicinal plant use with lower education, lower socioeconomic background, Muslim faith, and first-time pregnancies. The findings of James *et al.*, (2018) attributed the attractiveness of herbal medicines to

limited access to modern healthcare and lower incomes and as a more accessible healthcare option.

The non-significant positive correlation between the years of residence and utilization of medicinal plants shows that an increase in the years of residence leads to an increase in the utilization of medicinal plants in the study area.

The non-significant negative correlation observed between the annual income of the respondents and utilization of medicinal plants means that as the income of the people increases their utilization of medicinal plants decreases. This could be attributed to the change in status and taste and lifestyle of the respondents as a result of the change in income. However, this finding differs from that of Aina, *et al.* (2020) which income indicated a positive relationship with the use of herbal medicines.

4.5 Gender and Utilization of Medicinal Plants

The finding that male and female respondents do not differ significantly in the utilization of medicinal plants in the study area, means that both the male and females make use of medicinal plants without much difference. This finding is not consistent with the studies by Harrison *et al.* (2004) and Rahji *et al.*, (2005) from developed countries where women had higher use of medicinal plants than men. Also, the study by Onyeka *et al.*, (2012) on Herbal medicine found no significant difference between gender and use of herbal medicines. Research by Olowokere and Olajide (2013) however revealed that the use of locally prepared herbal medication is common among women during pregnancy and they have a positive disposition to the efficacy of herbal medicines and tend to seek help from orthodox healthcare when compared to men (Oshikoya *et al.*, 2008, Uzochukwu, *et al.*, 2015., and SDG, 2020).

4.6 Extent of Utilization of Medicinal Plants for Treatment of Ailments

The study found moderate utilization levels of medicinal plants by the people in the study area. This finding contrasts with that of Amina *et al.* (2014) which reported wide use of medicinal plants among the Hausa people of Northern Nigeria. Also, Tran and Stefen (2001) in Vietnam, reported that the local people in the buffer zone of Bach Ma National Park still practice and rely on traditional medicine to a large extent".

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

The study recorded forty-eight different plant species used by the Hausa communities for the treatment of ailments. Socioeconomic factors that positively influenced the utilization of medicinal plants were education, age, and years of residence in the area. Easy availability, efficacy,

and affordability were associated with the high use of medicinal plants by the Hausa people in the study area. Therefore, conservation of the preferred / commonly used medicinal plant species in home gardens and plantations should be encouraged by the Government, Non-governmental organizations (NGOs), and private individuals to enhance the sustainability of the resources. Additionally, partnerships between local communities, NGOs, and government agencies to establish sustainable harvesting practices and promote agroforestry should be promoted. Furthermore, education and awareness campaigns should be implemented to promote the importance of medicinal plants and their conservation. Additionally, economic incentives such as fair-trade certifications or market access for sustainably harvested medicinal plants could be explored to support local farmers and ensure the long-term viability of these resources.

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