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Incorporation of Herbal Medicine in Nigeria's Healthcare: Online Survey

1Yemi-Peters, Victoria I., 2Okon, Emmanuel O., 3Joshua B. Agbogun

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[1]Yemi-Peters, Victoria I., [2]Okon, Emmanuel O., [3]Joshua B. Agbogun

[1]Department of Mathematical Sciences, Kogi State University, Anyigba, Kogi State, Nigeria.
[2]Department of Economics, Kogi State University, Anyigba, Kogi State, Nigeria
[3]Department of Mathematical Sciences, Kogi State University, Anyigba, Kogi State, Nigeria.

Abstract

An effective health system guarantees access to health as fundamental to improved health, and decreased morbidity and mortality. Health care deliveries in many African countries have been poor due to the failure of governments and their agencies to address the underlying challenges with strategic plans. The WHO now recognized Herbal Medicine as an essential component of primary healthcare. The purpose of this paper is to ascertain the acceptability and use of ten common medicinal plants in Nigeria. An online survey was conducted using the Google survey form randomly sent into hundred and twenty (120) respondents' email address and one hundred respondents responded to the message by filling the survey form. Tables, graphs, percentage and other simple statistical tools were used in the analysis of the data collated using Statistical Package for Social Sciences (SPSS). Chi-square statistical tool and One-Way Analysis of Variance were used to test the formulated hypotheses. The Chi-Square test shows that the encouragement of the use of herbal medicinal plants for curative and preventive purpose over orthodox medicine is dependent on tribes. The result also shows that the side effect of using herbal medicinal plants is dependent on the age range. Furthermore, the result of the One-Way Analysis of Variance (ANOVA) test indicates the differences in the effectiveness of the ten selected common herbal medicinal plants. From the responses, it was observed that people are aware and have experience of using herbal medicinal plants for curative and preventive purposes. It is suggested that an enduring and sustainable conservation efforts be put in place by Nigerian communities and government to safeguard important medicinal plants. At the same time, massively sensitization of the people on the dangers of the indiscriminate use of medicinal plant most be carried out.

Keywords: Herbal Medicine, Healthcare, Nigeria, Online Survey

1. Introduction

Health care or healthcare is the maintenance or improvement of health via the prevention, diagnosis, and treatment of disease, illness, injury, and other physical and mental impairments in human beings. Healthcare is delivered by health professionals (providers or practitioners) in allied health professions, physicians, physician associates, dentistry, midwifery, nursing, medicine, optometry, audiology, pharmacy, psychology, and other health professions. It includes the work done in providing primary care, secondary care, and tertiary care, as well as in public health(Wikipedia, n.d.).

Access to health care may vary across countries, groups, and individuals, largely influenced by social and economic conditions as well as the health policies in place. Countries and jurisdictions have different policies and plans in relation to the personal and population-based health care goals within their societies. Healthcare systems are organizations established to meet the health needs of target populations. Their exact configuration varies between national and subnational entities. In some countries and jurisdictions, health care planning is distributed among market participants, whereas in others, planning occurs more centrally among governments or other coordinating bodies. In all cases, according to the World Health Organization (WHO), a well-functioning healthcare system requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; and well maintained health facilities and logistics to deliver quality medicines and technologies (WHO, n.d.).

The role of healthcare spending in stimulating economic growth has been suggested in Mushkin's health-led growth hypothesis (Bedir, 2016). According to this hypothesis, health is a type of capital; thus, investment on health can increase income and lead to overall economic growth. In fact, health can affect economic growth through its impact on human and physical capital accumulation (Elmi and Sadeghi. 2012). Since healthcare is a core component of human capital investment, rising national healthcare spending would tend to raise labor productivity, quality of life and general welfare. Healthcare spending has also been credited for prolonging life expectancy, and reducing morbidity and infant mortality rates (health outcomes) (Murthy and Okunade, 2009). Therefore, it can be stated that health is a significant form of human capital and there is a close relationship between the health level of society and its economic development. Some other empirical studies that shared this view: Bloom and Canning, 2000; Lorentzen et al., 2008; Acemoglu and Johnson, 2007; Cervellati and Sunde, 2011.

Since the concept of "Health for All" through primary health care (PHC) was launched at the International Conference on Primary Health Care at Alma-Ata in 1978, there has been a global movement to realize universal health-care coverage. However, in spite of advances made in the health sector, equitable health care coverage; availability, accessibility and affordability to conventional health care and services are quite often beyond the reach of people who are indigent, marginalized and underserved.

Nonetheless, there is a present upsurge in the use of traditional medicines or complementary and alternative medicine – generated after the Alma-Ata International Conference – has become a global phenomenon (WHO, 2010). In many countries, HM has a long tradition and the knowledge about local medical plants is ingrained into cultural memory. The World Health Organization estimates that 70–90% of the rural population in developing countries use HM to meet, in part or completely, their health needs. Also, in many developed countries, HM as an element of CAM is highly popular, especially in the treatment of minor ailments and because of the increasing costs of personal health maintenance (UNESCO, 1998). For instance, in the Democratic People's Republic of Korea (DPR Korea, i.e. North Korea) traditional Koryo

medicine is strongly supported by the government, reportedly providing around half of all healthcare services and medicines (Canaway, 2017). Herbal Medicine is recognized as an essential component of primary healthcare by the WHO (WHO, 2002). According to Gbile and Adesina (1986), herbs usually serve as the repository materials and have been acknowledged to be generally safe with minimum side effects. The purpose of this paper is to ascertain the acceptability level of the use of common medicinal plants in Nigeria.

Within the natural forests in Nigeria abound several valuable non-timber resources of edible and highly nutritive plants whose fruits, leaves, stems, twigs, barks and roots are of high medicinal values (Ugbogu and Odewo, 2004; Oni, 2010). Medicinal plants no doubt, will continue to play significant roles in both rural and peri-urban health care services as evident in the number of herbal practitioners in Nigeria toady. It had also enjoyed steady and popularity without any religious or ethnic barriers as evident in the number of modern alternative practitioners in many big cities of Nigeria (World Health Organization (WHO), 2001).

They are also important for pharmacological research and drug development either as direct therapeutic agents or as sources of templates for the synthesis of drugs (Farnsworth et al., 1985). According to World Health Organization (2004), despite all advances made in orthodox medicine, traditional medicine will continue to gain renewed interest in health care services of Nigerians. This may be attributable to increased awareness in the potential and curative ability of these alternative medicines and in particular the various short comings revealed for several synthetic drugs (Ugbogu and Odewo, 2004).

2. Empirical Review

Many studies have been carried out on the roles of traditional medicines to health care. A study on the attitudes and perceptions of urban and rural dwellers to traditional medical practice in Nigeria by Adepoju (2005) discovered a statistically significant difference in the perception and attitudes of rural and urban dwellers to traditional medical practice in Nigeria. Majority of the respondents in the rural areas preferred the TMP while the majority of the urban dwellers preferred the orthodox method.

Oshikoya et al. (2008) study on Use of complementary and alternative medicines for children with chronic health conditions in Lagos, Nigeria revealed that a total of 303 CAMs (complimentary alternative medicines) were used by the patients, either alone or in combination with other CAM, CAM was reportedly used by 99 (31%) patients (epilepsy- 38%, sickle cell anemia – 36% and asthma – 25%). Biological products were the most frequently used CAMs (58%), followed by alternative medical systems (27%) and mind-body interventions (14%). Relations, friends and neighbours had a marked influence on 76% of the parents who used CAM for their children. Eighty-five (86%) parents were willing to discuss the use of CAM with their doctors but were not asked. CAM use was associated with adverse reactions in 7.1% of the patients.

In addition to this, another study by Kadiri et al. (2010), on 'Appraisal of the Contributions of Herbalism to Primary Health Care Delivery in South West Nigeria' asserts that herbalism contributes significantly to the primary health care delivery system in the southwest Nigeria through sale and administration of different herbal medicinal preparations which are available in a number of ways like tinctures, herbal wine and elixirs, tisanes, decoctions, macerates, topical,

poultices, whole herb consumption, syrup, extracts, inhalation, local rings, incision and rubbing, charm belt, and other charm apparels. Medicines may be hawked by the ambulatory vendors (apothecary) or patients consulting practitioners. Charges are relatively cheap, consultation is prompt and the medicines are reportedly efficacious. Non-exclusion of anybody from patronizing and being organized around people's needs and expectations, which are two of the key elements of WHO to achieve the ultimate goal of primary health care of better health for all are affectively entrenched in the practice.

A different study on malaria prevalence and treatment seeking behaviour of young Nigerian adults by Anumudu et al. (2006), revealed that self treatment at home was common; approximately 25% of the volunteers self treated the initial symptoms at home and this included the use of herbal remedies. The use of multiple drug types to treat a single episode of malaria was common practice and chloroquine and maloxine (Sulfadoxine – pyrimethamine) were most often used in treatment. The study showed that 97.5% of the respondents had malaria at least once in the preceding three months. There was no significant difference in malaria prevalence and antibody levels between those living on the university campus and non-residents.

3. Nigeria: Health Situation Overview

Nigeria is Africa's most populous country and the 9th most populous country in the world. With an estimated population of 150 million, one in every five Africans is a Nigerian(UNICEF, 2007). The country has been undergoing explosive population growth and has one of the highest growth and fertility rates in the world. By UN estimates, Nigeria will be one of the countries responsible for most of the world's total population increase by 2050. Nigeria is home to four large ethnic groups: Fulani, Hausa, Igbo and Yoruba and there are as many as 350 languages spoken across the country. Officially called the Federal Republic of Nigeria, the country has a federal system of administration with a Federal Capital Territory (FCT), 36 States and 774 Local Government Areas. The capital city is Abuja.

Nigeria has one of the fastest growing economies in the world (see Table 1 for selected economic indicators). Petroleum and oil resources plays a large role in the Nigerian economy. The country is the 6th largest producer of petroleum in the world; it is the 8th largest exporter and has the 10th largest proven reserves. While the revenues made from oil provide the largest source of income for Nigeria, the country has become overly-dependent on its oil sector whereas other areas of the economy such as agriculture, palm oil production and coconut processing are in decline.

Table 1: Selected Economic Indicators

	2011	2012	2013	2014*
GDP Growth (%)	5.3	4.2	5.5	7.4
Inflation Rate (CPI Dec/Dec, %)	10.3	12.0	8.0	7.5
General Government Budget Balance (% of GDP)	-1.3	-1.1	-2.4	0.5
Federal Government BudgetBalance (% of GDP)	-1.6	-1.4	-1.0	-1.0
Fiscal Reserves (ECA/SWF) US$ b	4.6	8.6	3.0	6.0
Gross Monetary Reserves ($ b)	32.6	46.0	43.6	40.0
Nominal Exchange Rate (N/US$), eop	158	157	158.0	159.0
Sovereign Debt (% of GDP)	9.7	10.3	10.6	10.6
External	1.3	1.4	1.4	1.7
Domestic	8.4	8.9	9.2	8.9
Commercial Credit to the Private Sector (% of GDP)	15	15	14	16

Note: General Gov. balance includes Federal, State, Local, Extra-Bdg Funds, Fuel Subsidy,
Net Change in ECA
* Projections
Note: Estimates as shares of GDP use new re-based GDP numbers

Nigeria possesses a stark dichotomy of wealth and poverty. Although the country is rich in natural resources, its economy cannot yet meet the basic needs of the people. Such disparity between the growth of the GDP and the increasing poverty is indicative of a skewed distribution of Nigeria's wealth. The 2007 United Nations Human Development Index ranks Nigeria 158 out of 177 countries; this is a significant decrease in its human development rank of 151 in 2004(UNICEF, 2007). About 64 per cent of households in Nigeria consider themselves to be poor while 32 per cent of households say their economic situation had worsened over a period of one year. Although National statistics report that the trend in poverty is on the decline, it is painstakingly sluggish and progress towards meeting the Millennium Development Goal of eradicating extreme poverty and hunger is slow. Poverty still remains one of the most critical challenges facing the country and population growth rates have meant a steady increase in the number of poor. Life expectancy remains low and is estimated to have decreased from 47 years in 1990 to 44 years in 2005(UNICEF, 2007).

Healthcare services in Nigeria have been and are still very poor. One of the limitations to the full achievement of a universal healthcare delivery system is the limited coverage of Nigerians under Social Health Insurance. The National Health Insurance Scheme (NHIS) in Nigeria was

established under Act 35 of the 1999 Constitution by the Federal Government of Nigeria to improve the health of all Nigerians at an affordable cost through various prepayment systems. Through this scheme a universal coverage for all Nigerians is targeted at an affordable cost(Businessday, 2017).

By its structure it aims to provide social health insurance in Nigeria on a contributory basis where health care services of contributors and their dependants are made from a common pool of fixed regular amounts made by the contributors. However, the coverage of the National Health Insurance Scheme is still below 5%. Some of the reasons for this can be attributed to ignorance, weak governance, funding, etc. Most people covered that make up this 5% are workers in paid employment where a direct deduction from their wages (their contribution) is made into the pool. The larger uncovered population is mostly the unemployed who live in the rural areas. There are people in paid employment who are yet to key into this plan for lack of proper machinery that seeks to enforce the provisions of the act setting up the scheme.

Also, essential (Basic) healthcare services are lacking, as most PHC facilities are short of the minimum healthcare package stipulated by the National Primary Healthcare Agency. Where Private clinics are available, they are not affordable, since about 70% of Nigerians live below $1/day(Businessday, 2017). Given that over 65% of Nigerians live in rural areas, it is easy to understand why most Nigerians do not have physical and financial access to basic healthcare services (Businessday, 2017).

Secondary health facilities (General hospitals), though fewer in number, have not fared better in terms of human and material resources availability. Few State Governments, like Lagos, Kaduna and Imo States have invested heavily in health infrastructure at the secondary level. For instance, Imo State Government, under OwelleRochasOkorocha has built 27 brand new General Hospitals spread across all the LGAs in the State (Businessday, 2017). However, investment in Secondary Healthcare needs to be complemented by provision of basic healthcare services at the Primary level, which is most accessible to majority of Nigerians.

Tertiary Level Care is under the purview of Teaching Hospitals, Federal Medical Centres and other specialized centres. The Federal Government in 2005/2006 under the FGN/VAMED Project initiated an ambitious, phased scheme to refurbish and equip all teaching hospitals in Nigeria, designating some as centres of excellence for treatment of specific diseases (Businessday, 2017).

A decade after this initiative, the upgraded teaching and specialist hospitals have not filled the manpower and equipment void they were meant to. In summary, health, health care and general living conditions in Nigeria are poor, especially for children and women. Infant and under-five mortality rates are high. The weakened Public Health Care (PHC) system with low coverage of key interventions has resulted in the persistence of high disease burden. HIV/AIDS remains a major issue of concern among children, young people and women in Nigeria with a prevalence rate of 4.4 per cent. An estimated 2.9 million Nigerians (mostly females) are living with the virus (UNICEF, 2007). The epidemic is also increasing the population of orphans in the country, which is already estimated at 7 million (UNICEF, 2007).

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4. Vegetation of Nigeria and Medicinal Plants

Nigeria is covered by three types of vegetation: forests (where there is significant tree cover), savannahs (insignificant tree cover, with grasses and flowers located between trees), and montane land. (The latter is the least common, and is mainly found in the mountains near the Cameroon border.) Both the forest zone and the savannah zone are divided into three parts(G.A.I., n.d.).

Some of the forest zone's most southerly portion, especially around the Niger River and Cross River deltas, is mangrove swamp (see Central African mangroves). North of this is fresh water swamp, containing different vegetation from the salt water mangrove swamps, and north of that is rain forest (G.A.I., n.d.).

The savannah zone's three categories are divided into mm' Guinean forest-savanna mosaic, made up of plains of tall grass which are interrupted by trees, the most common across the country; Sudan savannah, similar but with shorter grasses and shorter trees; and Sahel savannah patches of grass and sand, found in the northeast(G.A.I., n.d.).
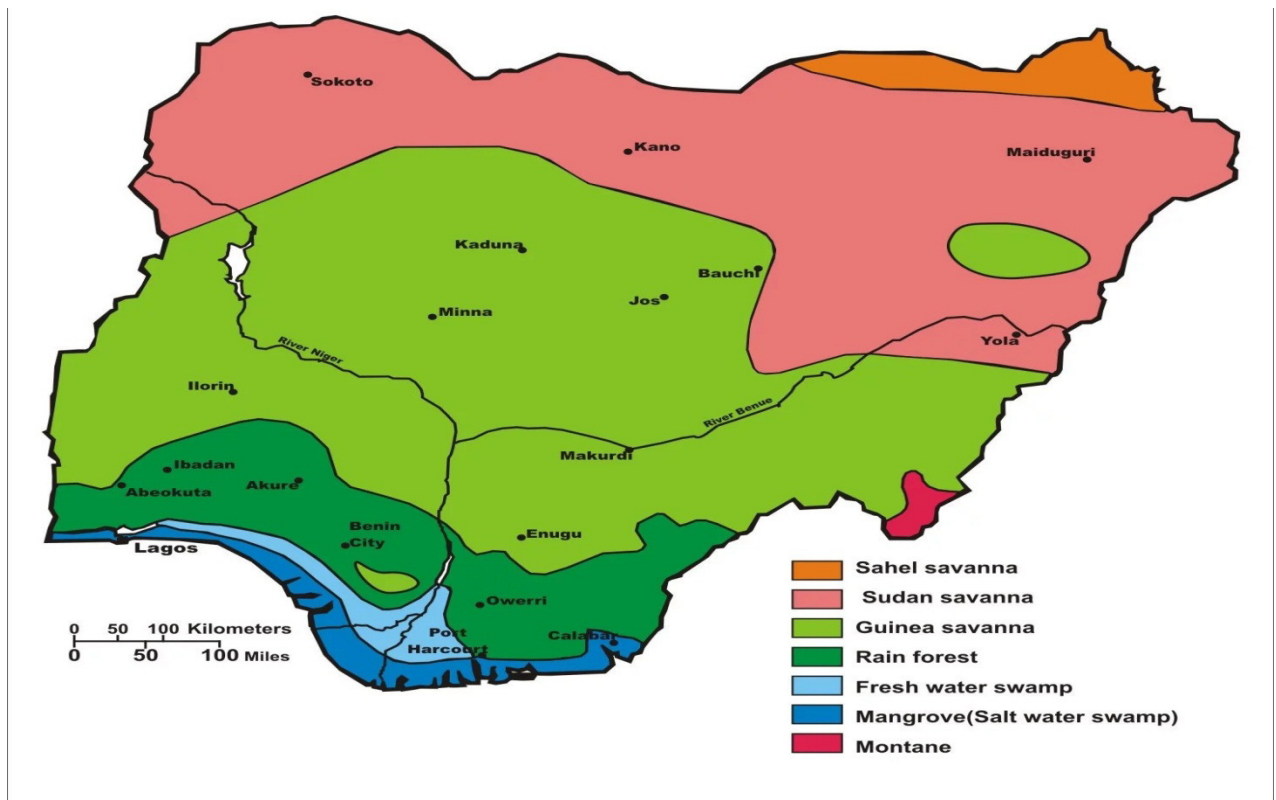

Figure 1: Vegetation map of Nigeria
Source: NAIJ Nigeria (n.d.).

The potential of the Nigerian vegetation/flora as a veritable source for pharmaceutical and other therapeutic materials have been emphasized (Gbile and Adesina, 1986; Anselm-Adodo, 2004). The dwindling economic fortunes, political instability and high cost of orthodox medicines have also forced many people to exploit various plant species (medicinal herbs) for their health service (Odebiyi and Ogunjobi, 2003).

Medicinal herbs cover a wide range of types of plants. They can be annual or perennials; woody or herbaceous; sun loving or shade requiring. The parts use for medicinal purposes may be their leaves, flowers, root, seeds or bark. Medicinal herbs have been in use by both plants and animals for many thousand years. Not surprisingly many medicinal plants have a rich folklore associated with them. This cultural history is an important part of many communities in Nigeria and many other countries. In addition to their cultural importance, many medicinal herbs are important economically. Due to Nigeria's topographical advantage, many medicinal herbs survive naturally or can be cultivated for their economic use. However, despite the wide research and scientific evidence in support of traditional claims of medicinal herbs by researchers worldwide, many of the herbs are still largely untapped. Below are some common medicinal herbs images and their local Nigerian names:

a.i.)Pupalialappacea

a.ii.) Common name: Forest burr

a.iii.) Nigerian names:

   -Emo-agbo(Yoruba)

   - Marin KASU (Hausa)

   - Ose(Igbo)

Source: O.H.N.L. (n.d.).

b.i.)Pseudocedrelakotschyi c.i.)Psidiumguajava

b.i.i) Common name: guava

b.iii.) Nigerian names:

   - Akodinrin (Yoruba)

   - Juna (Hausa)

   Source: O.H.N.L. (n.d.).

c.ii.) Common name: guava

c.iii.) Nigerian names:

   -Guaba (Yoruba)

   -Goba (Hausa)

   -Ugwoba(Igbo)

   Source: O.H.N.L. (n.d.).

d.i.) Ricinuscommunis   e.i.)Piliostigmathonningiif.i.)Physalisangulata
d.ii.) Common name: Castor bean   e.ii.) Common name: Camel's foot.   f.ii.) Common name: balloon cherry
d.iii.) Nigerian names: e.iii.) Nigerian names: f.iii.) Nigerian names:
    -Lara (Yoruba)   -Have (Yoruba)   -koropo(Yoruba)
    -Cika-gidaa (Hausa)   -kalgo (Hausa)   - tsaadabiri(Hausa)
    -Cgiliugba (Igbo)   -okpoatu(Igbo)   - ogwuari (Igbo)

5. Methods

5.1. Design of the Study

A qualitative study was carried out using the Google Survey Form (an online survey tool) to find out the acceptance of medicinal plants for curative and preventive purposes in Nigeria. This Fourteen (14-PFKS) Perception, Familiarity and Knowledge Survey was completed online. This design was chosen to allow an intensive analysis of volunteers' views and experiences. The questionnaire was prepared by consulting the opinions of three experts in the field of Mathematical Sciences, Computer Science, and Economics. The questions asked cover the demographics, perceptions, knowledge and acceptance of medicinal plants in Nigeria. A pilot study was initially carried out before the final form was sent to a larger population through their e-mail addresses to get their opinion on the use and acceptance of ten (10) common Nigerian medicinal plants:

1.Abelmoschusesculentus (common name: Okra, Yoruba: Ila, Hausa: Kubeewaa, Igbo:Okwulu)
2. Aframomummeleguata (common name: Alligator pepper, Yoruba: Atare, Hausa: Cittaa, Igbo: Ose Oji, Ipolo)
3. Allium cepa (common name: Onion, Yoruba: Alubosa, Hausa: Albasaa, Igbo: Yabaasi)
4. Anacardiumoccidentale (common name: Cashew tree, Yoruba: Kasu, Hausa: Fisaa/Kanju, Igbo: Akwe-Olu/Kansu)
5. Azadirachtaindica (common name: Neem tree, Yoruba: Dongoyaro/ Eke-Oyibo , Hausa: Dogonyaro/Margosa, Igbo: Dogoyaro/AtuYabasi)
6. Magniferaindica (common name: Mnago, Yoruba: Mangoro, Hausa: Mangwaro, Igbo: Mangolo/ Okpokpabeke)

7. Vernonia amygdaline (common name: Bitterleaf , Yoruba: Ewuro, Hausa: Shiwaakaa, Igbo: Onugbu)

8. Carica-papaya (common name: Pawpaw, Yoruba: Ibepe, Hausa: Gwanda, Igbo: Okwuruezi)

9. MoringaOleifera (common name: Moringa tree/ Drumstick tree, Yoruba: Ewe-ilee/ Ewe Igbale, Hausa: Zogallagandi, Igbo: Okweoyibo)

10. Allium sativum (common name: Garlic, Yoruba: Ayo/Ayun, Hausa: Tafannuuwaa, Igbo: Ayun/Ayo-ishi)

5.2. Sample, Data Collection and Technique of Analysis

The online survey form was completed online by 100 participants out of 120 survey forms that were randomly sent out to respondents e-mail boxes. Data were collected within a period of three months. Thereafter analysis was proceeded on. A User defined Google survey form was sent into one hundred and twenty (120) Email addresses and one hundred respondents responded to the message by filling the survey form. This represented 83 percent retrieval rate. Tables, graphs, percentage and other simple statistical tools were used in the analysis of the data collated using Statistical Package for Social Sciences (SPSS). The results presented in the next section of this article are based on the instruments used on the questionnaire. Chi-square statistical tool and One-Way Analysis of Variance were used to test the formulated hypotheses.

6. Results and Discussions

Results of the demographic structure of respondents as depicted in Figure 2 shows that 20% of respondents were Hausa, 5% were Igbo, 40% were Yoruba and 35% were from other tribes.
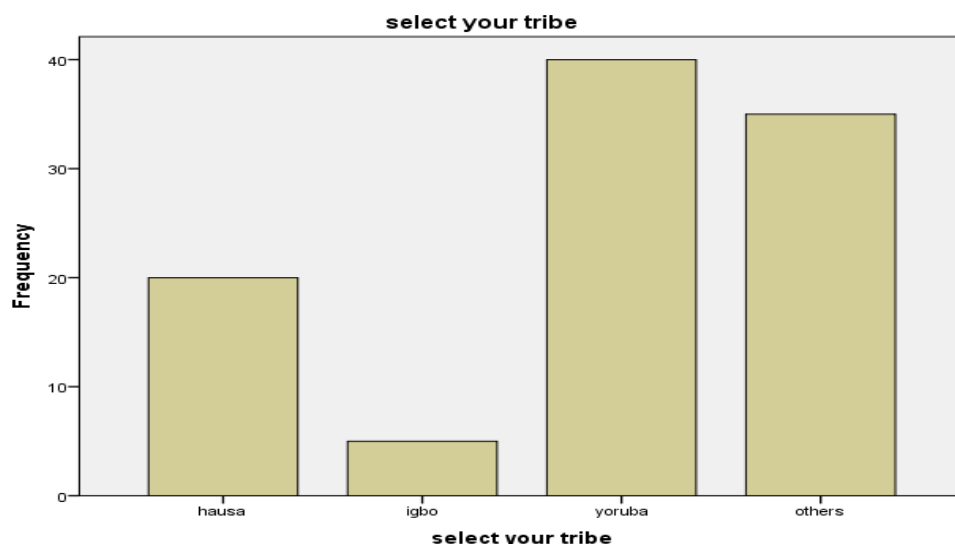

Figure 2: Bar chart for responds on tribe selection
Source: Online survey

Table 2 shows that 55% of respondents live in the rural settlements while 45% lives in the urban area.

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Table 2: how would you describe your residential area?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	rural settlement	55	55.0	55.0	55.0
	urban settlement	45	45.0	45.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table 3 shows that 22% of the respondents are between the ages of 18-29yrs, 35% between the ages of 30-39 yrs, 25% between the ages of 40-60yrs while 18% are over 60 yrs old.

Table 3: select your age range

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	between 18 and 29	22	22.0	22.0	22.0
	between 30 and 39	35	35.0	35.0	57.0
	between 40 and 60 years	25	25.0	25.0	82.0
	older than 60 years	18	18.0	18.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table 4 shows that 3% of the respondents attained primary education training, 37 % has secondary certificate, 50% has degrees from tertiary institutions. While 10% have other degrees. The corresponding graph (figure 4.13) is also presented.

Table 4: select your level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	primary education	3	3.0	3.0	3.0
	secondary education	37	37.0	37.0	40.0
	tertiary education	50	50.0	50.0	90.0
	Others	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table 5 shows 15% of the respondents are unemployed, 15% are business people, 30% engaged in private sector while 40% are in the public sector and civil servants.

Table 5: means of livelihood

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	15	15.0	15.0	15.0

Business	15	15.0	15.0	30.0
private sector	30	30.0	30.0	60.0
public sector/civil servant	40	40.0	40.0	100.0
Total	100	100.0	100.0	

Source: Online survey

Table 6 shows that 50% of the respondents are Christians, 40% are Muslims, 9% practice traditional religion while 1% is for other religion.

Table 6: select your religion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	christainity	50	50.0	50.0	50.0
	Islam	40	40.0	40.0	90.0
	traditional	9	9.0	9.0	99.0
	Others	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table 7 shows that 70% of the respondents believes in the use of herbal medicinal plants for preventive and curative purposes, while 30% do not believe.

Table 7: do you believe in the use of herbal plant for preventive and curative purposes?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	70	70.0	70.0	70.0
	No	30	30.0	30.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table 8 shows that 53% of the respondents have used herbal medicinal plants to cure an ailment before while 47% have not.

Table 8: have you used herbal plant to cure an ailment before?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	53	53.0	53.0	53.0
	No	47	47.0	47.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table 9 shows that 40% of the respondent experienced a side effect after making use of medicinal plants, 50% did not experience, while 10% were undecided.

Table 9: after using any herbal plant was there any side effect?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	40	40.0	40.0	40.0
	No	50	50.0	50.0	90.0
	undecided	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Table10 shows 53% of the respondents are exposed to the use of herbal medicinal plants through ICT devices and tools. While 47% were not.

Table 10: have you been exposed to the used of herbal plant via ICT devices/tools?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	53	53.0	53.0	53.0
	No	47	47.0	47.0	100.0
	Total	100	100.0	100.0	

Source: Online survey

Test for Dependency on the Use of Herbal Medicinal Plants across the Various Tribes Using CHI-SQUARE Test

H_0: The use of herbal medicinal plants is independent of tribes

H_1: The use of herbal medicinal plants depends on an individual's tribe.

Level of significance $\alpha = 0.05$

Chi-Square calculated =113.393,   P-value (0.000)

Conclusion: Since the P-value (0.000) is less than $\alpha = 0.05$, we reject H_0 and conclude that, preference of herbal medicinal plants for curatives over orthodox medicine depends on tribes. This is shown in the Table 11 and Table 12 below.

Table 11: select your tribe * would you say that the use of herbal plants for medicinal and curative be encouraged over orthodox medicine? Cross tabulation

	would you say that the use of herbal plants for medicinal and curative be encouraged over oxrthodox medicine?					Total
	Agree	Strongly agree	Disagree	Undecisive	Others	

select your tribe	Hausa	Count	20	0	0	0	0	20
		Expected Count	7.0	8.0	3.0	1.0	1.0	20.0
	Igbo	Count	5	0	0	0	0	5
		Expected Count	1.8	2.0	.8	.3	.3	5.0
	Yoruba	Count	10	30	0	0	0	40
		Expected Count	14.0	16.0	6.0	2.0	2.0	40.0
	Others	Count	0	10	15	5	5	35
		Expected Count	12.3	14.0	5.3	1.8	1.8	35.0
Total		Count	35	40	15	5	5	100
		Expected Count	35.0	40.0	15.0	5.0	5.0	100.0

Source: Online survey

Table 12: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	113.393[a]	12	.000
Likelihood Ratio	129.240	12	.000
Linear-by-Linear Association	52.999	1	.000
N of Valid Cases	100		

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is .25.

Test for Dependency on the Side Effects across the Various Age Groups.

H_0 : The side effects of using herbal medicinal plants is independent of age groups

H_1: The side effects of using herbal medicinal plants is dependent on the age groups

Level of significance $\alpha = 0.05$

Chi-Square calculated =83.514

 P-value (0.000)

Conclusion: Table 13 and Table 14 presents the following results. Since the P- value (0.000) is less than $\alpha = 0.05$, we reject H_0 and conclude that side effects of using herbal medicinal plants are dependent of the individual's age group.

In sum, the Chi-Square test shows that the encouragement of the use of herbal medicinal plants for curative and preventive purposeover orthodox medicine is dependent on tribes;here, the Yoruba language has the highest count having 40% followed by 40% from other tribes, 20% of

respondents are Hausas and 5% Igbos. The result also shows that the side effect of using herbal medicinal plants is dependent on the age range.

Table 13: select your age range * after using any herbal plant was there any side effect? Cross tabulation
Count

		after using any herbal plant was there any side effect?			Total
		Yes	no	Undecided	
select your age range	between 18 and 29	22	0	0	22
	between 30 and 39	18	17	0	35
	between 40 and 60 years	0	15	0	15
	older than 60 years	0	18	10	28
Total		40	50	10	100

Source: Online survey

Table 14: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	83.514[a]	6	.000
Likelihood Ratio	103.680	6	.000
Linear-by-Linear Association	62.107	1	.000
N of Valid Cases	100		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.50.
Source: Computation using SPSS

Test for Equality of Different Herbal Medicinal Plants for curing of Ailments, Using ONE-WAY ANOVA

H_0: All the selected herbal medicinal plants treat or cure equally

H_1: At least one differs significantly

Level of significance $\alpha = 0.05$ F- value =8.086   P-value (0.000)

Conclusion: Table 15 and 16 gives the following results. Since the P-value(0.000) is less than $\alpha = 0.05$, we reject H_0 and conclude that among the selected common herbal medicinal plants, there are some that cure effectively more than the others.

In sum, the result of the One-Way Analysis of Variance (ANOVA) test indicates the differences in the effectiveness of the ten selected common herbal medicinal plants. From the responses, it

was observed that people are aware and have experience of using herbal medicinal plants for curative and preventive purposes.

Table 15: how effectives are plants in curing illness and diseases in your locality? * responses Cross tabulation
Count

		Responses		Total
		Effective	most effective	
how effectives are plants in curing illness and diseases in your locality?	Abelmoschusesculentus(okro)	55	45	100
	Aframomummeleguata(alligator pepper)	60	40	100
	Allium cepa(onion)	47	53	100
	Anacarduimoccidentale(cashew tree)	35	65	100
	Azadirachtaindica(neem tree)	79	21	100
	Mangiferaindica(mango)	57	43	100
	vernonia amygdaline(bitter leaf)	50	50	100
	carica-papaya(paw paw)	48	52	100
	moringaoleifera(moringa tree)	30	70	100
	Allium sativum(garlic)	60	40	100
Total		521	479	1000

Table 16: ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	17.089	9	1.899	8.086	.000
Within Groups	232.470	990	.235		
Total	249.559	999			

Source: Computation using SPSS

7. Summary, Conclusion and Recommendation

An effective health system guarantees access to health as fundamental to improved health, and decreased morbidity and mortality. Health care deliveries in many African countries have been poor due to the failure of governments and their agencies to address the underlying challenges with strategic plans. The WHO now recognized Herbal Medicine as an essential component of primary healthcare. Healthcare services in Nigeria have been and are still very poor. One of the limitations to the full achievement of a universal healthcare delivery system is the limited coverage of Nigerians under Social Health Insurance. Some of the reasons for this can be attributed to ignorance, weak governance, funding, etc. The purpose of this paper was to ascertain the acceptability and use of ten common medicinal plants in Nigeria. The potential of the Nigerian vegetation/flora as a veritable source for pharmaceutical and other therapeutic materials have been emphasized (Gbile and Adesina, 1986; Anselm-Adodo, 2004). The dwindling economic fortunes, political instability and high cost of orthodox medicines have also forced many people to exploit various plant species (medicinal herbs) for their health service (Odebiyi and Ogunjobi, 2003).

An online survey was conducted using the Google survey form randomly sent into hundred and twenty (120) respondents' email address and one hundred respondents responded to the message by filling the survey form. Tables, graphs, percentage and other simple statistical tools were used in the analysis of the data collated using Statistical Package for Social Sciences (SPSS). Chi-square statistical tool and One-Way Analysis of Variance were used to test the formulated hypotheses. The Chi-Square test shows that the encouragement of the use of herbal medicinal plants for curative and preventive purposeover orthodox medicine is dependent on tribes. The result also shows that the side effect of using herbal medicinal plants is dependent on the age range. Furthermore, the result of the One-Way Analysis of Variance (ANOVA) test indicates the differences in the effectiveness of the ten selected common herbal medicinal plants. From the responses, it was observed that people are aware and have experience of using herbal medicinal plants for curative and preventive purposes.

In conclusion, this study has revealed that medicinal plants are well accepted by the people of this country. It is suggested that an enduring and sustainable conservation efforts be put in place by Nigerian communities and government to safeguard important medicinal plants. At the same time, massively sensitization of the people on the dangers of the indiscriminate use of medicinal plant most be carried out.

Acknowledgement

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