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Healthcare Professionals and Patient Perceptions on the Use of Herbal Medicines to Control Diabetes Mellitus and Hypertension in Nigeria

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ABSTRACT

The perception that herbal medicines are generally safe and non-toxic, has all necessitated patients' use of herbs in the management of diabetes and hypertension. The study evaluated healthcare professionals' and patients' perceptions of the use of herbs to control diabetes mellitus (DM) and hypertension**.** The study utilized a randomized sampling method for the survey; an online form was designed and used for data collection. The questionnaire was sent to professional and non-professional groups having the target population (patients and relatives. The results showed that the majority of the participants stated the use of *Vernonia amagdalena* in the management of HTN (33.0%) and DM (9.9%). Other plants mentioned include Moringa leaves HTN n (5.5%), DM n(6.6%); *Carica papaya*; HTN (9.9%), DM (8.2); Ginger, and DM (12.6%). Dogoyaro/Agbo (4.9%). Notable antidiabetic plants reported in this study include *Rauwolfia vomitoria* (1.1%), Ugu leaves (2.2%), Hibiscus (zobo) (4.4%), *Ocimum gratiscimum* (1.1%), cucumber (1.1%), neem plant (3.8%). Previous knowledge on Diabetes Mellitus between the patients and healthcare workers was P=0.038 while previous knowledge on hypertension was p=0.029. The knowledge of herbal product(s) used in diabetes was p=0.043 while knowledge of herbal product(s) used in hypertension was p=0.019, at $p<0.05$. It was thus concluded that the participants believe that herbal medicines can relieve disease within a short period, are effective at the correct dosage, have fewer side effects or no side effects at the proper doses, and can effect a complete cure if standardized, affordable, better tolerated in the body.

INTRODUCTION

The prevalence of diabetes mellitus (DM) is one of the most alarming statistics concerning health problems globally. The major concern regarding this observation relates to the development of the chronic complications associated with DM such as microvascular such as retinopathy, nephropathy, and neuropathy or macrovascular which is cardiovascular disease (CVD) including hypertension, cerebrovascular accidents (CVA), and peripheral vascular disease (PVD). It is well-recognized that DM and Hypertension negatively affect the quality of life in individuals. A non-communicable disease (NCD) is a non-infectious health challenge the complications of diabetes cause considerable morbidity and mortality worldwide and, as such, cannot be spread from one individual to another. The disease condition can progress for a long period in an individual. This condition is otherwise referred to as a chronic disease. Some risk factors may include detrimental diets, inadequate physical activity, smoking, passive smoking, and inordinate use of alcohol (Judith & Erica, 2018). NCDs are frequently dominant in low-income and middle-income countries. The World Health Organization (WHO) estimated that by 2020, 80% of global deaths will be attributed to NCDs. In sub-Saharan Africa (SSA) alone, the NCDs burden is expected to increase by 27% in that time frame (WHO 2013; Andrew *et al.,* 2020).

The major types of NCDs are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), and diabetes (WHO 2021). Excess salt/sodium intake has been attributed to over 4.1 million deaths annually, which is a risk factor for cardiovascular disease. About 1.5 million annual deaths attributable to alcohol use are from NCDs, including cancer (WHO 2021). Over 1.6 million deaths annually can be attributed to low physical activity (James *et al.,* 2018). The practice of nature cure (herbs) provides a way of understanding the scale and scope of the non-communicable disease as a public health crisis (WHO 2021). Hypertension is a common global health challenge. Hypotension is dangerous because it causes the heart to very hard and contributes to atherosclerosis, besides increasing the risk of heart disease and stroke, it can also lead to other conditions such as congestive heart failure, kidney disease, and blindness. About 75 to 80% of the world population use herbal medicines, mainly in developing countries, for primary health care because of their better acceptability with the human body and lesser side effects. In the last three decades, a lot of concerted efforts have been channeled into researching the local plants with hypotensive and antihypertensive therapeutic values (Tabassum, & Ahmad, 2011).

Patients may choose to supplement their pharmacological regimen with dietary supplementation in many forms, like vitamin and/or mineral mixtures, but the most popular supplements taken by the patients are those considered to be of natural origin, (herbal medicine). Regrettably, significant controversy exists regarding the efficacy of dietary supplements in general and that of herbal medicines, particularly regarding pathophysiological factors related to the treatment of patients with type 2 diabetes. The controversy exists because reported efficacy data for many natural products are only in the form of uncontrolled studies and anecdotal reports. Thus, poor quality control measures may also cause inconsistent effects for certain herbal medicines. There is a paucity of consistent and reproducible efficacy data in humans to suggest any recommendations for most herbs or bioactive supplements as adjunct treatments for risk factors related to diabetes. Traditional, complementary, and alternative medicine (TCAM) comprises indigenous healthcare practices that do not include an orthodox healthcare system o intervention. In the African setting, it may account for local herbal medicines or products, and indigenous healthcare practices (James *et al.,* 2018). It is therefore important to access the public opinion on the use of herbs to control this diabetes mellitus and how effective they are in maintaining their blood sugar levels considering the cost burden. The economic burden of orthodox medicines and the major risk factors of NCDs like diabetes and hypertension has been attributed to modernization, the perception that herbal medicines are generally safe and non-toxic, has all necessitated patient's use of herbs in the management of diabetes and other similar conditions hence justifies the need to evaluate the impact of herbal medicines in disease prevention, health promotion, and public health. The study evaluated healthcare professionals' and patients' perceptions of the use of herbs to control diabetes mellitus (DM) and hypertension.

METHODS

Study design

The study will be a descriptive, cross-sectional study using a questionnaire (online or physical). The survey instrument will be developed based on a literature review of diabetes mellitus, including its medications and preventive measures. A well-structured questionnaire, which will include three sections. The first section comprises the demographic characteristics of the participants such as age, gender, place of work, and years of experience. The second section will be regarding the knowledge of NCDs, hypertension, and diabetes mellitus in particular and prevalence, and the last section will estimate the attitude and perception of herbal medication in diabetes and its relevance in health promotion, disease prevention, and public health.

Study area and setting

The study will be conducted in Nigeria. Based on the United Nations estimates that the population of Nigeria as of September 2017 was 193.3 million (Worldometers.info, 2017). The pooled hypertension and Diabetes Mellitus (DM) prevalence of 5.77% observed in a meta-analysis suggests that 11.2 million Nigerians (1 out of every 17 adults) are living with DM and hypertension.

Regional differences in the prevalence of DM and hypertension, with the highest rate observed in the South-South region of Nigeria and the lowest rate seen in the North-Western zone (Gezawa *et al.,* 2013).

Sample size determination

Diabetes mellitus and hypertension are major causes of morbidity and mortality both in developing and developed countries like Nigeria, hence, every individual above 18 years of age will be recruited physically or online for the survey. The estimated target population size was two and fifty (250) individuals, drawn from both healthcare providers and patients or patient's relatives, especially those that have previously prescribed, dispensed, or used herbal preparation in the management of diabetes mellitus and hypertension. A total of one hundred and eighty-two (182) online responses were retrieved from the survey, the same was used for the data analysis as presented in chapter three.

Eligibility criteria

Inclusion criteria – patients, patient relatives, who might have directly or indirectly experienced diabetes, current diabetic patients and relatives, and healthcare providers above 18 years of age, from every part of Nigeria.

Sampling methods and study instrument

A randomized sampling method was used for the survey (clearly describe the randomization unambiguously here), and an online form was designed and used for data collection. The form (questionnaire) was sent to professional and non-professional groups having the target population (patients and relatives).

Validation of study instrument

The online questionnaire (google form) was designed and forwarded to the project supervisor for content evaluation and modification. The content was evaluated and subsequently corrected by the supervisor. Thereafter, it was sent and distributed across various social media platforms to generate data from healthcare providers, patients, and patient's relatives.

Outcome measures

Healthcare professionals and patient's or patient relatives' perceptions of the use of herbs to control diabetes mellitus (DM) and hypertension, with regards to the type, effectiveness, and relative safety compared to orthodox medicine.

Data analysis

Data generated from the survey were analyzed using one-way analysis of variance (ANOVA) with SPSS software version 23.0, and GraphPad Instat Version 3.0.

RESULTS AND DISCUSSION

Data revealed that more females participated in the study compared to their male counterparts, with a percentage distribution of 54.9% (female) and 45.1% (male) respectively. With 12.7 standard deviations from the mean. 2.2% of the participants had no formal education, 4.4% had secondary education, while 93.4% had tertiary educational qualifications, with some having Postgraduate diploma-PGD (12.1%), Master of Science – MSc (39.7%), and Doctor of Philosophy - Ph.D. (20.9%), respectively.

Table 1. Gender Distribution and Educational Qualification of Participants

Gender	**n**	**%**
	82	45.1
Female	100	54.9
Mean	91	50
SD	12.7	7.0
Educational Qualification		
No Formal Education	4	2.2
Primary	0	0.0
Secondary	8	4.4
Tertiary	170	93.4
Mean	45.5	25.0
SD	83.1	45.6
Higher Education		
None	68	37.4
PGD	22	12.1
MSc	54	29.7
PhD	38	20.9
Mean	45.5	25.0
SD	19.9	10.9

SD – Standard Deviation

Location of Study Participants

Participants were drawn across Nigeria, as Google form was distributed in all possible social platforms to generate responses. The majority of the participants were Lagos state (13.7%), this was closely followed by Anambra (11.0%), Bayelsa (10.4%), Oyo (7.7%), Delta (7.1%), Akwa Ibom (7.1%), and Imo (6.6%) states, respectively.

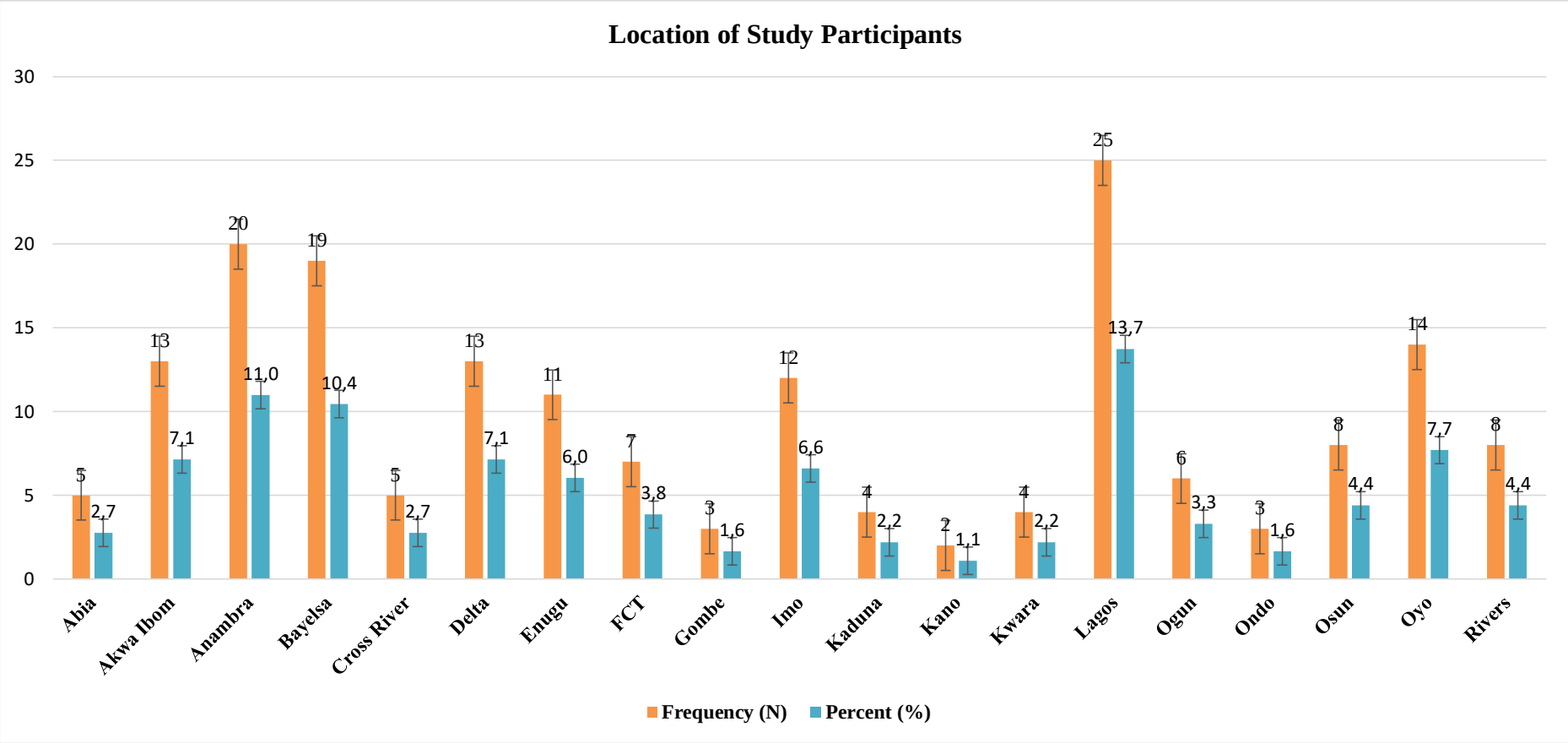

Figure 1. Location of Study Participants

Table 2. The table of the relationship between the age range of participants and the frequency of distribution

Age of Participants	N	%
18 – 25	20	11.0
26 – 39	94	51.6
40 – 59	66	36.3
60 – 79	2	1.1
Mean	45.5	25
SD	42.1	23.1

Table 3. The frequency of Marital Status and Religion of the respondents

Marital Status	n	%
Single	56	30.8
Married	120	65.9
Widow/Widower	6	3.3
Mean	60.7	33.3
SD	57.1	31.4
Region		
Christianity	172	94.5
Muslim	10	5.5
Mean	91	50.0
SD	114.6	62.9

Table 4. Participant Category, place of work, and household type

Participant Category, place of work, and household type	**n**	**%**
Healthcare Provider	46	25.3
Patient Relative	42	23.1
Pharmacists	46	25.3
Patient	42	23.1
Medical Doctor	2	1.1
Medical Lab Scientist	4	2.2
Mean	30.3	16.7
SD	21.3	11.7
Place of Work		
Public	92	50.5
Private	52	28.6
Self-employed	36	19.8
Unemployed	2	1.1
Mean	45.5	25.0
SD	37.4	20.5
Household Type		
Stay with immediate family (spouse/children)	136	74.7
Stay with Minos	12	6.6
Stay alone	30	16.5
Stay with caregiver	4	2.2
Mean	45.5	25.0
SD	61.3	33.7

Table 5. The frequency distribution of the social history of the respondents

Social History		**n**	**%**
Alcohol intake			
	Yes	72	39.6
	No	110	60.4
Salt Intake			
	Yes	170	93.4
	No	12	6.6
Beverages consumption			
	Yes	167	91.8
	No	14	7.7
Sugar Intake			
	Yes	148	81.3
	No	34	18.7
Cigarette smoking			
	Yes	6	3.3
	No	176	96.7
Deliberate exercise			
	Yes	130	71.4
	No	52	28.6
Food allergy			
	Yes	32	17.6
	No	150	82.4
Mean		90.9	50.0
SD		65.6	36.0

Table 6. Previous knowledge on Hypertension and Diabetes mellitus

Previous knowledge and Experience		**N**	**%**
Precious knowledge on Diabetes?	Yes	154	84.6
	No	28	15.4
Precious knowledge on Hypertension?			0.0
	Yes	152	83.5
	No	30	16.5
What is Diabetes?			0.0
Increased Blood sugar		178	97.8
Increased Blood salt level		4	2.2
Experienced diabetes?			0.0
	Yes	24	13.2
	No	158	86.8
Relative Diabetic?	Yes	106	58.2
	No	76	41.8
What is Hypertension?			0.0
Increased Blood pressure		182	100.0
Experienced Hypertension?	Yes	44	24.2
	No	138	75.8
Relative hypertensive?	Yes	146	80.2
	No	36	19.8
Mean		97.1	53.3
SD		64.4	35.4

Table 7. Assessment of Hypertension and Diabetes Mellitus

Assessment of Hypertension and Diabetes mellitus		
How often do you check blood sugar	N	%
Once a week	35	19.2
Once in a month	52	28.6
When symptoms persist	41	22.5
Frequently	34	18.7
When needed	20	11.0
How often do you check blood pressure?		
Once a week	42	23.1
Once in a month	54	29.7
When symptoms persist	34	18.7
Frequently	18	9.9
When needed	34	18.7
Kind of treatment sort after when blood pressure or sugar is high		
Herbal medicine	34	18.7
Orthodox (conventional)	74	40.7
Both	51	28.0
Don't know	23	12.6
Knowledge of herbal product(s) used in Diabetes		
Yes	64	35.2
No	118	64.8
Knowledge of herbal product(s) used in hypertension		
Yes	50	27.5
No	132	72.5
Herbal and conventional medicine, which is more effective in managing Diabetes or Hypertension?		
Conventional Medicine	57	31.3
Herbal Medicine	13	7.1
Both	56	30.8
Don't Know	56	30.8
Mean	49.6	27.3
SD	29.0	15.9

Table 8. Herbs used in the management of Hypertension and Diabetes Mellitus

Antihypertensive Plants	**N**	**%**	**Anti-diabetic Plants**	**N**	**%**
Abere seed	2	1.1	Bitter leaf	18	9.9
Allium sativum	8	4.4	Beetroot	2	1.1
Moringa leaves	10	5.5	*Rauwolfia vomitoria*	2	1.1
Aloe vera	2	1.1	Ugwu leaves	4	2.2
Avocado, kiwi	2	1.1	Hibiscus (zobo)	8	4.4
Bitter leaf (*Vernona amagdalena*)	60	33.0	Garsonia (bitter cola)	2	1.1
Curry leaf	2	1.1	Moringa leaves	12	6.6
Nuchwuanwu Leaves	4	2.2	Eucalyptus	2	1.1

Chanca piedra	2	1.1	*Bryophyllum pinnatium*	2	1.1
Bryophyllum pinnatum	4	2.2	*Chanca piedra*	2	1.1
Efirin Utazi leaf	2	1.1	Cucumber	2	1.1
Carica papaya	18	9.9	Digitalis	2	1.1
Occimum gratissimum	2	2.2	Avacado seeds	2	1.1
Cucumber	4	2.2	*Ocimum basilicum*	2	1.1
Dogoyaro/Agbo	9	4.9	*Hyptis suaveolens*	2	1.1
Gymnemia Sylvester	4	2.2	Lapell green tea	2	1.1
Honey	2	1.1	Lemon grass	4	2.2
Green Garden	4	2.2	Matchstick plant	2	1.1
Lapell green tea	4	2.2	Mukta bati	2	1.1
Madhunasin	2	1.1	Palm kernel nut	2	1.1
Red potatoes	4	2.2	Parsley leaves	2	1.1
Neem	4		Ginger	23	12.6
Okra	4		Scent leaves	2	1.1
STC- 30	4	2.2	Sobo flowers Hibiscus sabbri	2	1.1
Boiled utazi leaves	4	2.2	Unripe pawpaw	15	8.2
		2.2	Neem plant	7	3.8
		2.2	Unripe plantain	2	1.1
Mean	6.3	3.0	Mean	4.8	2.4
SD	11.3	5.9	SD	5.6	3.0

Table 9. Cost-effectiveness of Herbs used in the management of Hypertension and Diabetes Mellitus

Herbal medicine and conventional medicine, which is cost-effective	**N**	**%**
Herbal Medicine	59	32.4
Conventional Medicine	47	25.8
Both	26	14.3
Don't Know	50	27.5
Which has improved your health in managing Diabetes or Hypertension		
Herbal Medicine	46	25.3
Conventional Medicine	54	29.7
Both	26	14.3
Don't Know	56	30.8
Can you recommend any herbal mixture to your friend or family?		
Yes	76	41.8
No	106	58.2
Can you share the benefits of herbal products with your Healthcare provider?		0.0
Yes	98	53.8
No	84	46.2
Mean	60.7	33.3
SD	25.6	14.1

Table 10. Correlation Analysis of Categories of Participants and Previous Knowledge on Diabetes, Hypertension, and the Use of Herbal Medicines

Category	**Previous knowledge on Diabetes mellitus**		**Chi-square (x^2)**	***Df***	***P-value***
	Yes	No	16.269	5	0.039
Healthcare Provider	46	0			
Patient Relative	24	18			
Pharmacists	46	0			
Patient	32	10			
Medical Doctor	2	0			
Medical Lab Scientist	4	0			
	Previous knowledge on Hypertension		8.365	5	0.029
Healthcare Provider	46	0			
Patient Relative	24	18			
Pharmacists	46	0			
Patient	30	12			
Medical Doctor	2	0			
Medical Lab Scientist	4	0			
	Knowledge of herbal product(s) used in Diabetes		16.301	5	0.043
Healthcare Provider	4	42			
Patient Relative	3	39			
Pharmacists	46	0			
Patient	8	34			
Medical Doctor	2	0			
Medical Lab Scientist	1	3			
	Knowledge of herbal product(s) used in hypertension		5.999	5	0.019
Healthcare Provider	2	44			
Patient Relative	2	40			
Pharmacists	41	5			
Patient	2	40			
Medical Doctor	2	0			
Medical Lab Scientist	1	3			

Several Nigerian medicinal plants have been reported to possess antidiabetic and antihypertensive properties. The study revealed some species of Nigerian medicinal plants with anti-diabetic and antihypertensive properties based on evidence-based and first-hand experience by healthcare providers, patients, and patient's relatives. Data revealed that more females participated in the study compared to their male counterparts, with a percentage distribution of 54.9% (female) and 45.1% (male) respectively. With a 12.7 standard deviation from the mean (this is presented in Table 1). This could be due to the inability of some persons not having internet access or data subscription as at the time of the survey, etc. The study was conducted nationwide, hence participants were drawn across all the states including FCT of Nigeria, as Google form was distributed on all possible social media platforms to generate responses. The majority of the participants were Lagos State (13.7%), this was closely followed by Anambra (11.0%), Bayelsa (10.4%), Oyo (7.7%), Delta (7.1%), Akwa Ibom (7.1%), and Imo (6.6%), Enugu (6.0%), Rivers and Osun state (4.4% each), FCT (3.8%), Ogun (3.3%), states, respectively. Fewer responses were gotten from the Northern part of Nigeria such as Kwara, Kaduna, which were 2.2% each, and 1.6% from Gombe state

(this is shown in Figure 1.). This shows that majority of the participants were from the western part of Nigeria, where most herbal medicines or traditional medicines practice is well known across Nigeria.

Age Distribution and Religion of Participants

It is generally believed that religion always affects the perception and the pattern of how people live and make their choices as regards to management and treatment of certain ailments using orthodox or herbal medicines, respectively. From the survey, it was observed that the majority of study participants were young people, while the rest population was distributed across various age groups. 51.6% out of the total population were between the age group of 26 – 39, 36.3% were 40 – 59 years of age, 11.0% were between 18 – 25 years and only 1.1% were between 60 – 79 years old (Table 2). It is believed that religion affects the lifestyle and use of certain remedies in the management of various disease conditions. Almost all participants (94.5%) were Christians, while 5.5% Muslims were recorded. 65.9% were married, 30.8% were single while 3.3% were either widows or widowers (this is presented in Table 3). Similar results were in a study conducted by Judith and colleagues in 2018, where most of the survey respondents were more of young persons, etc., (Judith & Erica, 2018).

Educational background and Category of participants

Another factor that might influence the use of some (herbal of orthodox) remedies to a very large extent is the level of exposure which could be attributed to the standard or level of education one has acquired. About 2.2% of the participants had no formal education, 4.4% had secondary education, while 93.4% had tertiary educational qualifications, with some having Postgraduate diploma - PGD (12.1%), Master of Science – MSc (39.7%), and Doctor of Philosophy - Ph.D. (20.9%), respectively. 37.4% of the participants had no higher education (this is shown in Table 3.4). Different categories of participants were observed in the study, based on an online form designed to generate their responses. The majority of the participants (25.3%) were healthcare providers, 25.3% were pharmacists, 1.1% were medical doctors, 2.2% were medical laboratory scientists, while 23.1% each were patients and patient's relatives respectively. More than half of the study population (50.5%) were government or public servants, 28.6% were private or NGO workers. Almost all the subjects (74.7%) were staying with their immediate family (i.e., spouse and/or children), while 16.5% stays alone, 2.2% stays with health caregivers, while 6.6% lives with minos (Table 5).

The social lifestyle of individuals often affects the substances (herbal or orthodox) they consume. Almost all participants use or take salt (93.4%), 39.6% consume alcohol and related substances, 81.3% take sugar while only 3.3% smoke cigarettes. 71.4% participate in a deliberate exercise, and 17.6% reported having experienced food allergies/reactions (Table 6), this also relates to the study by Judith & Erica, (2018). Participants had the correct knowledge on hypertension and diabetes mellitus. 84.6% indicated they know about diabetes, while 83.5% indicated their understanding of hypertension. 13.2% and 24.2% have experienced diabetes and hypertension respectively. Also, a higher percentage of the population affirmed that their relatives currently or have managed either diabetes or hypertension.

Assessment of diabetes and hypertension

It was observed that the majority of the participants assess their blood sugar (28.6%) and pressure (29.7%) once every month. 40.7% of the population uses orthodox medicines while 18.7% sort after herbal medicines in the management and treatment of diabetes and hypertension, respectively. 35.2% and 27.5% had prior knowledge of herbs used in the management of diabetes and hypertension, respectively. Finally, 7.1% believe that herbal medicines are more effective than the conventional medicines currently used in the treatment of diabetes and hypertension. Some of the participants stated that they only check their sugar (22.5%) or blood pressure (18.7%) when symptoms persist (Table 8, shows this information).

Herbal Medicines used in the management of Hypertension and Diabetes mellitus

Various herbal plants and remedies were listed by study participants as used by them or relatives or have been recommended or dispensed to patients in the management of hypertension (HTN) and diabetes mellitus (DM). The majority stated that they have used Bitter leaf (*Vernonia amagdalena*) in the management of hypertension (33.0%) and diabetes mellitus (9.9%). Other plants mentioned

include Moringa leaves HTN (5.5%), DM (6.6%); *Carica papaya*; HTN (9.9%), DM (8.2); Ginger, DM (12.6%), respectively. Other herbs reported by study participants used in hypertension include Abere seed (1.1%), *Allium sativum* (4.4%), aloe vera (1.1%), Nuchwuanwu Leaves (2.2%), *Bryophyllum pinnatum* (2.2%), *Ocimum basilicum* (1.1%), Cucumber (2.2%), etc., others were okra (2.2%), Dogoyaro/Agbo (4.9%). Notable antidiabetic plants reported in this study include *Rauwolfia vomitoria* (1.1%), Ugwu leaves (2.2%), Hibiscus (zobo) (4.4%), *Ocimum gratiscimum* (1.1%), cucumber (1.1%), neem plant (3.8%), (Table 9). This confirms the report by Ozougwu (2017) in the article Nigerian medicinal plants with anti-diabetic and anti-hypertensive properties.

Cost-effectiveness of herbal medicines

The cost of treatment is another factor that has been reported to influence the use of medicinal agents by different individuals. A greater proportion of the participants (32.4%) stated that herbal medicines are more cost-effective than their conventional (orthodox) counterparts. Also, 25.3% thought that herbal medicines have helped improve their lifestyle in the management of diabetes and/or hypertension (Table 10). On a general note, many of the participants perceive that herbal medicines are more cost-effective than orthodox medicines.

Correlation Analysis of Categories of Participants and Perception, Previous Knowledge on Diabetes, Hypertension, and the Use of Herbal Medicines

There was significant relationships between the participant's previous knowledge of diabetes, hypertension, and the use of herbal medicines. In line with this, there was a positive significant difference among the participants' category and previous knowledge on diabetes mellitus. Also, participants were not aware of the use of herbal medicines in the treatment of diabetes mellitus and hypertension. It was then observed, among the participants, pharmacists were 100% aware of the use of herbal medicines in the management of diabetes and hypertension. This could be attributed to the undergraduate and postgraduate curriculum currently obtainable in all accredited Schools of Pharmacy.

CONCLUSION

The participants of this study had previous knowledge and use of herbal medicines. Some believe that herbal medicines can relieve disease within a very short period, are effective at the right dosage, have fewer side effects or no side effects at the right doses, and can affect a complete cure if standardized, affordable, and better tolerated in the body. Bitter leaf was the most frequently reported plant used in the management of diabetes and hypertension by study participants. Some stated that Bitter juice helps to check diabetes, while scent leaf (*Ocimum gratiscimum*) juice and *Ugu* juice are used for BP control with minimal side effects, quick onset of action, possibilities of treating other unknown diseases, decreased blood sugar, decreased cholesterol level, decreased blood sugar, decreased cholesterol level, easy access, and cost-effectiveness. There was a significant difference among participant's category and their previous knowledge and perception of the use of herbal medicines in the management of diabetes and hypertension at p-value < 0.05.

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