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Prevalence and Perception of Herbal Medicine Use among Patients with Chronic Diseases in a Nigerian Teaching Hospital

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Authors' contributions

This work was carried out in collaboration among all authors. Author SCO conceived the idea of the study, interpreted the data-set, and, together with author SCO, analyzed the result and wrote the manuscript. Author CAE prepared the proposal. Author IE revised the manuscript for publication. Author SCO made the final correction for submission. All authors read and approved the final manuscript.

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ABSTRACT

Background: Man's quest to manage illness over many years has led to the development of complementary and alternative medicine (CAM). There are many types of CAM, and the most utilized is herbal medicine. The relevance of herbal medicine has increased over the years due to the surge in health demands and other factors that influence the management of diseases. Hence, this study was conducted to ascertain the frequency and pattern of herbal medicine use among patients diagnosed with chronic diseases in the University of Nigeria Teaching Hospital, its predictors, magnitude, and perception.

Methodology: This was a cross-sectional descriptive study conducted among adult patients (*n* = 319) diagnosed with various chronic diseases, such as Diabetes Mellitus, Hypertension, Glaucoma, cancer, etc., from October 2022 to November 2022, at the University of Nigeria Teaching Hospital, Enugu, Nigeria. Questionnaires were administered through face-to-face interviews with patients.

Results: A total of 319 patients were included in this study. The gender distribution is 139 males and 180 females. The rate of herbal medicine use was 65.2%. Herbal medicine use among the female gender was higher, but there was no relationship between gender and herbal medicine use *(P* = 0.842). Of participants using herbal medicine, 46.1% used it for treating their health condition, 30.4% used herbal medicine to improve well-being, and 10.3% for preventing diseases. Their perception of herbal medicine uses as compared to conventional synthetic medicine based on modifications of some issues found from literature reviews that militate against the use of herbal medicine such as dose (15% strongly agreed, 20.1% agreed, 23.2% neutral, 18.8% disagreed and 22.9% strongly disagreed) etc.

Short Conclusion: The study discovered that patients in Nigeria with chronic conditions frequently use herbal medicines. Age, gender, marital status, occupation, education, monthly income, religion, health insurance, the timing of sickness diagnosis, the number of medications prescribed, and multiple chronic conditions were all linked to the usage of herbal medicines.

Keywords: Chronic disease; herbal medicines; perception; prevalence; teaching hospital.

ABBREVIATIONS

WHO: World Health Organization; CAM: Complementary and alternative medicine; UNTH: the University of Nigeria Teaching Hospital; H.M.: Herbal Medicine.

1. INTRODUCTION

Since the beginning, people have sought ways to enhance their health and avoid and treat illness. This has led to the development of complementary and alternative medicine (CAM). There are many types of CAM, and the most utilized is herbal medicine. Herbal medicine is one of the most balanced and moderate approaches to achieving health [1]. Studies have shown that herbal medicine is beneficial and is usually consumed with orthodox medicine, notwithstanding the challenges [2]. The relevance of herbal medicine has increased over the years due to the surge in health demands and other factors that influence the management of diseases. Using herbal medicine has become a global trend, with Nigeria embracing this trend. Although patients perceive herbal medicine to be safe because it is of natural origin and best suited for the long-term management of diseases [3,4], there are issues such as inappropriate use and self-medication, obscure risk awareness, non-specialist consultation, which could potentially lead to drug interactions and toxicity, especially in patients who are on many drugs [5]. A comparison of orthodox and herbal medicine in Nigeria showed that herbal medicine was better in terms of safety, accessibility, advertisement, cost, and safety [5]. Over the years, it has been shown that herbal medicines exert the following pharmacological effects: antidiabetic, anti-depressive, analgesic, anti-psoriasis, anticancer, hepatoprotective, Etc. [6]. Complementary and alternative medicine use to treat chronic disease has increased globally, even in Nigeria [7-11]. Most of the global population relies on herbal medicine, especially in developing countries (80%) [12-15]. Several studies have revealed H.M. use among health subpopulations in diverse settings and locations [16-21]. Much research has been carried out in Nigeria on

herbal medicine use. However, studies of its utilization in patients diagnosed with chronic diseases in tertiary hospitals are limited and only address selected chronic diseases by giving holistic knowledge [22-24]. These patients have the highest need for herbal medicine due to the perceived minimal toxicity in long-term use and the slow onset of action, and it would be of little use in acute conditions. Hence, this survey was conducted to ascertain the frequency and usage of herbal medicine among patients who have been diagnosed with chronic diseases in the University of Nigeria Teaching Hospital and to assess the factors that influence its use and perceptions among patients to increase public health campaigns as well as inform physician and pharmacist counselling and to enlighten and counter the misconceptions associated with herbal medicine usage [24].

1.1 Aims and Objectives

1.1.1 Primary objective

This study aims to investigate the prevalence of herbal medicines among chronic disease patients in a Nigerian teaching hospital.

1.1.2 Secondary objectives

To assess the frequency of use of herbal medicines among chronic disease patients in a Nigerian hospital

To investigate the primary purpose of use of these medicines

To analyze the patients' perception towards the use of these medicines should, some issues concerning their use be addressed.

To find out the primary source of these medicines and the association between herbal medication and chronic diseases.

2. METHODS

Between October 2022 and November 2022, a cross-sectional descriptive study was carried out among adult patients (n = 319) who had been given a diagnosis of various chronic diseases, including diabetes, Hypertension, glaucoma, cancer, etc., at the University of Nigeria Teaching Hospital in Enugu, Nigeria. The study only included eligible patients who provided their informed permission. All authors delivered a face-to-face questionnaire to the participants [25]. Cronbach's alpha was used to pre-test the questionnaire's reliability and validity on 20 patients who did not make up the final sample. Each participant provided their written informed consent, and the respondents' privacy and confidentiality were rigorously maintained. The "Committee of Research Ethics of the University of Nigeria Teaching Hospital (Ref: UNTH/HREC/2022/08/452)" accepted the study protocol. The World Medical Association's Declaration of Helsinki concerning the moral treatment of human beings in research was adhered to during this study [26].

2.1 Study Population

2.1.1 Sample Size and recruitment strategy

The sample size was calculated according to the equation of Slovins' formula n= \frac{N} {1\dotplus N\left (e^{^{2}} \right)}

n= sample size, N= target population, e= margin of error (0.05)

The value of N (1576), the average target population of chronic disease inpatients and outpatients in a month, was obtained from the UNTH database. Substituting target population of 1576.

n= \frac{1576}{1\dotplus 1576\left (0.05^ {^{2}} \right)}
= 319 patients

The sample size in this study is approximately 319 patients.

Through a systematic random sampling process, patients were chosen. The authors collected in-person data using an 18-item questionnaire that was developed and tailored from previously validated studies on herbal medicine [25-27].

The questionnaire included information on the Patient's sociodemographic variables, disease features, diagnosis time, and the number of drugs the Patient took. The questionnaires also assess the use of herbal medicines in patients, including what it was used for, the reason for its use, the source of information of these patients, reasons for this choice as against conventional synthetic drugs, and the Patient's perception of the issues raised about herbal medicines.

2.1.2 Inclusion and exclusion criteria

The eligibility criteria for participation in this study include:

a. Adult patients with chronic diseases aged 18 and above.
b. Patients with or without co-morbidities.
c. Patients who can read and write in the English language
d. Patients who agreed to participate.

2.2 Data Analysis

The data collected were examined using the Statistical Package for Social Sciences version 15 for Windows. Mean, standard deviation, range, and frequency (% values) are the formats used to report descriptive statistics. Categorical variables were subjected to the chi-square test or Fisher's exact test. Statistical significance is defined as a $P< 0.05$.

3. RESULTS

A total of 319 patients participated in this study, as shown in Table 1. There were 139 male (43.6%) and 180 female (56.4%) patients. Whereas 38.2% of the patients are employed, 26.3% are unemployed, and 35.4% are self-employed. In Table 2, there were 77 patients (24.1%) with Hypertension, 33 patients (10.3%) with cancer, 32 patients (10.0%) with diabetes mellitus, 29 patients (9.1%) with chronic kidney disease, 13 patients (4.1%) with stroke and peptic ulcer disease each, followed by arthritis and cataract which were suffered by 12 (3.8%) and 11 (3.4%) patients respectively. There were 116 patients (53.5%) with more than one disease. Among those patients, 319 (100.0%) used conventional medicine, and 209 (65.2%) also used herbal medicine. The sociodemographic and clinical features of the study population are presented in Table 1. Herbal medicine use was found to have no significant association with the study population's social demographic and clinical features, as shown in Table 1.

From Table 5, Herbal medicines were commonly recommended to the users by their families or friends (60.5%), by radio/T.V. advertisements (29.2%), by medicine experts (22.6%), by Internet (14.4%), by books/magazines (14.1%), and by seminar/workshop (8.5%) respectively. Of participants using herbal medicine, 46.1% used it to treat their health condition, 30.4% used it to improve well-being, and 10.3% to prevent diseases, as shown in Table 4. There was also a significant association between the indications for herbal medicine use (improve health, prevent illness, and treat disease) and herbal medicine use ($p=0.000$), as shown in Table 3.

As can be seen in Table 6, The reasons for herbal medicine use were to be due to belief in efficacy in the past (32.0%), cost (20.4%), ease of accessibility (19.7), it has always been done this way/people's opinion (19.4%), family tradition/culture (17.6%), decreased side effect (17.6%) and dissatisfaction with herbal medicine (14.4%).

From Table 7, their perception of herbal medicine uses as compared to conventional synthetic medicine based on modifications of some issues found from literature reviews that militate against the use of herbal medicine such as dose (15% strongly agreed, 20.1% agreed, 23.2% neutral, 18.8% disagreed and 22.9% strongly disagreed), taste (7.8% strongly agreed, 14.4% agreed, 29.5% neutral, 21.6% disagreed and 26.6% strongly disagreed), smell (8.2% strongly agreed, 13.8% agreed, 30.1% neutral, 21.0% disagreed and 27.0% strongly disagreed), safety (13.8% strongly agreed, 18.5% agreed, 33.2% neutral, 12.9% disagreed, and 21.6% strongly disagreed), NAFDAC regulation (12.9% strongly agreed, 12.2% agreed, 32.0% neutral, 18.5% disagreed and 24.5% strongly disagreed) and the dressing/organization of the sellers/dispensers (3.1% strongly agreed, 10.7% agreed, 36.7% neutral, 21.6% disagreed and 27.9% strongly disagreed).

4. DISCUSSION

There is an increasing prevalence of chronic diseases in the world, hence an increase in the deaths caused by conditions ranging from cardiovascular diseases diabetes, etc. With 17.9 million fatalities yearly, cardiovascular disease ranks first among chronic illnesses, followed by cancer (9.3 million), chronic respiratory conditions (4.1 million), and diabetes (2.0 million, including diabetic kidney disease). Over 80% of all chronic disease-related premature deaths are attributed to these four disease groups. In Nigeria, research by the WHO showed that chronic disease prevalence stood at 29% in 2018, cardiovascular diseases at 11%, cancer at 4%, and diabetes at 2%. In as much as chronic diseases remain the primary cause of death in Nigeria, the country is plagued with the increasing burden of chronic diseases, with premature mortality of approximately 22%.

There is a current surge in the use of herbal medicine worldwide, and the WHO says that more than 75% of people utilize it as their

Table 1. Socio-demographic and clinical characteristics of the study population

Patients' characteristics	Sample	Herbal medicine use		P-value
	All	Yes	No	
Participants	N (%)	N (%)	N (%)	
Age (years, mean ± SD)				0.096
18-28	52 (16.3)	25 (7.8)	27 (8.5)	
29-39	54 (16.9)	33 (10.3)	21 (6.6)	
40-50	58 (18.2)	39 (12.2)	19 (6.0)	
51-61	71 (22.3)	51 (16.0)	20 (6.3)	
62 and above	84 (26.3)	52 (16.3)	32 (10.0)	
Gender				0.842
Male	139 (43.6)	88 (27.6)	51 (16.0)	
Female	180 (56.4)	112 (35.1)	68 (21.3)	
Educational level				0.295
Primary	44 (13.8)	30 (9.4)	14 (4.4)	
Secondary	93 (29.2)	63 (19.7)	30 (9.4)	
Tertiary	174 (54.5)	101 (31.7)	73 (22.9)	
None	8 (2.5)	6 (1.9)	2 (0.6)	
Marital Status				0.164
Married	213 (66.8)	142 (44.5)	71 (22.3)	
Single	77 (24.1)	35 (11.0)	42 (13.2)	
Divorced	4 (1.3)	3 (0.9)	1 (0.3)	
Widowed	25 (7.8)	13 (4.1)	12 (3.8)	
Occupational status				0.407
Employed	122 (38.2)	71 (22.3)	51 (16.0)	
Unemployed	84 (26.3)	54 (16.9)	30 (9.4)	
Self employed	113 (35.4)	75 (23.5)	38 (11.9)	
Monthly income (naira)				0.382
<50,000	159 (49.8)	105 (32.9)	54 (16.9)	
50,000-99,000	85 (26.6)	50 (15.7)	35 (11.0)	
100,000-199,000	57 (17.9)	37 (11.6)	20 (6.3)	
200,000-299,000	10 (3.1)	4 (1.3)	6 (1.9)	
>300,000	8 (2.5)	4 (1.3)	4 (1.9)	
Religion				0.18
Christianity	306 (95.9)	189 (59.2)	117 (36.7)	
Islam	7 (2.2)	7 (2.2)	0 (0.0)	
Traditionalist	5 (1.6)	3 (0.9)	2 (0.6)	
Others	1 (0.3)	1 (0.3)	0 (0.0)	
Health insurance				0.489
Insured	43 (13.5)	29 (9.1)	14 (4.4)	
Not Insured	276 (86.5)	171 (53.6)	105 (32.9)	
When illness was diagnosed (years)				0.282
5-Jan	223 (69.9)	146 (45.8)	77 (24.1)	
10-Jun	51 (16.0)	30 (9.4)	21 (6.6)	
11 – 15	20 (6.3)	9 (2.8)	11 (3.4)	
More than 15	25 (7.8)	15 (4.7)	10 (3.1)	
Number of drugs prescribed for illness				0.065
1 – 4	180 (56.4)	103 (32.3)	77 (24.1)	
5 – 8	99 (31.0)	68 (21.3)	31 (9.7)	
More than 8	40 (12.5)	29 (9.1)	11 (3.4)	

**P<0.05 considered as statistically significant, SD: Standard deviation*

primary form of healthcare [28]. Tulunay *et al.* [25] reported the rate of herbal medicine used to be 29% in a similar participant with chronic diseases, while according to Peltzer et al., 35.9% of people utilize herbal medications [29]. However, conducted in Thailand on the same

study population, this study found that herbal medicine use was 65.2%. This contrast could be due to the sociodemographic factors of the two countries (even though the study population is the same), such as the monthly income of the people, occupational status, etc.

Table 2. Associations between herbal medicine use and chronic diseases

Chronic Disease	Sample	Herbal medicine use	P- value
	N (%)	N (%)	
Acne Vulgaris	1 (0.3)	1 (0.3)	0.126
Allergy	1 (0.3)	1 (0.3)	
Arthritis	12 (3.8)	9 (2.8)	
Asthma	2 (0.6)	1 (0.3)	
Atherosclerosis	1 (0.3)	1 (0.3)	
Bipolar Disorder	1 (0.3)	1 (0.3)	
Cancer	33 (10.3)	19 (6.0)	
Cardiomegaly	2 (0.6)	2 (0.6)	
Cataract	11 (3.4)	6 (1.9)	
Chronic Ankle Fracture	1 (0.3)	0 (0.0)	
Chronic Chest Pain	2 (0.6)	1 (0.3)	
Chronic Ear Problem	3 (0.9)	2 (0.6)	
Chronic Eye Problem	8 (2.5)	3 (0.9)	
Chronic fatigue syndrome	1 (0.3)	1 (0.3)	
Chronic Infection	3 (0.9)	3 (0.9)	
Chronic Kidney disease	29 (9.1)	25 (7.8)	
Chronic Malaria	8 (2.5)	6 (1.9)	
Chronic Otitis Externa	4 (1.3)	2 (0.6)	
Chronic Stomach ache	1 (0.3)	1 (0.3)	
Chronic Waist Pain	1 (0.3)	1 (0.3)	
Cirrhosis	1 (0.3)	1 (0.3)	
Coronary Artery Disease	1 (0.3)	1 (0.3)	
Diabetes Mellitus	32 (10.0)	21 (6.6)	
Dry Eyes	2 (0.6)	2 (0.6)	
Endometriosis	1 (0.3)	1 (0.3)	
Eye Trauma	1 (0.3)	1 (0.3)	
Eye Ulcer	1 (0.3)	1 (0.3)	
Fibroid	4 (1.3)	3 (0.9)	
Gastroesophageal Reflux Disease	1 (0.3)	0 (0.0)	
Glaucoma	5 (1.5)	4 (1.3)	
Hearing Loss	1 (0.3)	0 (0.0)	
Heart attack	1 (0.3)	0 (0.0)	
Hepatitis B	3 (0.9)	1 (0.3)	
Hernia	1 (0.3)	1 (0.3)	
Hypertension	77 (24.1)	37 (11.6)	
Incisional hernia	1 (0.3)	1 (0.3)	
Infertility	1 (0.3)	1 (0.3)	
Mental disorder	5 (1.6)	1 (0.3)	
Motor disorder	1 (0.3)	0 (0.0)	
Myopia	2 (0.6)	1 (0.3)	
Nephropathy	2 (0.6)	2 (0.6)	
Ocular Hypertension	1 (0.3)	0 (0.0)	
Otomycosis	1 (0.3)	0 (0.0)	
Parkinson’s disease	2 (0.6)	0 (0.0)	
Paroxysmal Nocturnal Dyspnea	1 (0.3)	1 (0.3)	
Pelvic Inflammatory Disease	2 (0.6)	1 (0.3)	
Peptic Ulcer Disease	13 (4.1)	12 (3.8)	
Pituitary Adenoma	1 (0.3)	0 (0.0)	

Chronic Disease	Sample	Herbal medicine use	P- value
Prostrate Hyperplasia	6 (1.9)	3 (0.9)	
Psoriasis	1 (0.3)	0 (0.0)	
Skin Disease	1 (0.3)	0 (0.0)	
Spinal cord Injury	1 (0.3)	1 (0.3)	
Stroke	13 (4.1)	10 (3.1)	
Tuberculosis	1 (0.3)	1 (0.3)	
Tumor	1 (0.3)	1 (0.3)	
Valvular Heart Disease	1 (0.3)	1 (0.3)	

Abbreviations: AOR, Adjusted Odds Ratio; CI, Confidence Interval

Table 3. Indications for herbal medicine use

Number of reasons	N (%)	P-value
All three reasons	20 (6.3)	
Improve my health andprevent disease		
Prevent disease and treatmy disease	33 (10.3)	
Only one reason	151 (47.3)	0.000
Didn't use for any reason	115 (36.1)	

Moreover, conventional medication use was lower in patients receiving herbal medicine [25]. Our study showed that as much as patients were on herbal medication, it did not affect their use of conventional medicine. Patients still need to be convinced about wholly accepting herbal medicine, even if some of the issues outlined are addressed, as shown in Table 5. This provided an insight into the fact that they combined both, which could lead to a possibility of interaction (ranging from inhibition to potentiation) which affects the health outcome and thus should be a significant concern for our health facilities to enlighten these patients and initiate public health campaigns to tackle this rather disturbing trend. Peltzer *et al*. reported that the prevalence of herbal medicine used to be 35.9%, among which 53.7% use it for long-term health issues, 40% use it for improving their health, and 6.3% use it for treating acute illnesses [29]. Comparing with the outcome of our study, we find out that of the 65.2% who used herbal medicine, 30.4% used it to improve health, 10.3% used it to prevent diseases, and 46.1% used it to treat their conditions, while the rest claimed to use it without any reason. Amongst the factors that exhibited a relationship with the use of herbal medicines were sociodemographic factors, multiple chronic conditions, and the type of illness [26].

In contrast, none of these exhibited any relationship from our study except the purpose and reasons for use (p=0.00). Okwuonu *et al*. reported on the belief of rural populations on the utilization of herbal medications for the treatment of kidney diseases in the same geopolitical zone [7]. This study is the only study similar to our research conducted in Nigeria. However, its limitation is that it did not focus on all chronic disease patients and only on rural dwellers. The majority (83.2%) believed in alternate therapy in the management of kidney disease, which is higher than the rate from our study could be because it was conducted in rural areas that are predominantly farmers and who do not earn enough to afford conventional medicines in that management of their illness. Additionally, there was no connection between this assumption and the participants' educational backgrounds [27], which is in line with the findings of our study.

Table 4. Purpose of herbal medicine use

Purpose	N (%)
Improve my health	97 (30.4)
Prevent disease	33 (10.3)
Treat my disease	147 (46.1)

Table 5. Sources of information on herbal medicine

Source of Information	N (%)
Books/Magazine	45 (14.1%)
Family/Friends	193 (60.5)
Medicine Experts	72 (22.6)
Radio/ TV advertisement	93 (29.2)
Seminar/workshop	27 (8.5)
Internet	46 (14.4)

Table 6. Reasons for using herbal medicine

Reasons for Using Herbal Medicine	N (%)
I am not satisfied with western medicine	46 (14.4)
It has worked for me in the past	102 (32.0)
Family tradition or culture	56 (17.6)
It has always been done this way/people's opinion	62 (19.4)
It is cheaper than western medicine	65 (20.4)
Herbal medicine is easier to get than western medicine	63 (19.7)
Herbal medicine has fewer side effect than western medicine	56 (17.6)

Table 7. Preferences if some of the drawbacks of herbal medicines are resolved

Would preferherbal medicine towestern medicine, if?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	N (%)	N (%)	N (%)	N (%)	N (%)
The dose isstandardized	48 (15.0)	64 (20.1)	74 (23.2)	60 (18.8)	73 (22.9)
the taste is masked	25 (7.8)	46 (14.4)	94 (29.5)	69 (21.6)	85 (26.6)
the odor is masked	26 (8.2)	44 (13.8)	96 (30.1)	67 (21.0)	86 (27.0)
Safety is ascertained	44 (13.8)	59 (18.5)	106 (33.2)	41 (12.9)	69 (21.6)
Regulated byNAFDAC	41 (12.9)	39 (12.2)	102 (32.0)	59 (18.5)	78 (24.5)
Seller is welldressed	10 (3.1)	34 (10.7)	117 (36.7)	69 (21.6)	89 (27.9)

Li *et al*. also reported on using herbal medications among women in the same country selected from an adult population of those with breast cancer. The percentage of people who used traditional medicine was 81.6% [23]. In addition, it was found that there was a positive correlation between ethnicity, educational background, and the rate of traditional medicine use. Women from the Yoruba ethnic extraction used herbal medicine more than Igbo and Hausa women. In contrast, educated women had a lower probability of using herbal medicine than non-educated women, which proves true as most of our study population comes from the Igbo ethnic group. This could be the reason for a reduction in herbal medicine used compared to the study by Li et al. [23]. The highest usage is seen in women whose highest education level is secondary education. This did not play any role in our study as educational level had no association with herbal medicine use.

The study also showed the source of information for herbal medicine use ranging from family/friends, which is the primary source of information, radio/T.V. advertisements, medical experts, the internet, books/magazine, and seminars/workshop. This source can also be exploited to counter misinformation concerning herbal medicine use and help tackle this issue of herbal medicine use. Previous studies have shown that the reason for herbal medicine use includes lack of regulation, ease of reaching the products, and excessive media advertisement [30], which was inconsistent with our study's findings. However, additional reasons were also found, which include cost, family tradition, positive history of health outcomes with herbal medicine use, dissatisfaction with conventional medicine, and the belief that it has reduced side effects since it's from nature (it is important to note that, we did not assess the claims of this patients clinically as it didn't form part of our scope) and opinions of neighbours on its use to patients, etc.

5. SUMMARY

From the result of this study, frequency of use, reasons for use, primary sources of information on herbal medicines, and perception of the use of herbal medications should, some issues concerning herbal medication use be addressed were investigated and presented in Tables. It is worth noting that most patients with one or more chronic diseases use herbal medicines in hospitals, and there is a positive possibility of improved health outcomes when combined with conventional medication. This research will pave the way for more studies on the use and efficiency of herbal medicines in chronic diseases.

6. CONCLUSION

This study found that people with chronic diseases in Nigeria frequently use herbal medications. There are several considerations

(usage motivations, information sources, Etc.) that are connected to using herbal remedies. Healthcare professionals and policymakers will be helped by this information when making decisions about using herbal medicine. Additionally, doctors should be aware of their patients' use of herbal medications and educate them on their efficacy and potential side effects.

7. STUDY LIMITATIONS

Since the study was cross-sectional, no inferences on a cause-and-effect link can be made. Results cannot be extrapolated to other regions of Nigeria because the survey was also carried out in a teaching hospital in South-eastern Nigeria. Self-reporting was used to collect the data for the assessment, which may have resulted in either an under or over-reporting of the use of herbal medications. Because they believe traditional medical professionals disapprove of herbal medicines, some patients may not have been entirely truthful when they admitted to using them. Future studies should investigate several critical factors that could improve the use of herbal medications, including patient-provider communication about herbal medicine use and the types of herbal medicines used for the illness.

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CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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