An assessment of the prevalence and practice of herbal medicine use among hypertensive patients accessing care in a semi-urban health facility in south-south Nigeria

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Abstract

Background: Hypertension is a leading risk factor for cardiovascular diseases, affecting approximately 1.4 billion people globally in 2010, with a higher prevalence in low and middle-income countries. Despite the effectiveness of orthodox medicines (OM), many patients in developing countries turn to herbal medicine (HM), raising concerns regarding its safety and efficacy.

Objectives: The study aimed to assess the prevalence and practice of HM use among hypertensive patients and its association with sociodemographic characteristics in a semi-urban health facility in South-South Nigeria.

Methods: A descriptive cross-sectional study was conducted at Delta State University Teaching Hospital (DELSUTH), Oghara, involving 320 hypertensive patients selected through systematic random sampling. Data were collected using pretested, interviewer-administered questionnaires covering sociodemographic characteristics, HM use, reasons for use, side effects, and consultation with healthcare providers. Data analysis involved descriptive statistics and chi-square tests to assess associations.

Results: Sixty-five percent of respondents reported using HM, with 81.7% using preparations of unknown composition. Commonly used herbs included garlic, ginger, and bitter kola. Sociocultural influences and recommendations from social networks were primary reasons for HM use. Challenges reported included difficulty accessing genuine HM, dosage determination, and potential interactions with OM. Sixty percent did not consult healthcare providers over HM use. Significant associations were found between HM use and age, marital status, and gender.

Conclusion: The study highlights a high prevalence of HM use among hypertensive patients in the study area, influenced by sociodemographic factors. There is a need for healthcare providers to engage patients regarding HM use to ensure safe and effective hypertension management.

Keywords: Hypertension, Herbal medicine, Prevalence, Practice

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Introduction

Hypertension (defined as persistent systolic blood pressure (BP) equal/greater than 140mmhg, a diastolic BP equal/greater 90mmhg or use of medication to reduce BP) is a leading risk factor for cardiovascular diseases.[1,2] About a third of adults in the world i.e. approximately 1.4 billion people suffered from systemic hypertension in 2010 and the prevalence was markedly higher in low and middle-income countries (LMICs) than high-income countries.[3] In 2015, approximately 7.8 million deaths were associated with hypertension.[4] Hypertension imposes a significant financial burden on sufferers, stemming from expenses for consultations, laboratory tests, medications and hospitalization. There are also indirect costs due to lost productivity following illness, disabilities and premature death.[5]It remains a significant public health challenge worldwide, and much global resources and efforts are directed to managing it. In 2001, the financial burden of high blood pressure worldwide was approximately 370 billion US dollars, accounting for about 10% of total global healthcare expenses.[5]

In developing countries, healthcare services for hypertension and other illnesses is often complicated by patients seeking care outside the orthodox healthcare system.[6] Despite the proven effectiveness of orthodox medicines (OM) in managing high blood pressure, a growing number of hypertensive patients are turning to herbal medicine (HM) to complement or even replace traditional therapies.[6] There is an overall increase in the utilization of HM globally—approximately 20 - 80% of world adult population.[7,8] In many under-served regions of the world, HMs are a major form of therapy for different illnesses including hypertension and its complications like stroke, heart failure and chronic kidney disease.[6] Despite its widespread use, the safety, efficacy, and composition of HM remain areas of grave concern, particularly for individuals with chronic conditions like hypertension.[9,10] Understanding the practices surrounding HM use in hypertensive patients is important for healthcare providers, as it may affect treatment adherence and outcomes. This is an important gap in knowledge as it pertains to HM utilization among hypertensive patients accessing care in this semi-urban health facility in south-south Nigeria; especially against the background of widespread use of HM.[8]

This study assessed the prevalence and practice of HM use among hypertensive patients and its association with sociodemographic characteristics of the patients.

Materials and Methods

This study employed a descriptive cross-sectional design to examine the use of HM among hypertensive patients. The study area was the Medical Out-Patient Clinic (MOPC) and Family Medicine Clinic (FMC) of Delta State University Teaching Hospital (DELSUTH), Oghara. DELSUTH Oghara is a tertiary teaching hospital located in the semi-urban town of Oghara, South-South, Nigeria.

Fisher's formula was employed to estimate the sample size for the study, yielding approximately 320 patients at a 95% confidence interval with a desired accuracy of 0.05.[11]A total of 320 hypertensive patients were recruited during the three

months study period. Participants were selected using systematic random sampling. The clinic records had indicated that an average of 962 hypertensive patients is typically seen over a 3-month period—which served as the sampling frame. The sampling interval (nth) was calculated by dividing the sampling frame by the sample size, resulting in an interval of 3. Patients on repeat clinic visits were not included to avoid duplication, thus each patient enrolled only once. On clinic days, patients were assigned serial numbers based on arrival time. The first patient was selected by balloting, and subsequent selections were made by adding/subtracting the sampling interval (3) to the previous number until the sample size was reached. Eligible patients were interviewed after their clinic consultations in an adjacent room.

Inclusion criteria required was the ability of the hypertensive patients to provide informed consent, while those who were too ill or cognitively impaired were excluded. Data were collected using a pretested, interviewer-administered questionnaire covering participants' sociodemographic characteristics, types of herbal medicine used, reasons for use, reported side effects, challenges associated with use, and whether healthcare providers were consulted.

Data collectors were scientific officers recruited from the hospital staff but not directly involved in patient care, trained on the use of the tool. Completed questionnaires were checked for completeness and consistency before being entered into an Excel spreadsheet. Data analysis was conducted using IBM® SPSS 23, with results presented as means, frequencies, and percentages. A chi-square test of independence was performed to assess the association between sociodemographic characteristics (independent variables) and herbal medicine use (outcome variable), with the level of significance set at 0.05. Appropriate research ethical clearance was obtained from the ethical and research committee of the hospital and the work was done according to the Helsinki declaration. [12] (Reference number: HREC/PAN/2022/075/0520)

Results

All 320 of the recruited hypertensive patients (respondents) participated in the study with a response rate of 100%. The respondents' age ranged between 18 to 99 years, with a mean age of 54.8 ± 16.5 years. A hundred and thirty-nine of the 320 respondents were aged 60 years or more, and the majority (55.9%), were females. Most of the respondents (85%) were married. About half (46.9%) of the respondents had tertiary level of education (Table 1).

Table 1: Sociodemographic characteristics of the respondents

Variables	Frequency (n= 320)	Percentage
Age group (years)		
<40	61	19.1
40-49	47	14.7
50-59	73	22.8
≥60	139	43.4
Mean age; 54.8 ± 16.5 years		
Gender		
Female	179	55.9
Male	141	44.1
Marital status		
Single	48	15.0
Married	272	85.0
Educational status		
Nil formal	36	11.2
Primary	53	16.9
Secondary	79	25.0
Tertiary	152	46.9

Prevalence and types of herbal medicine used by respondents

Two hundred and eight respondents (65%) reported using HM to manage their systemic hypertension. Of this group, 81.7% used herbal preparations of unknown composition, while many consumed specific herbs, including garlic (46.6%), turmeric (15.9%), ginger (40.9%), green tea (31.3%), moringa (21.2%), and bitter kola (37.5%). Other sources of HM used by the respondents included cabbage, elephant grass, soybean, hibiscus, maize, cocoa, tomato, mistletoe, thyme, onion, pawpaw, lime, coconut, soursop, castor, lettuce, guava, aloe vera, pineapple, mango, bitter leaf, avocado, plantain, ginseng, shea, banana, cocoyam, pepper, cocoa, olive and basil in varying proportions. The various HMs were consumed in diverse forms; mainly as leaves, fruits, seeds, stems, roots, and bark in their natural state, or often soaked in water or alcohol to extract their essence. Some preparations were in powdered or solid states, with a few packaged like OM, such as tablets and syrups (Table 2).

Table 2: Prevalence and types of herbal medicine used by respondents

Herbal Medicine Used	Frequency (N=208)	Percentage (%)
Garlic	97	46.6
Green Tea	65	31.3
Turmeric	33	15.9
Moringa leaf	44	21.2
Bitter cola	78	37.5
Ginger	85	40.9
Unknown	170	81.7
Others	41	19.7

Others= thyme, basil, ginseng, cocoa, onion, soursop, coconut, cocoyam, mango, aloe vera, lettuce, bitter leaf, pineapple hibiscus etc.

Reasons for using herbal medicine

One hundred and twenty-five respondents (60%) who used herbal medicine attributed their choice to sociocultural and traditional influences, while 31.7% were motivated by recommendations from family, friends, and advertisements from herbal medicine practitioners/vendors. Other respondents cited dissatisfaction with OM, and some mentioned prior awareness of the benefits of herbal medicine as their main motivation (Table 3).

Table 3: Respondents' reasons for using herbal medicine

Reasons	Frequency (N=208)	Percentage (%)
Tradition and sociocultural beliefs	125	60.0
Recommendations from family/friends/adverts	66	31.7
Dissatisfaction with orthodox treatment	51	24.5
Awareness of benefits*	39	18.7

**Enhance BP control and libido, mild side effects, improve sleep and cognition*

Respondents' challenge with HM use

Some patients reported challenges with HM use. An estimated one third of respondents cited difficulty accessing genuine HM and reliable practitioners. Additional concerns included difficulty in determining the correct dosage, unhygienic preparation and high alcohol content of some HM. A few patients also expressed worries about potential interactions with their orthodox medications and the risk of side effects. However, the majority of HM users reported no side effects, but some reported mild side effects like abdominal discomfort and allergic skin reactions.

Consultation with healthcare providers

One hundred and ninety-two participants (60%) did not consult with healthcare providers about herbal medicine usage. Half of them did not consult because they perceived a conflict of interest with the healthcare providers. The rest believed it was unnecessary, as they deemed HM to have no adverse side effects.

Association between respondents' sociodemographic characteristics and HM use

All evaluated sociodemographic characteristics were significantly associated with HM use among the respondents, except for educational status. Older respondents (≥60 years) had a higher prevalence of HM use compared to younger respondents (≤40 years) (68.3% vs. 39.3%; p = 0.001). Similarly, married respondents reported greater HM use than single respondents (71.3% vs. 29.2%; p = 0.001) and female respondents had a higher prevalence of HM use compared to males (69.8% vs. 58.9%; p = 0.041) (Table 4).

Table 4: Association between sociodemographic characteristics and HM use by the respondents

Variable	Herbal medicine use		Chi test, *p*-value
Age group (years)	YES n (%)	NO n (%)	
<40	24 (39.3)	37 (60.7)	
40-49	37 (78.7)	10 (21.3)	23.470, 0.001
50-59	52 (71.2)	21 (28.8)	
≥60	95 (68.3)	44 (31.7)	
Gender			
Female	125 (69.8)	54 (30.2)	4.170, 0.041
Male	83 (58.9)	58 (41.1)	
Marital status			
Single	14 (29.2)	34 (70.8)	31.872, 0.001
Married	194 (71.3)	78 (28.7)	
Educational status			
Nil formal	27 (75.0)	9 (25.0)	
Primary	34 (64.2)	19 (35.8)	4.699, 0.195
Secondary	43 (54.4)	36 (45.6)	
Tertiary	91 (59.9)	61 (40.1)	

Discussion

Understanding the practices surrounding herbal medicine use by hypertensive patients is important for policy formulators and healthcare providers; as it may affect compliance with therapy and consequently clinical outcomes. The sociodemographic profile of the enrollees in this study reflects the heterogeneity in the profile of hypertensive patients utilizing this facility, with the average age of the patients approaching the mid-6th decade of life where age-related cardiovascular conditions like hypertension has the highest prevalence and studies have shown that consumption of HM is also quite significant.[13,14]

Prevalence and types of herbal medicine used by respondents

A majority (65%) of patients in this study admitted to current usage of HM alongside OM to manage their hypertension. This indicates a widespread reliance on HM in this cohort of patients. This prevalence is much higher than what was reported by previous workers in Maiduguri and Lagos where a prevalence of 24 and 39% respectively was recorded in similar studies.[15,16.] The differences may be due to the population studied as semi-rural dwellers are more likely to consume HM than urban patients. However similar studies in the south-east region of Morocco and a tertiary hospital in India revealed much higher usage of HM among hypertensive patients.[7,17] This may not be unconnected with the presence of a historically well-developed alternative medicine practice in the Middle East and Near East cultures.[17] In this index study, garlic and ginger made up a majority of the identified HMs while moringa, green tea, and turmeric were consumed in lesser amounts. This is similar to the finding from a comparative study in Lagos, Nigeria, where garlic was the main HM used.[16] Herbal medicines like turmeric and moringa are relatively recent additions to the hypertensive herbal medicine armamentarium, whereas garlic has long been widely consumed.[18,19] The reasons for these differences are not entirely clear but may have been influenced by local beliefs and customs regarding the effectiveness of certain HM and their availability in the locality. Some workers have shown that garlic is rich in allicin—a natural chemical substance—that has been shown to have anti-platelet, blood pressure and lipid lowering properties thus helping to mitigate cardiovascular risk in users.[19] It is quite common for HM to be an admixture of various herbs, which can make it challenging for users to identify their specific components. Indeed, 81.7% of patients in this study, were unable to name the ingredients in the HM they were using. This trend is similar to revelations in the WHO 2019 Global report on traditional and complementary medicine that showed that many users of HM lack knowledge about the ingredients or contents of the HM they use.[20] This poses a great risk for HM users, as they might consume compounds they have allergy to, or that could worsen their cardiovascular condition. For example, a patient might consume foxglove leaves, ostensibly to help with a cardiovascular disorder, unaware of its narrow therapeutic index and potential toxicity.[21]Various medicinal herb or plant has been considered and used as HM by respondents in this study. Thus, commonly known plants and plant products have been utilized as herbal medicines in various proportions and formulations by the respondents. This familiarity helped increase confidence in the apparent safety of these HMs. Herein also lies the need for caution and circumspection as these HMs are not without adverse effect as often envisaged.[9] In this study, the various herbal preparations were consumed in diverse forms; primarily as leaves, fruits, seeds, stems, roots, and bark in their natural state or often soaked in water or alcohol to extract their essence. Some preparations were in powdered or solid forms, with a few packaged like OM, such as tablets and syrups. The final methods of presenting herbal medicines depend on the sophistication and preferences of the makers

and consumers, as well as the available technology. Consequently, herbal medicines could range from relatively crude natural forms to well-packaged products similar to OMs.[22] Good packaging makes some HM more appealing to the potential users as has been shown in some studies.[22]

Reasons for using herbal medicine

Sociocultural and traditional influences were the most cited reason for the high demand for herbal medicine among the majority of Nigerian respondents. Previous research has shown that many Nigerian hypertensive patients regard HM as the only credible alternative cure for hypertension.[23] Similar sociocultural influences and nuances were also alluded to in a study among Jordanian adult patients.[14] Respondents also mentioned other reasons for using herbal medicine, such as recommendations from trusted and respected individuals within their social networks, and advertisements from mainstream and social media. Dissatisfaction with conventional medication and awareness of the benefit of HM were also reasons adduced by respondents. These reasons resonate with findings from a national survey in the USA where respondents revealed that dissatisfaction with OM and awareness of the benefits of HM were their main reasons for using HM.[24] Also, the apparent failure of OM to cure hypertension (only controls it) and the perception that OM is more expensive than HM is seen as a serious drawback.[7] These HMs are promoted as having no adverse effects, being natural herbs, thus attracting some clientele e.g. men who are exposed to erectile dysfunction or other adverse effects from OM use.[16] Thus, purported undesirable adverse effects of OMs are therefore a potent reason for increased use of HM by hypertensive patients.[17] The relative high cost of OM in managing cardiovascular diseases when compared to HM may also be fueling the trend to increased HM usage in light of current inflation and cost of living crisis.

Respondents' challenges with HM use

The challenges reported by respondents regarding HM use, such as difficulty accessing genuine products and reliable practitioners, are similar to concerns observed in other studies.[25] This highlights a widespread issue regarding the quality and availability of herbal remedies, which can undermine their effectiveness. However, the National Agency for Food and Drug Administration and Control (NAFDAC) recently published guidelines addressing the regulation and quality control of herbal products in Nigeria.[26] The difficulties some respondents confront in determining the right dosages and the unhygienic preparation methods further underlie the need for better standardization and regulation of HM practices.[27,28] Furthermore, the concerns raised about high alcohol content in certain herbal remedies align with findings from other studies which suggest that alcohol can increase health risks, especially for vulnerable populations.[29.30] While most users of HM in this study reported no side effects, a few did experience mild symptoms, such as abdominal discomfort and allergic reactions. This highlights the importance of individualized care and monitoring.[28]These findings suggest that while herbal medicine can be beneficial, issues of accessibility,

safety, and standardization remain significant challenges that need to be addressed.[25-28]

Consultation with orthodox Healthcare Providers

The majority of participants (60%) did not consult orthodox healthcare providers about their herbal medicine usage, citing perceived conflicts of interest and believing consultation was unnecessary as they considered herbal medicine to be free of side effects. This lack of consultation may lead to unmonitored health practices. Therefore, it is crucial for healthcare professionals to proactively engage patients in discussions about their use of HM to ensure safe practices.[31]

Association between respondents' sociodemographic characteristics and HM use

The findings of this study highlight significant sociodemographic patterns in the use of HM among respondents, with age, marital status, and gender being key factors. These observations align with previous research that underscores the influence of sociodemographic characteristics on health-seeking behaviors and preferences for HM.[32,33]Older respondents (≥60 years) exhibited a higher prevalence of HM use compared to their younger counterparts (≤40 years). This may reflect a generational preference for traditional remedies, as older individuals are more likely to adhere to long-standing cultural practices.[34]This is similar to findings by workers in Palestine and Jordan where older age was associated with HM use.[14,33] The significantly greater HM use among married compared to single respondents might be attributable to shared health beliefs within marital unions. Married individuals often engage in collective decision-making regarding health, which could promote HM use, especially in households with older adults who influence family practices.[35] The finding that female respondents had a higher prevalence of HM use than males; may be explained by gender differences in health-seeking behavior, as women are generally more proactive in addressing health issues and often serve as primary caregivers within families.[36]

Interestingly, educational status was not significantly associated with HM use, which is similar to findings in Jordan and Lagos (Nigeria) where respondents' educational level was not a differentiating factor in HM utilization.[14,16]. However some studies did highlight higher usage of HM among more educated respondents.[32]This discrepancy may reflect context-specific factors, such as differences in cultural acceptance or otherwise of HM across educational levels in the study area.

Conclusion

The study highlights a high prevalence of HM use among hypertensive patients receiving conventional treatment at our tertiary facility, driven by cultural beliefs and social influences, with many patients perceiving herbal remedies as effective. However, a significant communication gap exists between patients and healthcare providers. Public health efforts should focus on promoting the safe use of HM, particularly among older adults, married individuals, and women. Clinicians should actively inquire about HM use, address potential risks, and provide appropriate counseling. Further research is needed to better understand the motivations and health outcomes associated

with this practice, ensuring safer and more effective patient care.

Conflict of interest: nil

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