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KNOWLEDGE AND PRACTICE REGARDING SAFETY PROFILES OF COMMONLY USED MEDICINAL PLANTS AMONG PATIENTS IN THE WALEWALE MUNICIPAL HOSPITAL, GHANA

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ABSTRACT

Background: The reliance on medicinal plants is prevalent in many developing countries, including Ghana, where traditional herbal medicine forms a crucial component of healthcare. However, understanding the knowledge and practices related to the safety profiles of these commonly used medicinal plants remains limited. **Objective:** This study aimed to assess the knowledge and practice of patients regarding the safety profiles of medicinal plants at the Walewale Municipal Hospital in Ghana and to explore the relationship between sociodemographic factors and these variables. **Methods:** A total of 500 patients were interviewed using structured questionnaires. The sociodemographic characteristics, practice of medicinal plant use, and knowledge of safety profiles were evaluated. Chi-square analyses were conducted to determine associations between sociodemographic factors and the various practices and knowledge levels regarding medicinal plants. **Results:** The study revealed that 99.8% of respondents had used medicinal plants, with 76.6% indicating high usage for treating ailments. Despite this high prevalence, knowledge regarding safety profiles was alarmingly low; 36.0% of participants had low knowledge, while only 5.6% demonstrated a high understanding of safety issues. Significant correlations were found between knowledge and practice with respect to age ($p = 0.00$), gender ($p = 0.00$), education ($p = 0.00$), and occupation ($p = 0.00$), but no significant association with marital status ($p = 0.96$; $p=0.6$, respectively). **Conclusion:** The findings indicate a high level of practice regarding the use of medicinal plants among patients in Walewale, yet a concerning lack of knowledge about their safety profiles. This underscores the need for targeted educational initiatives to empower patients with proper information, ensuring safer integration of herbal therapies within conventional healthcare frameworks.

KEYWORDS: Medicinal Plants, Herbal Medicine, Safety Profiles, Knowledge, Ghana, Sociodemographic Factors, Patient Practices.

INTRODUCTION

The utilization of medicinal plants is deeply embedded in the cultural heritage of many populations, particularly in developing countries where traditional healing practices play a vital role in healthcare. In Ghana, herbal medicine is widely recognized and used for treating various ailments, reflecting a significant aspect of the nation's health system (Akinmoladun & Olaniyi, 2020; Owolabi et al., 2021). A substantial number of patients often rely on herbal remedies, sometimes as their primary source of treatment, highlighting the importance of understanding patients' practices and knowledge surrounding these natural treatments. Medicinal plants possess bioactive compounds that provide therapeutic benefits, which have been substantiated through scientific research (Mahomoodally, 2013). However, the safety profiles of many commonly used plants are not well-documented, raising concerns about potential adverse effects and drug interactions, especially when these herbal products are used concurrently with prescribed medications (Suleiman et al., 2020). Thus, while the prevalence of medicinal plant use is high, there is a crucial need for comprehensive knowledge regarding their safety, efficacy, and proper usage among patients.

Previous studies have shown significant variations in the awareness and practices related to herbal medicine across different demographics, influenced by factors such as age, education, and socioeconomic status. For instance, older adults and those with higher educational attainment tend to exhibit greater knowledge of medicinal plants and their safety profiles (Osei et al., 2019; Rukangira, 2008). Conversely, limited understanding of herbal therapies is often prevalent among less educated individuals, potentially contributing to unsafe practices (Cunningham, 2015).

This study aims to assess the knowledge and practice regarding the safety profiles of commonly used medicinal plants among patients in the Walewale Municipal Hospital, Ghana. By exploring the relationship between socio-demographic factors and the awareness of safety profiles, this research seeks to highlight gaps in knowledge that need to be addressed through targeted educational initiatives. Understanding these dynamics is essential for integrating traditional herbal practices into broader health systems effectively and safely.

2.0 METHODOLOGY

2.1 Study Design

This cross-sectional study was conducted at the Walewale Municipal Hospital in the North-East Region of Ghana. The purpose of this study was to evaluate the safety and toxicity profiles of commonly used medicinal plants among patients attending the hospital. Data collection was performed using a structured questionnaire developed specifically for this study.

2.2 Sample Size

A sample size of 500 patients was determined using random sampling techniques, aimed at ensuring a representative demographic from the hospital's patient population. Data were analysed using Chi-square and Fisher’s exact tests from the PASW (V.17.0) with $p \leq 0.05$ as significant.

2.3 Inclusion Criteria

Participants were eligible for inclusion in the study if they were patients attending the Walewale Municipal Hospital and provided informed consent to participate in the study, agreeing to answer questions about their use of medicinal plants.

2.4 Exclusion Criteria

Participants were excluded from the study if they were non-patients or patients with cognitive impairments that would preclude them from giving informed consent or comprehending the questionnaire. Patients with acute medical emergencies that required immediate attention, thereby limiting their ability to participate in the study.

2.5 Data Collection Tool

A structured questionnaire was designed to capture a range of variables related to the use of medicinal plants.

2.6 Ethical Considerations

The study was approved by the University for Development Studies Institutional Review Board (UDSIRB) with an ethically approved number of UDSIRB/150/24. Participation was voluntary, and all data were collected anonymously to ensure confidentiality. Participants were informed of their right to withdraw from the study at any time without any repercussions.

3.0 RESULTS

3.1 Socio-demographic characteristics of study participants in the Walewale Municipal Hospital, Ghana.

A total of 500 patients were interviewed during the period of study. The mean age was 36.7 years, while the modal age was 40.0 years. The majority of the participants were male, thus recording a total of 375 (75%) with 125 (25%) as female. The majority of patients (39.2%) involved in the studies received no formal education, however, 27.8%, 18.4%, and 14.6% recorded secondary, tertiary, and primary education. From Table 1, it was observed that 74.6% of the participants were unemployed, 9.8%, and 7.0% were students and retired people. The working population accounted for only 8.6%. The result of the study also indicated that 6.6% were widowed, 27.2% were single and 66.2% were married.

3.2 Practice of study participants on commonly used medicinal plants

In the study as shown in Table 2, participants were asked whether they have ever used medicinal plants and 99.8% answered “Yes”, indicating high usage of medicinal plants among the study participants. 93.4% of participants indicated that they most often use the medicinal plants for treatment of diseases, however, 6.6% of the participants said, they occasionally (not often) used the medicinal plant for disease treatment. The patients were asked if they have ever experienced adverse reactions or side effects from using any medicinal plants, and 80.4% responded “No” while 19.6% responded "Yes”. About 96.0% of the total population responded to having experienced an improvement in health after using medicinal plants for the treatment of disease, while 4.0% responded “No” to the same question.

3.3 Knowledge of study participants on safety profiles of commonly used medicinal plants

This table (table 3) deduced from participants their knowledge of the safety profile of commonly used medicinal plants. Participants were asked how they would rate their understanding of the benefits associated with medicinal plants, and 67.4% and 6.4% rated their responses as very good and excellent, respectively, however, 6.2% rated their responses as poor.

3.4 Relationship between Sociodemographic factors and Practice of study participants on awareness of the safety profile of commonly used medicinal plants.

The association between the sociodemographic factors and the practice of study participants on commonly used medicinal plants was determined using chi-square analysis. There was a significant correlation between the practice of

patients on commonly used medicinal plants with respect to age (p = 0.00), gender (p = 0.00), education (p = 0.00), and occupation (p = 0.00), however, no significant correlation was observed with their marital status (p = 0.96) as shown in Table 4.

3.5 Association of Socio-demographic factors and Knowledge of study participants on safety profiles of commonly used medicinal plants

Chi-square analysis was used to determine the possible association between Socio-demographic factors and the Knowledge of study participants on the safety profiles of commonly used medicinal plants. In Table 5, there was a significant correlation between the knowledge of patients on commonly used medicinal plants with respect to age (p = 0.00), gender (p = 0.00), education (p = 0.02), and occupation (p = 0.03), however, their marital status (p = 0.06) recorded no significant correlation.

3.6 Rating of respondents' practice towards the use of medicinal plant

From Table 6, it was observed that 76.6% scored from 21 to 25, indicating high practice or usage of medicinal plants by respondents for the treatment of various diseases, however, only a few (5.4%) chose a scale of 1 to 5, indicating low usage of medicinal plants for disease treatment.

3.7 Rating of respondents' knowledge level on Safety Profiles of Commonly used Medicinal Plants

From the study, it was observed that most respondents did not have adequate knowledge of the safety profile of commonly used medicinal plants. 36.0% and 46.2% of participants scored 1-5 and 6-10, indicating low knowledge and moderate-low knowledge level. Only 5.6% of the total participants scored 21-25 indicating they had a high knowledge level on the safety profile of commonly used medicinal plants.

Table 1: Socio-demographic characteristics of study participants in the Walewale Municipal Hospital, Ghana.

Categories	Variables	Frequency	Percent
Gender	Male	375	75
	Female	125	25
Age	15-17	8	1.6
	18-24	24	4.8
	25-34	66	13.2
	35-44	113	22.6
	45-54	143	28.6
	55-64	108	21.6
	65 above	38	7.6
	Total	**500**	**100.0**
Education	No Education	196	39.2
	Primary	73	14.6
	Secondary	139	27.8
	Tertiary	92	18.4
	Total	**500**	**100.0**
Occupation	Student	49	9.8
	Retired	35	7.0
	Employed	43	8.6
	Unemployed	373	74.6
	Total	**500**	**100.0**
Marital Status	Widow	33	6.6
	Single	136	27.2
	Married	331	66.2
	Total	**500**	**100.0**

Source: Field Survey, 2025.

Table 2: The practice of study participants on commonly used medicinal plants.

Variables	Attributes	Frequency	Percent
Have you ever used medicinal plants	Yes	499	99.8
	No	1	0.2
	Total	**500**	**100.0**
How frequently do you use medicinal plants	Occasional	33	6.6
	Most Often	467	93.4
	Total	**500**	**100.0**
Have you experienced any adverse reactions or side effects from using any medicinal plants	Yes	98	19.6
	No	402	80.4
	Total	**500**	**100.0**
Have you experienced any improvement in your health after using medicinal plants	Yes	480	96.0
	No	20	4.0
	Total	**500**	**100.0**

Source: Field Survey, 2025.

Table 3: Knowledge of study participants on safety profiles of commonly used medicinal plants.

Variables	Attributes	Frequency	Percent
How would you rate your understanding of the benefits associated with medicinal plants	Poor	31	6.2
	Fair	38	7.6
	Good	62	12.4
	Very Good	337	67.4
	Excellent	32	6.4
	Total	**500**	**100.0**
Do you think medicinal plants can interact with conventional medicine	Yes	66	13.2
	No	434	86.8
	Total	**500**	**100.0**
Are you aware of the safety profiles of medicinal plants you commonly use?	Yes	126	25.2
	No	374	74.8
	Total	**500**	**100.0**

Source: Field Survey, 2025.

Table 4: Association on Socio-demographic factors and Practice of study participants on commonly used medicinal plants.

Categories	Variables	Yes	No	P value
Gender	Male	58	317	0.00
	Female	40	85	
	Total	**98**	**404**	**500**
Age	15-17	5	3	0.00
	18-24	8	16	
	25-34	30	36	
	35-44	29	84	
	45-54	13	130	
	55-64	9	99	
	65 above	4	34	
	Total	**98**	**402**	**500**
Education	No Education	56	140	0.00
	Primary	4	69	
	Secondary	16	123	
	Tertiary	22	70	
	Total	98	402	500
Occupation	Student	18	31	0.00
	Retired	9	26	
	Employed	9	34	
	Unemployed	62	311	
	Total	**98**	**402**	**500**

Marital Status	Widow	7	26	0.96
	Single	27	109	
	Married	64	267	
	Total	**98**	**402**	500

Source: Field Survey, 2024.

Table 5: Association on Socio-demographic factors and Knowledge of study participants on safety profiles of commonly used medicinal plants.

		Frequency		
Categories	**Variables**	**Yes**	**No**	**P value**
Gender	Male	116	259	0.00
	Female	10	115	
	Total	**126**	**374**	**500**
Age	15-17	0	8	0.00
	18-24	11	13	
	25-34	23	43	
	35-44	39	74	
	45-54	31	112	
	55-64	15	93	
	65 above	7	31	
	Total	**126**	**374**	**500**
Education	No Education	55	141	
	Primary	26	47	
	Secondary	27	112	0.02
	Tertiary	18	74	
	Total	**126**	**374**	
Occupation	Student	20	29	0.03
	Retired	2	33	
	Employed	9	34	
	Unemployed	95	278	
	Total	**126**	**374**	**500**
Marital Status	Widow	0	33	0.06
	Single	50	86	
	Married	76	255	
	Total	**126**	**374**	**500**

Source: Field Survey, 2024.

Table 6: Rating of respondents' practice towards the use of medicinal plant.

Variables (Practice)	**Scale**	**Frequency**	**Percent**
Low Practice	1-5	27	5.4
Moderate-Low Practice	6-10	26	5.2
Moderate Practice	11-15	42	8.4
Moderate-High Practice	14-20	22	4.4
High Practice	21-25	383	76.6
Total		**500**	**100.0**

Source: Field Survey, 2024.

Table 7: Rating of respondents' knowledge level on Safety Profiles of Commonly used Medicinal Plants.

Variables (Knowledge)	**Scale**	**Frequency**	**Percent**
Low Knowledge	1-5	180	36.0
Moderate-Low Knowledge	6-10	231	46.2
Moderate Knowledge	11-15	37	7.4
Moderate-High Knowledge	14-20	24	4.8
High Knowledge	21-25	28	5.6
Total		**500**	**100.0**

Source: Field Survey, 2024.

4.0 DISCUSSION

The findings from this study provide significant insights into the knowledge and practices surrounding the use of medicinal plants among patients in the Walewale Municipal Hospital, Ghana. The high prevalence of medicinal plant usage (99.8%) among participants reflects a continuation of traditional healthcare practices that are deeply rooted in many communities in Ghana and across Africa. Previous studies have echoed similar sentiments, highlighting that a significant proportion of the population relies on herbal medicine for various health concerns (Amunga et al., 2018; Akinmoladun & Olaniyi, 2020). The demographic characteristics of the participants revealed that a majority were male (75%) and largely unemployed (74.6%). Such findings align with the national trends in Ghana, where unemployment rates are particularly high among men, and a significant portion of the population lacks formal education (World Bank, 2020). The educational profile of the participants indicates that the majority (39.2%) had received no formal education, suggesting that traditional knowledge systems and local practices might play an essential role in their understanding and utilization of medicinal plants (Tizhe et al., 2019).

Interestingly, the results demonstrated that 93.4% of participants used medicinal plants primarily for treatment, indicating a proactive approach to health management utilizing available resources. This is consistent with findings from studies in Nigeria and Uganda where a high proportion of people reported using herbal remedies for self-care (Owolabi et al., 2021; Ekpo et al., 2020). The perception of most participants (80.4%) not experiencing adverse reactions underscores a broader narrative about the safety and efficacy of traditional medicine, although the 19.6% who reported adverse effects should not be overlooked. It underscores the importance of awareness and education on the potential risks associated with herbal therapies. Furthermore, an impressive 96.0% of participants acknowledged experiencing health improvements after using medicinal plants, reinforcing the perceived effectiveness of these treatments. This perception potentially validates the use of herbal medicine in their therapeutic regimen. The findings resonate with the work of Mahomoodally (2013), who noted that many patients believe in the efficacy of herbal treatments due to either a cultural belief system or favorable personal experiences.

In terms of knowledge of safety profiles, 67.4% of respondents rated their understanding of the benefits of medicinal plants as “very good” or “excellent.” This confidence in their knowledge may speak to cultural ownership of herbal practices and the transmission of knowledge through generations (Lozano et al., 2018). However, the 6.2% who rated their knowledge as poor highlights a gap that could benefit from targeted educational interventions. Enhancing understanding of both benefits and possible adverse reactions to medicinal plants should be prioritized by healthcare providers and local health authorities. This study also highlights the need for further research into the pharmacological properties and potential interactions of widely used medicinal plants, especially in light of the high usage rates. Studies have shown that while many plants have therapeutic potential, they may also interact negatively with conventional medications (Suleiman et al., 2020). Educating patients about these risks can promote a safer integration of herbal and conventional medicine and empower patients to make informed choices regarding their health.

The relationships observed between sociodemographic factors and the practices and knowledge surrounding the safety profiles of commonly used medicinal plants are crucial in understanding how these variables interact within the context of healthcare in Walewale Hospital, Ghana. The findings from this study indicate significant associations with age, gender, education, and occupation concerning both the practice of using medicinal plants and the knowledge of their safety profiles. The clear correlation between age and the practice of using medicinal plants ($p = 0.00$) reflects the

notion that older individuals may possess more extensive knowledge and experience regarding traditional herbal remedies. This finding is in line with previous research indicating that older generations are often more entrenched in traditional practices, leading them to rely heavily on herbal medicine for health issues (Ekor, 2014). In contrast, younger individuals may be more influenced by modern medical practices or may have limited exposure to traditional knowledge, which could explain the differences in usage patterns across age groups. Similar trends can be observed concerning gender, where males often dominate the realm of herbal medicine use in many African communities, reflecting gender roles prevalent in society. This study's finding of a significant correlation ($p = 0.00$) complements the arguments made by Rukangira (2008), who noted that males typically engage more in medicinal plant usage due to their roles as primary decision-makers within family health matters.

Education emerged as a critical factor influencing both the practice and knowledge of the safety profiles of medicinal plants. The chi-square analysis indicated a significant correlation ($p = 0.00$ for practice and $p = 0.02$ for knowledge). Higher educational levels often correlate with increased awareness of health issues, treatment alternatives, and potential side effects related to medicinal plants. This underscores the importance of integrating education about the benefits and risks of herbal medicines into the general health education curricula, as highlighted by Osei et al. (2019). Advancing education levels can empower patients to make more informed decisions about the use of herbal remedies, ensuring that they are adequately equipped to balance traditional practices with modern medical advice. The employment status of participants also showed a significant relationship ($p = 0.00$ for practice and $p = 0.03$ for knowledge) with their engagement with medicinal plants. Unemployment may lead individuals to rely on accessible and less costly herbal remedies, as financial constraints can limit access to conventional healthcare services. This trend is reflected in a study by Gbadamosi et al. (2021), which noted that individuals with limited financial resources tend to favor herbal options due to their availability and affordability. Interestingly, marital status did not show a significant correlation with either the practice of using medicinal plants or knowledge about their safety profiles ($p = 0.96$ for practice and $p = 0.06$ for knowledge). This lack of correlation suggests that marital status may not substantially influence the engagement with or understanding of medicinal plants amongst the population studied. It could be contended that the cultural and traditional beliefs surrounding health practices transcend marital status, with individuals deriving their beliefs about medicinal plants through communal learning rather than through spousal influence.

The evaluation of respondents' practices and knowledge regarding the use of medicinal plants at Walewale Municipal Hospital reveals significant trends that merit discussion. The prominent finding that 76.6% of respondents scored between 21 to 25 indicates a high level of practice and frequency of using medicinal plants for disease treatment. This aligns with broader literature indicating that traditional herbal medicine remains a critical component of health care for many individuals in Ghana and across Africa (Kagoya et al., 2019; Okunrobo & Adeyemo, 2020). The widespread belief in the efficacy of these plants, as suggested by the high utilization rates, underscores the cultural significance of herbal therapies in managing health and reflects a deep-rooted trust in traditional healing practices. Conversely, the low percentage (5.4%) of respondents scoring between 1 to 5 highlights a sizable minority that either seldom utilizes or may lack awareness of alternative treatments. This may point towards socioeconomic barriers or limited exposure to herbal knowledge, which could constrain the potential benefits that could be derived from medicinal plant usage (Cunningham, 2015). The diversity in practice levels indicates a spectrum of reliance on herbal medicine, warranting tailored educational interventions to enhance knowledge and practices across all demographics. Conversely, the ratings of respondents' knowledge levels regarding the safety profiles of widely used medicinal plants reveal a concerning

trend. The majority of participants (36.0% scoring 1-5 and 46.2% scoring 6-10) reported low to moderate knowledge about the safety profiles of these plants. This finding underscores a significant gap in understanding the potential benefits and risks associated with herbal remedies, echoing concerns in previous studies about the critical need for education on this aspect (Osei et al., 2019). The dissonance between high usage rates and low safety knowledge suggests that while many patients are actively engaging with herbal treatments, they may not be adequately informed about their safety profiles, potential side effects, or interactions with conventional medications. This warrants further emphasis on structured educational programs to improve patient awareness and ensure the safer use of herbal products. The stark contrast between the high level of practice and the low level of knowledge on safety profiles highlights a critical area for intervention. Healthcare providers, herbal practitioners, and policymakers need to collaborate to design and implement educational campaigns that promote safer practices and empower individuals with knowledge about the safety profiles of medicinal plants. Such initiatives could facilitate better health outcomes by aligning traditional practices with safe usage guidelines. Furthermore, these findings present an opportunity to investigate and document the safety profiles of commonly used plants. By doing so, the existing knowledge gap can be addressed, ultimately leading to a more informed patient population that integrates traditional and modern healthcare approaches effectively.

5.0 CONCLUSION

In summary, the study elucidates significant insights regarding the high prevalence of medicinal plant use among patients at Walewale Municipal Hospital, predominantly characterized by positive treatment outcomes and cultural reliance. However, it also uncovers a troubling lack of knowledge surrounding the safety profiles of these remedies, emphasizing the urgent need for educational initiatives to raise awareness. By addressing these gaps, healthcare systems can integrate traditional practices more safely and effectively, enhancing the overall healthcare experience for patients who rely on both conventional and herbal treatments.

Data Availability

The data used to support the findings of this study are available within the article.

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Authors' Contributions

Conceptualization and methodology: Frederick Sarfo-Antwi and Yakubu Sulley. Formal analysis and investigation: Frederick Sarfo-Antwi, Daniel Seifu and Yakubu Sulley. Writing of the original draft, review, and editing: Frederick Sarfo-Antwi, Michael Boah and Christopher Larbie. All authors approved the final manuscript.

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Declaration of Conflicting Interests

The authors do not have any conflict of interest.

Ethical statements

The study was approved by the University for Development Studies Institutional Review Board (UDSIRB) with an ethically approved number of UDSIRB/150/24.

Informed Consent Statement

The conduct of the study followed the guidelines set by the Committee for Monitoring and Control of Human Experimentation's guidelines. Protocols for all human experiments were verified and approved by the ethical committee.

6.0 REFERENCES

1. Aworh, N. K., Nwankwo, I. J., & Falade, A. Prevalence of herbal medicine use among patients attending selected health facilities in Nigeria: Implications for pharmacy practice. International Journal of Pharmacy Practice,v; 24(5): 331-335.
2. Bussmann, R. W., & Glenn, A. Ethnobotany in the Americas: 100 years of research. Ethnobotany Research and Applications, 2010; 8: 1-13.
3. Cameron, M., & Jackman, L. Botanical toxicity: The hidden danger in herbal remedies. Drug Safety, 2016; 39(7): 533-540.
4. Kebede, R., Liyew, E. K., & Shumet, A. Trends and patterns of herbal medicine use for healthcare among rural communities in Ethiopia. BMC Complementary and Alternative Medicine, 2018; 18(1): 158.
5. Osei-Safo, B., Adams, A. B., & Kyei, S. Assessing the prevalence and associated factors of herbal medicine use among patients at community pharmacies in Ghana: A cross-sectional study. BMC Pharmacology and Toxicology, 2020; 21(1): 42.
6. Cunningham, A. B. (2015). Applied Ethnobotany: People, Wild Plant Use and Conservation. Earthscan.
7. Kagoya, H. S., Mabuza, L. H., & Obuku, E. Perceptions and Practices of Herbal Medicine Among Patients Attending Clinics in Uganda. BMC Complementary Medicine and Therapies, 2019; 19(1): 60.
8. Okunrobo, L. O., & Adeyemo, S. O. Knowledge and Use of Herbal Medicine Among Patients Attending a Tertiary Hospital in Nigeria. Journal of Young Pharmacists, 2020; 12(3): 227-232.
9. Osei, A. F., Appiah, V., & Yeboah, A. The Role of Education in the Use of Herbal Medicine Among Different Age Groups. Journal of Ethnopharmacology, 2019; 234: 189-196.
10. Akinmoladun, O. F., & Olaniyi, T. A. Utilization of Herbal Medicines Among Cancer Patients Attending the Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife. Nigerian Journal of Medicine, 2020; 29(3): 184-190.
11. Amunga, E. A., Njagi, J., & Mwobobia, I. Challenges and Strategies in Herbal Medicine Utilization: A Review. Journal of Medicinal Plants Research, 2018; 12(31): 378-385.
12. Ekpo, M., Ibeneme, S. C., & Ugochukwu, D. E. Prevalence and Pattern of Herbal Medicine Use Among Patients in a Tertiary Health Institution in Southeastern Nigeria. International Journal of Herbal Medicine, 2020; 9(1): 15-19.
13. Lozano, A. J., Piñeros, M., & Goycoolea, F. M. Traditional Herbal Medicine: A Global Perspective on the Practice and the Framework of Integration into Health Systems. PLOS ONE, 2018; 13(6): e0198473.
14. Mahomoodally, M. F. (2013). Traditional Medicines in Africa: An Overview

15. Akinmoladun, O. F., & Olaniyi, T. A. Utilization of Herbal Medicines Among Cancer Patients Attending the Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife. Nigerian Journal of Medicine, 2020; 29(3): 184-190.
16. Cunningham, A. B. (2015). Applied Ethnobotany: People, Wild Plant Use and Conservation. Earthscan.
17. Mahomoodally, M. F. Traditional Medicines in Africa: An Overview. Frontiers in Pharmacology, 2013; 4: 1-10.
18. Owolabi, O. J., Akintola, A. A., & Olatunji, L. A. Perception of Herbal Medicine Among Patients in a Tertiary Hospital in Nigeria. Journal of Traditional and Complementary Medicine, 2021; 11(2): 178-185.
19. Osei, A. F., Appiah, V., & Yeboah, A. The Role of Education in the Use of Herbal Medicine Among Different Age Groups. Journal of Ethnopharmacology, 2019; 234: 189-196.
20. Rukangira, E. Gender, Traditional Medicine and Cultural Treatment Practices in Africa. ISHS Acta Horticulturae, 2008; 800: 153-162.
21. Suleiman, M. M., Adesanya, S. A., & Suru, S. J. Safety Issues in the Use of Herbal Medicines Among Patients: A Review. Journal of Herbal Medicine, 2020; 20: 100–
22. Ekor, M. The Growing Problem of Herbal Medicine. Frontiers in Pharmacology, 2014; 5: 1-8.
23. Gbadamosi, T. A., Jibiri, N. N., & Akinsanya, A. The Relationship Between Income and Utilization of Herbal Medicines in a Rural Community. BMC Complementary Medicine and Therapies, 2021; 21(69).
24. Osei, A. F., Appiah, V., & Yeboah, A. The Role of Education in the Use of Herbal Medicine Among Different Age Groups. Journal of Ethnopharmacology, 2019; 234: 189-196.
25. Rukangira, E. Gender, Traditional Medicine and Cultural Treatment Practices in Africa. ISHS Acta Horticulturae, 2008; 800: 153-162.