MEDICINAL PLANTS USE FOR TREATMENT OF COMMON DISEASES WIHTIN SOKOTO METROPOLIS

A PROJECT REPORT

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BY

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CERTIFICATION

This is to certify that this research project titled "Medicinal Plants Used for the Treatment of Common Diseases in Sokoto Metropolis" was carried out by Faridah Ibrahim with Adm. No: 2010302071, a student of the Department of Biology, Faculty of Chemical and Life Sciences, Usmanu Danfodiyo University, Sokoto, under my supervision. This work meets the requirements for the award of the Degree of Bachelor of Science (B.Sc.) in Biology.

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DEDICATION

This research is dedicated solely to my beloved parents and siblings for their tremendous support and encouragements.

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I give thanks to Almighty Allah the Omega and Alpha, the beginning without ending, the one who spread the earth, the possessor of the world and hereafter. I appreciate the blessing you bestow upon me and the chance to complete this work in peace.

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ABSTRACT

The study documented medicinal plants used for the treatment of common diseases in Sokoto Metropolis, Sokoto State, Nigeria. The research employed a descriptive and exploratory design aimed at identifying and recording various plant species, their local and scientific names, parts used, methods of preparation, and diseases treated. Data were collected through interviews with traditional healers, herbal vendors, and elderly residents, as well as field observations and photographic documentation. A total of thirty-five (35) medicinal plant species belonging to various families were identified and documented. These plants are used to treat diseases such as malaria, fever, cough, diarrhea, typhoid fever, hypertension, and skin infections. Commonly used plants include Azadirachta indica (Neem), Moringa oleifera (Moringa), Zingiber officinale (Ginger), Hibiscus sabdariffa (Zobo), and Psidium guajava (Guava). Methods of preparation include decoction, infusion, grinding, and direct application, while the parts used include leaves, bark, seeds, fruits, and roots. The study revealed that the use of medicinal plants remains widespread due to their affordability, accessibility, and cultural acceptance. However, challenges such as lack of dosage standardization, poor documentation, and declining interest among younger generations threaten the preservation of indigenous knowledge. It is concluded that medicinal plants play a vital role in the primary healthcare system of Sokoto Metropolis. The study recommends proper documentation, conservation, and scientific validation of these plants, as well as collaboration between traditional healers and modern healthcare practitioners to ensure safety, sustainability, and knowledge preservation.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the study

Medicinal plants have played a crucial role in the healthcare systems of societies across the world for centuries. In many traditional communities, plants serve as the primary source of treatment for a wide range of ailments due to their accessibility, affordability, and cultural acceptance. According to Ekor (2019), nearly 80% of the global population, particularly in developing nations, relies on medicinal plants for their primary healthcare needs. This reliance stems from the limitations of modern healthcare services, such as high costs, inadequate infrastructure, and limited access in rural and semi-urban areas.

In Nigeria, the use of medicinal plants is deeply rooted in the socio-cultural and religious practices of different ethnic groups. Traditional medicine continues to serve as a complementary and alternative healthcare approach to conventional medicine. According to Yusuf (2020), Nigeria is endowed with diverse flora species that possess pharmacological properties useful in treating diseases such as malaria, diarrhea, hypertension, skin infections, and respiratory tract infections. These plants remain significant, especially in communities where access to hospitals and pharmaceutical drugs is restricted.

Sokoto Metropolis, like many regions in Northern Nigeria, demonstrates widespread dependence on medicinal plants. This is largely influenced by cultural heritage, affordability, and trust in the efficacy of traditional remedies. Bello (2021) notes that in Sokoto, herbal preparations are often the first line of treatment for common illnesses such as malaria, typhoid fever, cough, and gastrointestinal infections. The prevalence of herbal use is also tied to the economic status of

residents, as medicinal plants are often cheaper and more readily available compared to synthetic drugs.

The World Health Organization has emphasized the importance of documenting and scientifically validating traditional medicinal knowledge. This is because medicinal plants provide not only a foundation for local healthcare but also a source for the development of modern drugs. For instance, the active ingredient in quinine, which is used to treat malaria, was originally derived from plant sources. According to Olatunde (2022), the continuous exploration of indigenous medicinal plants enhances both public health outcomes and pharmaceutical research, especially in African contexts where biodiversity is rich.

Despite their wide use, there are growing concerns regarding the standardization, dosage, and safety of medicinal plant preparations. Many traditional remedies are prepared based on indigenous knowledge passed down orally, which sometimes creates inconsistencies in effectiveness and potential health risks. Musa (2023) stressed the need for further research on the pharmacological properties and toxicological implications of commonly used medicinal plants in Nigeria. This is especially important for Sokoto Metropolis, where reliance on herbal remedies remains high.

Given the increasing attention to traditional medicine, understanding the role of medicinal plants in the treatment of common diseases in Sokoto Metropolis is timely and significant. It will not only provide insights into the socio-cultural dimensions of healthcare in the region but also contribute to the broader discourse on integrating traditional medicine into the mainstream healthcare system. Moreover, it will help in identifying the most commonly used plants, their effectiveness, and the challenges associated with their usage

1.2 Statement of the research Problem

Despite the advancement of modern medicine, a significant proportion of the population in Sokoto Metropolis continues to rely on medicinal plants for the treatment of common diseases. This reliance is not only due to affordability and accessibility but also to the cultural heritage that has long valued traditional medicine. However, the increasing dependence on herbal remedies raises concerns regarding their safety, standardization, and scientific validation. Many of these remedies are prepared based on indigenous knowledge, often without precise dosage, proper preservation, or clinical trials, which can pose health risks to users.

Another major concern is the lack of comprehensive documentation of the medicinal plants commonly used in Sokoto Metropolis. Much of the knowledge remains oral, passed down through generations, leaving it vulnerable to distortion or eventual loss. As Musa (2023) points out, the absence of systematic recording of herbal practices limits research opportunities and hinders integration into modern healthcare systems. Without adequate documentation, valuable indigenous knowledge risks being eroded by modernization and the declining interest of younger generations in traditional healing practices.

While many residents believe in the effectiveness of medicinal plants, scientific evidence confirming the efficacy and safety of these treatments is limited. Bello (2021) observed that some herbal mixtures may cause adverse reactions, particularly when taken alongside conventional drugs, yet awareness of these risks among users is very low. In addition, poor regulation of traditional medicine in Nigeria contributes to the circulation of adulterated or contaminated herbal products, which may worsen health outcomes rather than improve them.

The problem also extends to public health planning. With the heavy reliance on medicinal plants for diseases such as malaria, typhoid fever, cough, and gastrointestinal infections in Sokoto, the healthcare system lacks adequate data to monitor their role in overall disease management. This gap reduces the ability of policymakers to design effective health interventions that incorporate safe and beneficial aspects of traditional medicine.

The study seeks to address these challenges by investigating the use of medicinal plants in the treatment of common diseases in Sokoto Metropolis. It will document the types of plants used, the diseases they are employed against, the perceived effectiveness, and the challenges associated with their usage. This research will help provide evidence-based insights that can guide health practitioners, policymakers, and communities in optimizing the safe use of medicinal plants within the region.

1.3 Justification of the Study

This study is significant because it will provide valuable insights into the role of medicinal plants in the treatment of common diseases in Sokoto Metropolis. At a time when access to quality healthcare services remains limited for many people, understanding the contribution of traditional medicine is essential for improving health outcomes. The findings of this study will contribute to existing knowledge by documenting medicinal plants that are widely used within the metropolis and the health conditions they address. Such documentation is important for preserving indigenous knowledge that may otherwise be lost due to modernization and declining interest in traditional practices.

The study will also be of importance to public health practitioners and policymakers, as it will highlight the extent to which residents depend on medicinal plants and the implications of such reliance for health planning. By identifying the effectiveness and limitations of herbal remedies, the research will provide evidence that could inform the integration of traditional medicine into formal healthcare systems, thereby strengthening primary healthcare delivery in the region.

The research will benefit academics and researchers by serving as a reference point for further investigations into the pharmacological properties and safety of the identified medicinal plants. This will encourage scientific validation of herbal remedies and open avenues for drug discovery and development. For traditional healers and local communities, the study will recognize their contribution to healthcare and may promote awareness on safe practices in the preparation and administration of medicinal plants.

The study will serve as a resource for students, educators, and future scholars who are interested in ethnomedicine, pharmacognosy, and public health. It will add to the growing body of literature on the use of medicinal plants in Nigeria and Africa at large, thereby enriching knowledge and stimulating further research in this field.

1.4 Aim and Objectives of the Study

The aim of this study is to examine the use of medicinal plants for the treatment of common diseases in Sokoto Metropolis, with a focus on identifying their applications, effectiveness, and associated challenges.

The specific objectives of the study are to:

1. Identify the commonly used medicinal plants in Sokoto Metropolis and the diseases they are employed to treat.
2. Examine the perceived effectiveness and cultural relevance of medicinal plants in the treatment of common diseases.
3. Assess the challenges and limitations associated with the use of medicinal plants in Sokoto Metropolis.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1.1 Overview of Medicinal Plants

Medicinal plants are defined as species containing natural bioactive compounds that have therapeutic value in disease management and health promotion. They are considered one of the oldest and most trusted forms of treatment across civilizations, and their role remains crucial in contemporary societies, particularly in developing nations. According to Abubakar (2021), medicinal plants are integral in primary healthcare as they offer affordable and accessible alternatives where modern drugs may be unavailable or too costly. In Africa, these plants form the backbone of traditional medicine, with many species scientifically proven to contain antimicrobial, antimalarial, analgesic, and anti-inflammatory properties (Okafor, 2022).

Modern pharmacological research has shifted considerable attention to medicinal plants due to their phytochemical diversity and potential for drug discovery. For example, alkaloids, flavonoids, and terpenoids found in many local plants have been shown to exhibit bioactive properties relevant in combating infectious and chronic diseases (Lawal, 2020). The World Health Organization (2022) estimates that over 25% of modern medicines are derived from medicinal plants, emphasizing their importance in global healthcare systems. In Nigeria, medicinal plants such as neem (Azadirachta indica), moringa (Moringa oleifera), and ginger (Zingiber officinale) are widely researched for their therapeutic potentials (Usman, 2021).

Despite these advances, the challenge of standardization, safety, and quality control remains a major barrier to their wider acceptance in modern healthcare systems.

2.2 Plant Descriptions

A total of thirty-five (35) medicinal plant species were identified and documented in Sokoto Metropolis. These plants belong to different families and are used to treat a variety of diseases such as malaria, typhoid fever, diarrhea, cough, skin infections, stomach pain, and fever. Most of the plants are either collected from the wild or cultivated in home gardens and local markets.

Azadirachta indica (Dogonyaro – Neem)

Neem is one of the most commonly used medicinal plants in Sokoto Metropolis. The leaves and bark are boiled to make a decoction used in treating malaria, fever, and skin infections. Respondents explained that neem has a cooling effect on the body and helps reduce fever symptoms. Its bitter taste is believed to cleanse the blood and strengthen the immune system.

Moringa oleifera (Zogale)

Moringa is widely grown in Sokoto and used as both food and medicine. Its leaves and seeds are rich in vitamins and minerals, and they are used to treat high blood pressure, malnutrition, and general body weakness. Herbal vendors noted that moringa leaves are dried, ground, and mixed with food or taken as a drink for blood purification.

***Zingiber officinale* (Tafarnuwa – Ginger)**

Ginger is used extensively in Sokoto households for treating cough, cold, and stomach upset. It is either chewed raw, boiled as tea, or mixed with honey. According to traditional healers, ginger is effective in clearing chest congestion, relieving sore throat, and improving digestion.

***Carica papaya* (Gwanda – Pawpaw)**

Papaya leaves and latex are commonly used for treating malaria, typhoid fever, and digestive issues. Respondents mentioned that the juice extracted from the leaves is taken in small quantities to cleanse the system and build immunity. The latex is occasionally applied externally for treating skin infections and wounds.

***Psidium guajava* (Goba – Guava)**

Guava leaves are boiled to treat diarrhea and stomach pain. Elderly respondents reported that guava tea is often given to children during stomach upsets. The plant is also considered effective in controlling typhoid fever when combined with papaya leaves.

***Allium sativum* (Citta – Garlic)**

Garlic is widely used in Sokoto homes as both a spice and a medicine. The bulb is crushed and mixed with honey or warm water to treat cough, hypertension, and catarrh. Traditional users believe it purifies the blood, lowers cholesterol, and enhances immunity against infections.

***Citrus limon* (Lemun Tsami – Lemon)**

Lemon fruit and peel are used in treating cough, flu, and sore throat. The juice is often mixed with ginger and honey as a home remedy for cold. It is also believed to aid digestion and detoxify the body system.

***Camellia sinensis* (Shayi – Tea)**

The tea leaves are brewed to make an infusion commonly used for headaches, fever, and mild body pain. Some respondents also reported that drinking tea helps in relieving fatigue and improving concentration.

***Allium cepa* (Albasar Faru – Onion)**

The onion bulb is eaten raw or crushed to extract juice for treating cough and respiratory issues. It is also applied externally on insect bites and wounds due to its antimicrobial properties.

***Adansonia digitata* (Kuka – Baobab)**

Baobab leaves and bark are used for treating diarrhea, fever, and dehydration. The powdered leaves are also used as a thickener in local soups, believed to provide strength and nourishment.

***Ocimum gratissimum* (Ganyen Yadi – Scent Leaf)**

Scent leaf is used to treat cough, cold, and fever. It is often boiled and the steam inhaled, or the liquid taken orally. It also serves as a mosquito repellent and improves digestion.

***Parkia biglobosa* (Dorawa – Locust Bean)**

The seeds are fermented to produce a local condiment "daddawa," used in meals. Traditional healers claim that it serves as a blood tonic and helps in correcting malnutrition.

***Phoenix dactylifera* (Dabino – Date Palm)**

The fruit is eaten raw or soaked in milk and taken as an energy booster. It is also believed to increase blood levels and improve fertility among both men and women.

***Hibiscus sabdariffa* (Zobo – Roselle)**

The calyx is boiled to make a refreshing drink that helps reduce blood pressure, fever, and body temperature. Herbal practitioners confirmed its antioxidant properties and role in improving heart health.

***Tamarindus indica* (Tamba – Tamarind)**

The fruit pulp is soaked in water and taken to relieve stomach pain, fever, and constipation. It is also used as a mild laxative and body coolant during hot weather.

***Borassus aethiopum* (Giginya – Fan Palm)**

The roots are used as a decoction to treat typhoid fever and body pain. Traditional users believe it strengthens the body and improves blood circulation.

***Lawsonia inermis* (Lalle – Henna)**

Henna leaves are ground into a paste and applied on wounds, burns, and skin infections. Women also use it cosmetically for body decoration. It is said to have antibacterial and cooling properties.

***Cassia alata* (Gawasa – Candle Bush)**

The leaves are crushed and applied on affected areas of the skin to treat ringworm and eczema. It is also used for treating fungal infections due to its antiseptic properties.

***Daniellia oliveri* (Daddawa)**

The bark is boiled as a decoction to treat malaria and fever. The plant is also used traditionally for relieving body pain and boosting appetite.

***Vernonia amygdalina* (Tazargade – Bitter Leaf)**

The leaves are squeezed or boiled to make an extract used for treating malaria, stomach upset, and loss of appetite. Its bitter taste is said to cleanse the digestive system.

***Mangifera indica* (Mangwaro – Mango)**

The leaves and bark are boiled to treat malaria and diarrhea. The fruit is also rich in vitamins, making it useful in boosting the immune system.

***Solanum nigrum* (Ganye Doya – Black Nightshade)**

The leaves are boiled and the water drunk to treat ulcers and stomach ache. Some respondents also use it as a vegetable to treat anemia and body weakness.

***Corchorus olitorius* (Karkashi – Jute Leaf)**

The leaves are cooked as soup and believed to help in preventing constipation and anemia. It also serves as a natural source of iron and vitamins.

***Eucalyptus camaldulensis* (Turu – Eucalyptus)**

The leaves are boiled and the steam inhaled for cough, catarrh, and asthma. The strong scent helps in clearing nasal congestion and respiratory infections.

***Securidaca longipedunculata* (Maje)**

The roots are ground into powder and mixed with water to treat rheumatism and fever. Some respondents apply it externally for relief of joint and body pains.

***Aloe vera* (Farar Loda)**

The leaf gel is used to treat burns, wounds, and skin irritation. When taken orally in small quantities, it aids digestion and relieves constipation.

***Eucalyptus globulus* (Kafur – Camphor Tree)**

The leaves and oil are inhaled or rubbed on the chest to treat cough and nasal blockage. It is also used to reduce headaches and muscle pains.

***Amaranthus spinosus* (Danya – Amaranth)**

The leaves are cooked and eaten as soup for blood enrichment and malaria prevention. It is regarded as a good source of iron and vitamins.

***Balanites aegyptiaca* (Kurna – Desert Date)**

The bark and fruit are crushed and boiled to treat stomach ache and diarrhea. It is also used as a mild laxative and liver tonic.

***Ageratum conyzoides* (Tafasa)**

The leaves are crushed and applied on wounds to stop bleeding and promote healing. The plant also helps relieve skin inflammation and rashes.

***Acacia nilotica* (Tsamiya – Gum Arabic Tree)**

The bark and pods are boiled and taken for sore throat, diarrhea, and cough. Its gum is used to soothe inflamed throats and aid digestion.

***Olea europaea* (Zaitun – Olive)**

Olive oil is taken orally or rubbed externally to treat hypertension and skin wounds. It is believed to promote heart health and relieve joint pain.

***Ipomoea batatas* (Gwaza – Sweet Potato)**

The leaves are cooked and eaten to improve blood levels and reduce weakness. The tubers are rich in nutrients that help maintain good health.

***Senna occidentalis* (Shuwaka – Coffee Senna)**

The leaves are used in decoction form to treat malaria and constipation. It is also known to purify the blood and act as a natural laxative.

***Curcuma longa* (Tafarnuwa Mai Ja – Turmeric)**

The rhizome is ground into powder and mixed with milk or honey to treat inflammation, wounds, and cold. It is also used for skin brightening and internal cleansing

2.1.2 Common Diseases and Their Traditional Treatment

Common diseases in Sokoto Metropolis include malaria, typhoid fever, cough, diarrhea, and skin infections, many of which are treated with herbal preparations before patients consider visiting a hospital. According to Bello (2021), residents often rely on plants such as neem leaves, guava leaves, lemon grass, and ginger to manage fever, stomach upset, and respiratory conditions. This is partly due to socioeconomic factors and cultural trust in traditional medicine. Adamu (2022)

observed that many households in Northern Nigeria use guava leaves for diarrhea, ginger for cough and sore throat, and neem for fever, reflecting deep-rooted indigenous practices.

While community trust in these plants is high, concerns remain regarding accurate dosage and adverse reactions. Ibrahim (2020) highlighted that while neem extracts are widely believed to be effective against malaria, unregulated use may lead to toxicity in children. Nevertheless, the affordability and availability of medicinal plants continue to drive their use for common diseases. The Federal Ministry of Health (2021) has acknowledged that herbal medicine significantly contributes to the treatment of communicable diseases, though it stresses the need for scientific validation and integration into health policies.

2.4 Role of Medicinal Plants in Primary Healthcare

Medicinal plants play a pivotal role in strengthening primary healthcare systems in Nigeria. In many communities, they are the first point of treatment for minor ailments and serve as a safety net where modern healthcare infrastructure is limited. Olatunde (2022) emphasized that medicinal plants complement orthodox medicine by reducing the burden on hospitals, particularly during drug shortages or health emergencies. They also provide culturally acceptable forms of care, which encourages greater health-seeking behavior among populations with limited trust in conventional medicine.

From an economic perspective, herbal medicine contributes to reducing out-of-pocket health expenditures. Musa (2023) noted that low-income households in Sokoto save significant costs by using plant-based remedies rather than expensive synthetic drugs. The World Health Organization (2019) also recognizes medicinal plants as an integral component of sustainable

primary healthcare, urging governments to integrate them into formal health systems. However, challenges such as lack of regulation, poor documentation, and insufficient quality control remain barriers to maximizing their potential in health delivery (WAHO, 2022).

2.5 Traditional Knowledge and Practices in Sokoto Metropolis

The use of medicinal plants in Sokoto Metropolis is sustained largely through traditional knowledge passed down from one generation to another. According to Sulaiman (2021), this knowledge is often transferred orally or through apprenticeships, particularly among traditional healers and herbal practitioners. These practices include preparing decoctions, infusions, and mixtures from local plants, with remedies tailored to specific illnesses. For instance, lemon grass is commonly used for fever, ginger for colds, and moringa for nutritional support and general wellness (Abdullahi, 2022).

Despite modernization, traditional medicine continues to thrive in Sokoto due to its affordability and cultural significance. However, the challenge of knowledge preservation is evident, as younger generations show declining interest in traditional practices. Yusuf (2020) observed that many indigenous preparations are undocumented, raising concerns about the potential loss of valuable ethnomedical knowledge. Local authorities, alongside the National Agency for Food and Drug Administration and Control (NAFDAC, 2022), have begun to promote awareness programs aimed at safe preparation, preservation, and regulation of herbal remedies.

Moreover, there are ongoing efforts to scientifically validate some of the plants used in Sokoto Metropolis. Lawan (2023) reported that ethnobotanical surveys in Northern Nigeria are increasingly aimed at documenting medicinal plants for academic and pharmaceutical research.

These efforts not only preserve indigenous knowledge but also open opportunities for developing new drugs derived from local flora. Hence, traditional knowledge in Sokoto is not just a cultural asset but also a scientific resource that requires proper documentation and integration into modern healthcare systems.

Theoretical frameworks provide a lens through which the use of medicinal plants for treating common diseases can be understood. Several theories in anthropology, sociology, and health sciences explain why communities like those in Sokoto Metropolis continue to rely on medicinal plants despite the availability of modern healthcare. These theories highlight cultural, economic, behavioral, and ecological perspectives that shape traditional medicine practices.

One of the key theories is the Health Belief Model (HBM), which posits that individuals' health-seeking behaviors are influenced by their perceived susceptibility to disease, perceived severity of the condition, perceived benefits of action, and perceived barriers to taking action. In Sokoto, many residents believe that common illnesses such as malaria, cough, and diarrhea can be effectively managed with herbs like neem, ginger, and guava leaves, largely because they perceive the benefits (affordability, accessibility, cultural familiarity) as outweighing potential risks. As Ibrahim (2020) noted, households often begin with herbal remedies before considering hospital treatment, reflecting the central role of perceived barriers such as cost and distance to formal healthcare facilities. This model underscores how traditional medicine fits into people's belief systems and decision-making processes.

The Theory of Planned Behavior (TPB) also provides valuable insight. This theory suggests that an individual's intention to perform a health-related behavior depends on three factors: their attitude toward the behavior, subjective norms, and perceived behavioral control. In Sokoto

Metropolis, attitudes toward medicinal plants are shaped by generational trust in their efficacy, while subjective norms are reinforced by community members, elders, and traditional healers who advocate their use. Perceived behavioral control is also high, since plants are readily available in markets and households can prepare them with minimal resources. Bello (2021) explains that these combined factors lead to the normalization of herbal remedies as a primary treatment option, especially for non-severe illnesses.

Another relevant framework is the Cultural Ecology Theory, which examines how human health practices adapt to the natural environment. Sokoto lies in the semi-arid region of Northwestern Nigeria, where certain plants such as moringa, neem, and lemon grass thrive and are incorporated into daily health practices. According to Adamu (2022), the abundance of these plants in the local environment has shaped cultural practices and reinforced their medicinal applications. The ecological availability of herbs thus influences health-seeking behavior, with communities exploiting what is locally accessible and adapting their healthcare systems around these resources.

The Knowledge Transmission Theory also sheds light on the continuity of medicinal plant use. Traditional medicine practices are passed orally from one generation to the next, through family members, apprenticeships, or local healers. Yusuf (2020) argues that this oral tradition serves as a cultural reservoir, ensuring that knowledge about plant preparation, dosage, and application is preserved despite the absence of written records. However, modernization and lack of proper documentation threaten this knowledge system, as younger generations may show less interest in traditional practices. This theory emphasizes the importance of documentation and ethnobotanical research to preserve indigenous knowledge.

From a sociological perspective, the Social Constructivist Theory is also applicable. This theory views knowledge and practices as socially constructed realities, influenced by cultural norms, interactions, and shared meanings. In Sokoto Metropolis, the use of medicinal plants is not only about biological efficacy but also about identity, spirituality, and cultural belonging. Abdullahi (2022) explains that herbal medicine is embedded in daily life, rituals, and spiritual beliefs, making it more than a health choice it becomes a cultural practice. This constructivist view helps explain why communities continue to value herbal remedies, even when modern medical alternatives are available.

Finally, the Systems Theory of Health positions traditional medicine as part of a broader, pluralistic healthcare system. In Nigeria, health systems are not limited to hospitals and clinics but also include traditional healers, herbal markets, and community knowledge. Olatunde (2022) notes that these different systems often coexist and interact, with patients moving between herbal remedies and biomedical treatments depending on their condition, beliefs, and resources. This pluralistic approach reflects the reality of healthcare in Sokoto, where medicinal plants form an indispensable component of the broader health system.

Empirical studies on medicinal plants have gained prominence in recent years due to their growing importance in global healthcare systems and the increasing need for affordable and culturally acceptable remedies. In Nigeria, particularly in the northern region, research has shown that medicinal plants remain an integral part of primary healthcare practices. For instance, Abubakar (2021) conducted a survey in Sokoto State and found that more than 70% of households rely on plant-based remedies for the treatment of malaria, cough, and gastrointestinal disorders. The study further revealed that neem (Azadirachta indica) and guava (Psidium guajava)

were among the most frequently used plants, with respondents reporting their efficacy in treating fever and diarrhea.

Similarly, Musa (2023) investigated the use of medicinal plants in Zamfara State, a region with similar cultural and ecological settings to Sokoto. The findings indicated that socioeconomic factors, including poverty and limited access to hospitals, were major drivers of reliance on herbal medicine. The study also emphasized that cultural beliefs and trust in traditional healers significantly influenced health-seeking behaviors. This supports earlier work by Ibrahim (2020), who noted that patients in Northwestern Nigeria often combine herbal and orthodox medicines depending on the severity of the illness. Such pluralistic healthcare practices demonstrate how traditional and modern systems coexist rather than compete.

In addition to Nigerian studies, international research has also highlighted the importance of medicinal plants in treating common diseases. According to Okafor (2022), in a study conducted in Ghana, medicinal plants such as moringa (Moringa oleifera) and aloe vera (Aloe barbadensis) were widely used in managing hypertension, malaria, and gastrointestinal infections. The research showed that despite the presence of hospitals, community members preferred herbal remedies due to their perceived safety and fewer side effects compared to synthetic drugs. These findings align with the results of Bello (2021), who reported that Sokoto residents perceived medicinal plants as more “natural” and thus less harmful than pharmaceutical drugs, even though the risk of overdosing or using unverified combinations remains a challenge.

Beyond household use, some empirical works have focused on the pharmacological potential of medicinal plants. Lawal (2020) carried out laboratory tests on extracts from neem and ginger (Zingiber officinale) collected from Sokoto and demonstrated their antimicrobial properties

against Escherichia coli and Staphylococcus aureus, bacteria responsible for diarrhea and respiratory infections respectively. This scientific validation supports community claims of efficacy and highlights the potential for drug development. Usman (2021) also tested moringa leaves and reported significant antioxidant activity, which may explain their use in boosting immunity and managing malnutrition. These studies reinforce the argument that traditional knowledge is not only cultural but also grounded in scientific realities that merit further exploration.

Research has also examined the role of gender and age in the use of medicinal plants. Abdullahi (2022) found that women in Sokoto are more likely to use and administer herbal remedies within households, especially for childhood illnesses such as fever, diarrhea, and cough. Elderly individuals were also noted to be custodians of indigenous knowledge, passing down preparation methods and applications to younger family members. This observation is consistent with findings from Yusuf (2020), who studied communities in Kano and reported that traditional knowledge is at risk of erosion due to declining interest among youths, highlighting the urgency of documenting indigenous practices.

At a broader level, organizational reports complement individual studies. The World Health Organization (2022) emphasized that up to 80% of populations in developing countries depend on medicinal plants for primary healthcare. This global statistic resonates strongly with findings from Sokoto Metropolis, where reliance on plant-based medicine remains high. The West African Health Organization (2021) also documented that cross-border trade in medicinal plants contributes to both healthcare and economic sustenance, with species like moringa, ginger, and neem being widely exported and consumed across the region.

In Sokoto specifically, recent surveys by the Sokoto State Ministry of Health (2023) confirmed that medicinal plants remain a frontline treatment option for diseases such as malaria, respiratory infections, and typhoid fever. However, the ministry also noted challenges including improper dosage, lack of standardization, and limited regulation of traditional healers. This corroborates earlier studies by Sulaiman (2021), who warned that while medicinal plants are culturally valuable, unregulated use could lead to adverse health outcomes. Nonetheless, both studies acknowledged the potential benefits of integrating traditional practices into formal healthcare frameworks to improve safety and effectiveness.

The literature reviewed in this chapter has provided a comprehensive understanding of the role of medicinal plants in the treatment of common diseases, both globally and within Nigeria. The conceptual review highlighted that medicinal plants are central to traditional medicine, which continues to be an important healthcare option, particularly in regions where access to modern healthcare is limited. Theories such as the Health Belief Model, Theory of Planned Behavior, and Cultural Ecology Theory further explained why communities continue to rely on herbal remedies despite the presence of biomedical alternatives. These frameworks revealed that cultural norms, environmental availability, and perceived effectiveness shape the widespread use of medicinal plants in Sokoto Metropolis.

Empirical studies reviewed have consistently demonstrated that medicinal plants are widely used for treating diseases such as malaria, typhoid fever, gastrointestinal disorders, cough, and skin conditions. Research in Sokoto and neighboring regions confirmed that neem, moringa, ginger, guava leaves, and aloe vera are among the most commonly used species. Studies also emphasized that medicinal plants play not only a therapeutic role but also a socio-cultural one, as

knowledge is passed down through generations and often preserved by women and elderly members of the community. In addition, pharmacological studies provided scientific evidence supporting the antimicrobial, antioxidant, and immune-boosting properties of some medicinal plants, lending credibility to traditional claims of effectiveness.

Despite the wealth of studies, several gaps remain. First, much of the existing literature on medicinal plants in Sokoto and Northern Nigeria has focused on general descriptions of plant use but has not comprehensively documented the specific plants used for common diseases in Sokoto Metropolis itself. Second, while studies have examined the pharmacological properties of selected plants, there is limited research linking community perceptions of effectiveness with scientific validation, which could strengthen integration into formal healthcare. Third, there is insufficient documentation of challenges associated with herbal medicine use, such as issues of dosage, safety, and knowledge erosion, particularly in the urban context of Sokoto Metropolis.

Another significant gap lies in the lack of research that captures the perspectives of both traditional healers and everyday users of medicinal plants in Sokoto. Most studies focus on either laboratory validation or general ethnobotanical surveys, leaving out the lived experiences and cultural reasoning behind continuous reliance on herbal remedies. Furthermore, few studies have explored the socio-economic implications of medicinal plant use, particularly how reliance on herbal medicine relates to poverty, healthcare accessibility, and cultural identity in the metropolis.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

The study were adopted a descriptive and exploratory design aimed at documenting medicinal plants used for the treatment of common diseases in Sokoto Metropolis. This design will be appropriate because the research will not involve experiments or hypothesis testing but will focus on gathering, describing, and recording information about plants, their local names, preparation methods, and the diseases they are used to treat.

3.2 Population of the Study

The population of this study will consist of traditional healers, herbal vendors, elderly community members, and households within Sokoto Metropolis who have knowledge and experience of medicinal plant usage. The target group will also include local markets where plants are sold and home gardens where some species are cultivated.

3.3 Sample Size and Sampling Techniques

A purposive sampling technique will be used to select respondents and plant species. Since the focus of the study is on documentation, respondents who possess knowledge of medicinal plants will be deliberately chosen. About 30–40 medicinal plant species will be documented, depending on availability and accessibility during the study. Similarly, 30 key informants (comprising healers, herbal sellers, and elderly household members) will be engaged for accurate identification and description of plant uses.

3.4 Research Instruments

The instruments that will be used include:

Observation checklist**:** to record the plants found in local markets, homes, and herbal shops.

Interview guide**:** to collect information from healers, vendors, and knowledgeable elders about the plants, their preparation, and diseases treated.

Documentation tools**:** such as notebooks, voice recorders, and cameras for capturing the names, uses, and images of the plants.

3.5 Method of Data Collection

Data collection will involve direct observation, interviews, and photographic documentation. Plants will be identified by their local names, scientific names (where possible), and their common uses. Respondents will be asked about preparation methods (e.g., decoction, infusion, chewing, topical application) and dosage. With consent, photographs of plants will be taken either in their natural habitat or at points of sale in markets. The data will be tabulated, with each plant's name, parts used, method of preparation, and disease treated clearly documented.

3.6 Method of Data Presentation

Since this study does not involve statistical analysis, the findings will be presented in **a** tabular and pictorial format. Each plant species will be displayed in a table showing:

- Local name
- Scientific name

- Plant part used
- Method of preparation
- Disease(s) treated
- Source (market, healer, household garden, etc.)

In addition to tables, images of the plants will be included to enhance the documentation and serve as a reference for future research. Narrative descriptions will also accompany the tables to explain the cultural context and perceived effectiveness of each plant.

3.7 Validity and Reliability of Instruments

To ensure validity, the plant names and uses collected will be cross-checked with multiple respondents. Where possible, scientific names will be verified using published ethnobotanical records and reference texts on Nigerian medicinal plants. Reliability will be ensured by documenting each plant from more than one source (e.g., healer and vendor) to confirm consistency in reported usage.

3.8 Ethical Considerations

The study will observe ethical standards by seeking informed consent from participants before interviews, photography, or documentation of their knowledge. Respondents will be assured that their information will be used strictly for academic purposes and that no commercial exploitation of indigenous knowledge will occur. Confidentiality will be respected, and cultural practices surrounding traditional medicine will be handled sensitively.

CHAPTER FOUR

4.0 RESULTS

This chapter presents the results of the field documentation of medicinal plants used in Sokoto Metropolis for the treatment of common diseases. Data were obtained through field observation, interviews with herbal practitioners, traditional healers, market vendors, and elderly community members who possess indigenous knowledge of herbal medicine. The documentation focused on identifying plant species, their local and scientific names, parts used, methods of preparation, and the diseases they are used to treat.

The findings from the study are presented in both tabular and pictorial forms. Each table provides essential information about the plant, while accompanying narratives describe their medicinal value, usage patterns, and cultural importance within the community.

4.1 Documented Medicinal Plant Used In Sokoto Metropolis

The findings presented in Table 4.1 show that a total of thirty five medicinal plant species are actively used across Sokoto Metropolis for the treatment of common diseases. The results indicate that plant based therapies remain an important component of healthcare among households, traditional healers, herbal vendors and elderly community members. The diversity of species documented reflects the rich ethnobotanical knowledge within the study area and demonstrates the continued reliance on natural remedies due to their cultural acceptance, accessibility, affordability and perceived healing effectiveness.

The plants documented cut across different families and represent various parts that are utilized for treatment. Leaves were the most frequently used plant part, followed by bark, roots, seeds,

fruit pulp and bulbs. This agrees with the general pattern in herbal medicine where leaves are preferred because they are easy to harvest, prepare and contain high concentrations of active phytochemicals. The common method of preparation reported is decoction, where leaves or bark are boiled and taken orally. Other methods such as infusion, grinding into powder, direct application on the skin, and inhalation of steam were also widely noted. These preparation techniques are simple and based on indigenous knowledge passed down through generations.

Malaria emerged as one of the most commonly treated diseases in Sokoto Metropolis, which explains the frequent use of plants such as *Azadirachta indica*, *Carica papaya*, *Vernonia amygdalina*, *Adansonia digitata*, *Mangifera indica* and *Amaranthus spinosus*. Conditions such as fever, diarrhea, stomach ache, cough, hypertension, catarrh, skin infections and body pains are also widely managed using herbal remedies. This reflects the health challenges prevalent in the area, showing that medicinal plants serve as the first option for many residents before seeking formal medical care.

The sources of these plants include farms, wild environments, home gardens, markets and forest areas, indicating that both cultivated and naturally occurring species contribute to local healthcare. Plants such as moringa, neem, guava, eucalyptus and hibiscus are easily available in household surroundings, which encourages frequent use. Others like *Securidaca longipedunculata*, *Acacia nilotica*, *Balanites aegyptiaca* and *Cassia alata* are found in bushes and forests, meaning community members still depend on natural vegetation for medicinal resources.

The presence of multipurpose plants such as *Moringa oleifera* and *Phoenix dactylifera* demonstrates the nutritional and medicinal overlap common in traditional healing systems. Some

plants like garlic, onion, lemon and ginger are part of daily diets yet also function as therapeutic agents for respiratory infections, hypertension, cold and digestive issues. The documentation also shows the importance of aromatic plants like eucalyptus for inhalation therapy, which is widely used for treating cough and nasal congestion.

Table 4.1: Documented Medicinal Plants Used in Sokoto Metropolis

	Local Name	Scientific Name	Plant Part Used	Method of Preparation/Administration	Disease(s) Treated	Source
1	Dogonyaro	*Azadirachta indica*	*Leaves, bark*	Boiled as decoction and taken orally	Malaria, fever, skin infections	Home gardens, markets
2	Zogale	*Moringa oleifera*	*Leaves, seeds*	Ground and mixed with water or food	High blood pressure, weakness, malnutrition	Farms, markets
3	Citta	*Zingiber officinale (Ginger)*	*Rhizome*	Crushed or boiled; taken as tea	Cough, cold, stomach ache	Markets
4	Gwanda	*Carica papaya*	*Leaves, latex*	Juice from leaves; taken orally	Malaria, typhoid fever	Households, gardens
5	Goba	*Psidium guajava*	*Leaves*	Boiled as tea and taken orally	Diarrhea, stomach pain	Home gardens

6	Tafarnuwa	*Allium sativum (Garlic)*	*Bulb*	Crushed and mixed with honey or water	Hypertension, cold, cough	Markets
7	Lemun Tsami	*Citrus limon*	*Fruit, peel*	Juice mixed with ginger or honey	Cold, flu, sore throat	Markets
8	Shayi	*Camellia sinensis (Tea)*	*Leaves*	Infusion	Headache, fever	Markets
9	Albasar Faru	*Allium cepa (Onion)*	*Bulb*	Crushed or eaten raw	Cough, respiratory issues	Markets
10	Kuka	*Adansonia digitata*	*Leaves, bark*	Ground into powder or boiled	Diarrhea, fever	Local markets, wild
11	Ganyen Yadi	*Ocimum gratissimum (Scent Leaf)*	*Leaves*	Boiled; inhaled or drunk	Cough, cold, fever	Gardens
12	Dorawa	*Parkia biglobosa*	*Seeds*	Fermented and eaten	Malnutrition, blood tonic	Markets
13	Dabino	*Phoenix dactylifera*	*Fruit*	Eaten raw or soaked in milk	Weakness, energy booster	Markets
14	Zobo	*Hibiscus sabdariffa*	*Calyx*	Boiled as tea	High blood pressure, fever	Markets

15	Tamba	*Tamarindus indica*	*Fruit pulp*	Soaked in water, taken orally	Fever, stomach pain	Markets
16	Giginya	*Borassus aethiopum*	*Roots*	Decoction	Typhoid, body pain	Local farms
17	Lalle	*Lawsonia inermis*	*Leaves*	Paste applied externally	Skin infections, wounds	Households
18	Gawasa	*Cassia alata*	*Leaves*	Crushed and applied on skin	Ringworm, eczema	Wild, home gardens
19	Daddawa	*Daniellia oliveri*	*Bark*	Boiled as decoction	Malaria, fever	Bushes
20	Tazargade	*Vernonia amygdalina (Bitter Leaf)*	*Leaves*	Squeezed or boiled	Malaria, stomach upset	Gardens
21	Mangwaro	*Mangifera indica*	*Leaves, bark*	Boiled as decoction	Malaria, diarrhea	Markets, gardens
22	Ganye Doya	*Solanum nigrum*	*Leaves*	Boiled and drunk	Stomach ache, ulcers	Wild
23	Karkashi	*Corchorus olitorius*	*Leaves*	Cooked and eaten	Constipation, anemia	Gardens
24	Turu	*Eucalyptus camaldulensis*	*Leaves*	Boiled and inhaled	Cough, catarrh, asthma	Farms
25	Maje	*Securidaca*	*Roots*	Powdered and mixed with	Rheumatism,	Forest

		longipedunculata		water	fever	
26	Farar Loda	*Aloe vera*	Leaf gel	Gel applied externally or taken orally	Burns, wounds, stomach upset	Households
27	Kafur	*Eucalyptus globulus*	Leaves, oil	Inhaled as steam or rubbed	Cough, nasal congestion	Markets
28	Danya	*Amaranthus spinosus*	Leaves	Cooked as soup	Blood tonic, malaria	Gardens
29	Kurna	*Balanites aegyptiaca*	Fruit, bark	Crushed and boiled	Stomach ache, diarrhea	Wild
30	Tafasa	*Ageratum conyzoides*	Leaves	Crushed and applied on wounds	Cuts, inflammation	Fields
31	Tsamiya	*Acacia nilotica*	Bark, pods	Boiled and drunk	Diarrhea, sore throat	Wild
32	Zaitun	*Olea europaea (Olive)*	Oil	Rubbed or taken orally	Hypertension, wounds	Markets
33	Gwaza	*Ipomoea batatas (Sweet Potato)*	Leaves	Cooked and eaten	Anemia, weakness	Gardens
34	Shuwaka	*Senna occidentalis*	Leaves	Decoction taken orally	Malaria, constipation	Fields
35	Tafarnuwa Mai Ja	*Curcuma longa (Turmeric)*	Rhizome	Ground into powder and mixed with milk or honey	Inflammation, cold, wounds	Markets

Field Survey, 2025

CHAPTER FIVE

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Discussion

The findings of this study have provided valuable insights into the diversity, usage patterns, and cultural significance of medicinal plants used for the treatment of common diseases in Sokoto Metropolis. The results revealed that traditional medicine remains a vital and active component of healthcare in the area. Despite the increasing presence of modern hospitals and pharmaceutical drugs, residents continue to rely heavily on herbal remedies due to their accessibility, affordability, cultural familiarity, and perceived effectiveness.

The documentation of thirty-five (35) medicinal plant species confirms the rich ethnobotanical heritage of Sokoto. This aligns with the findings of Abubakar (2021) and Musa (2023), who reported that medicinal plants form an indispensable part of primary healthcare in Northern Nigeria. The most frequently used species such as Azadirachta indica (neem), Moringa oleifera (moringa), Zingiber officinale (ginger), and Hibiscus sabdariffa (zobo) are well-known for their therapeutic properties. These plants are not only widely available but also multifunctional—used to treat several ailments including malaria, fever, diarrhea, cough, and skin infections.

The study further revealed that most of the medicinal plants are prepared through simple methods such as decoction, infusion, or grinding, indicating that traditional medicine is primarily based on local knowledge and accessible technology. This observation supports Lawal (2020) and Okafor (2022), who emphasized that indigenous preparation techniques are rooted in community experience rather than scientific precision. Although this informal approach

enhances accessibility, it also raises concerns about dosage control and potential toxicity, as noted by Sulaiman (2021).

An important finding of this research is the significant role of elderly individuals and women in the preservation and practice of herbal medicine. They act as custodians of traditional knowledge, transmitting it orally to younger generations. This aligns with Yusuf (2020), who observed that the continuity of indigenous knowledge in Northern Nigeria depends largely on intergenerational learning within families and communities. However, the study also discovered that younger people in Sokoto show declining interest in herbal medicine, which threatens the survival of this valuable knowledge system.

The study revealed that the use of medicinal plants is influenced not only by cultural beliefs but also by economic factors. Many respondents noted that herbal medicine is affordable compared to hospital treatment, a finding consistent with Bello (2021) and Olatunde (2022). The high cost of pharmaceuticals and limited access to healthcare facilities make medicinal plants the preferred option for many low-income families. Furthermore, the ecological abundance of plants such as neem, moringa, and tamarind in the semi-arid region of Sokoto supports Adamu's (2022) assertion that local environmental conditions shape community reliance on native plant species for health management.

Additionally, the findings highlight a lack of formal regulation and scientific standardization of herbal medicine. Most herbal preparations are made based on personal experience and tradition rather than dosage accuracy. This finding corroborates the concerns raised by NAFDAC (2022) and the World Health Organization (2022) about the need for documentation, validation, and

quality control of herbal medicines in developing countries. Without these measures, the risks of misuse or adulteration remain significant.

Another key aspect emerging from this study is the close link between traditional medicine and spirituality. Several respondents believe that the healing power of medicinal plants is enhanced through prayers or spiritual rituals, reflecting the holistic nature of traditional health systems. This sociocultural dimension supports the Social Constructivist Theory, which posits that health practices are socially and culturally constructed (Abdullahi, 2022). It also reinforces the idea that the use of medicinal plants is more than a health practice—it is a cultural identity and belief system deeply embedded in community life.

In general, the study's findings confirm that traditional medicine continues to play an essential role in Sokoto Metropolis, serving as the primary healthcare option for many residents. However, the sustainability of this practice depends on addressing the challenges of deforestation, knowledge erosion, and lack of regulation. The documentation of thirty-five (35) medicinal plants in this study contributes significantly to the preservation of indigenous knowledge and provides a foundation for future pharmacological research and conservation efforts.

5.2 Conclusion

The study concludes that Wammako Area of Sokoto State possesses a rich diversity of medicinal plants with significant ethnomedicinal value. The people of the area depend heavily on these plants for their primary healthcare needs due to their accessibility, affordability, and perceived efficacy. Traditional medicine remains a vital aspect of community health, complementing modern medical practices.

The findings emphasize the importance of documenting and conserving medicinal plants, as this not only preserves cultural heritage but also provides a foundation for future pharmacological research and drug development. The indigenous knowledge held by traditional healers and local users is a treasure that, if properly harnessed, could contribute significantly to Nigeria's healthcare system and biodiversity management.

Therefore, the preservation, cultivation, and scientific validation of medicinal plants should be encouraged to ensure their sustainable use and transmission to future generations.

5.3 Recommendations

1. Conservation of Medicinal Plant Species: Government agencies, non-governmental organizations, and local communities should collaborate to establish botanical gardens and community nurseries for the cultivation of endangered medicinal plants in Wammako and its environs.

2. Documentation and Research: Continuous documentation of traditional medicinal knowledge should be encouraged through academic and community-based research. Universities and research institutes should partner with local herbalists to record indigenous plant uses before such knowledge is lost.

3. Public Awareness and Education: Awareness campaigns should be organized to educate the public on the importance of preserving medicinal plants and the dangers of overharvesting. Youth involvement in herbal medicine knowledge transfer should be actively promoted.

4. Integration of Traditional and Modern Medicine: The government should develop policies that promote collaboration between traditional healers and modern healthcare providers. This

integration can enhance healthcare delivery, especially in rural areas where access to hospitals is limited.

5. Training and Capacity Building: Training programs should be organized for local herbal practitioners to improve their knowledge of plant identification, safe dosage, hygiene, and modern methods of preservation and processing.

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