

# ETHNO-BOTANICAL SURVEY OF PLANTS USED FOR THE TREATMENT OF SEXUALLY TRANSMITTED DISEASES IN THE SUDAN SAVANNAH REGION OF NIGERIA

## ABSTRACT

This study aimed at assessment of ethno-botanical medicinal plants used by local communities to treat Sexual Transmitted Diseases. Ethno-botanical study of medicinal plants was carried out from January 2023 to March 5, 2023 at Dutse, Local Government Dutse, Jigawa State, Nigeria. The study focused on documentation of medicinal plants used to treat various human sexual diseases in the study area. Purposive random sampling technique was used and fifty (50) structured questionnaire was administered to the respondents. Two major markets sampled were: Tsilliya (Kiyawa) and Shuwarin market (Dutse). Descriptive statistics was used such as table, frequency and percentage. Results showed that majority of the respondents (32.14%) were within the age brackets of 21-30 and 63.57% were married, 63.57% had non-formal education while 53.57% of the respondents' occupation was herb sellers. The prominent religious in the study area was Muslims (91.43%). A total of 26 medicinal plants species, distributed into 15 families used in the management of eight (8) diseases. Combretaceae (4 species) and Legumenaceae (4 species) had the highest medicinal plants in the study area used for various diseases treatment. *Jatropha curcas* (8) had the highest frequency followed by *Securidaca longepedunculata* (6). Gonorrhoea is the most prominent disease (8) followed by virginal discharge (6) respectively. Result also showed that maceration had the highest percentage with the total of 68% followed by decoction method which contains 20% followed by infusion techniques which was 8%. Liquid extract was rated least with the total of 4%. Bark was mostly used (37.50%), roots (18.51%), whole plant (18.51%) and leaf (11.11%). It is therefore, necessary to recommend the preservation of the local knowledge of traditional medicines by proper documentation, identification of plant species used, and herbal preparation.

**Keywords:** Ethno-Botanical, Sexually Transmitted Diseases, Sudan savannah, Survey and Plants.

## Introduction

Sub-Saharan Africa ranks first in STD yearly incidence compared to other world regions. Sexually Transmitted Disease (STD) are the major public health problem including infertility (Gerbase and Mertens (1998)). The world health organization has estimated that every year in Africa there are 3.5 million cases of syphilis, 15 million cases chlamydial disease, 16 million cases of gonorrhoea and 30 million cases trichomoniasis. STD are a high public health priority especially because of their widespread prevalence and treatability (Gerbase and Mertens (1998)). Herpes Simplex Virus and human papilloma virus infection are growing problem in sub-saharan Africa while STDs are caused by more than 20 microorganisms, they present themselves mainly in 4 syndromically (Wasserheit and Aral (1996)). Africa must implement effective and comprehensive integrated activities against the STD epidemic. Elements of such a strategy will include disease prevention, screening and case finding, and the early diagnosis and treatment of cases. The African continent has a long history with the use of plants for medicinal purposes, up to 80% of the population use herbal medicine for primary healthcare (World Health Organisation (2012)). In Nigeria, ethno-botanical investigations have shown that substantial numbers of people utilize traditional medicine for a variety of diseases associated with reproductive health. These includes, abortion, low sperm count, menstrual disorders, loss of libido and erectile dysfunction, menstrual pain, gonorrhoea, bleeding during pregnancy, contraception and breast problems (Okoli *et al.*, 2007; Ajibesin *et al.*, 2011). Traditional medicine, through several trado-medical scientists is now patronized by all segments of the society, the rich, the poor, educated and the uneducated. This clearly signifies that traditional medicine which has long been taken for granted and rejected for decades has a crucial role to play in making affordable health care delivery system of people (Soladoye *et al.*, 2012; Aslan *et al.*, 2010; Inanc *et al.*, 2007; Onal *et al.* 2005). Therapy with conventional drugs typically becomes less effective over time. Also, the few conventional drugs are characterized by appreciable level of toxicity, high cost and unavailability to the people in the rural area. Therapeutic use of local plant resources for healing has been an age long practice and its roots traced to ancient civilizations (Singh (2007)). Tropical regions globally are endowed with rich source of medicinal plants which have been used in history for health care particularly in the rural areas. Some of these available indigenous trees whose leaves, bark, and root could be supplementing the nutritional requirements and health care system for both man and animals in this regions are endangered and at the verge of extinction (Salami *et al.*, (2022)). Sexually related diseases have been observed to be second most prevalent diseases

World Health Organization (2013). Many sexually related ailments are being treated with locally available medicinal plants among rural populations in Africa, such as menstrual disorders, fertility problems, leucorrhoea and womb problems de Wet and Ngubane (2014). In a survey conducted in Nigeria, more than 54% of males with STDs were observed to contact traditional healers for treatment Hegde *et al.*, (2007); Hossan *et al.*, 2010). Majority of patients are not treated well because current treatments have many shortcomings, including safety and tolerability issues and inconvenience of the dose of medicine given. As such, the issue of STD has is one of the most important in human health that need to be studied. As a result of these, many patients seek relief from traditional healing which provides measures for the treatments of the disease Borokini et al ., (2013) There an approximate 320, 000 medicinal species in the world. Herbal medicine is used by more than 50% of world population. Gonorrhoea is the most prevalent sexually transmitted disease (STD). In Nigeria, in fact in 1963, WHO found Lagos to have the highest Gonorrhoea rate in the world. Recent survey report Gonorrhoea prevalence to be as high as 28.1%. Use of traditional medicine for disease treatment is most common in Africa, Asia and Latin America. In India, 65% of population has used traditional medicine. 90% of herbal raw material is used in Ayurvedic, Siddha, Unani, homeopathy medicine and those mainly collected from wild state Pratul (2011). Natural forest (home of these important resources) is also disappearing at an alarming rate in Africa due to overexploitation of wild populations and lack of well - coordinated conservation programmes Oladele *et al.*, (2011). Medicinal plants are at increasing risk from destruction of their habitats (agricultural expansion, fire, construction, overgrazing, and urbanization) and over harvesting of known medicinal species Cunningham (1992). According to Roberson (2008) about 15,000 medicinal plant species may be threatened with extinction world widely due to habitat loss and over harvesting and it is estimated that the earth is losing one potential major drug every two years The main objective of the present study was to identify and characterized Trado-medical plants used in the treatment of (STD) Sexual Transmitted Disease in view of providing better conservation and management plan for the species.

**Specific objectives are to:**

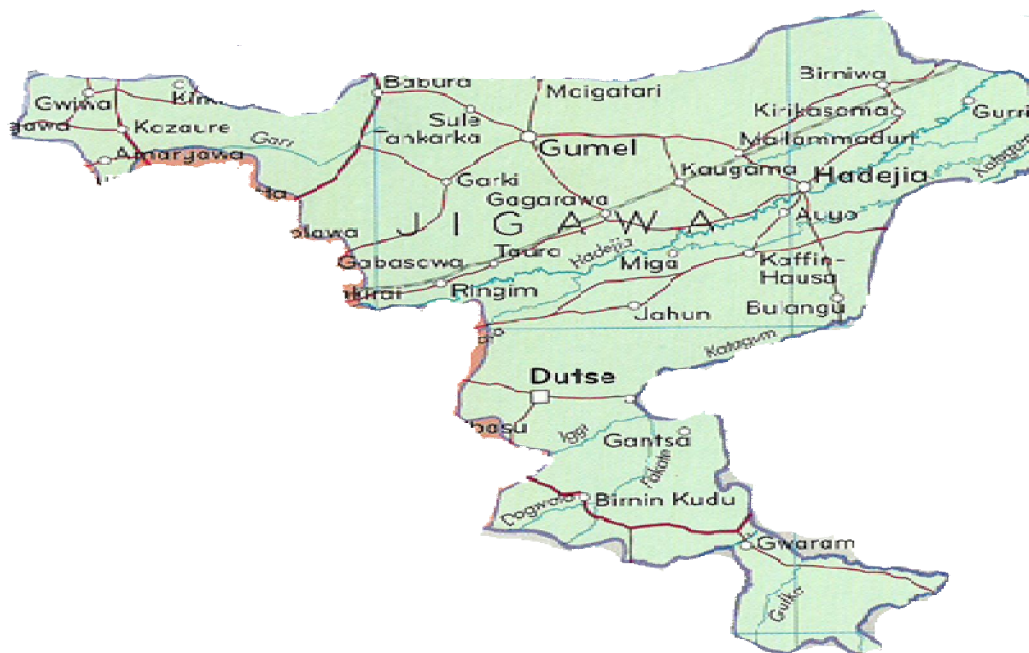
- i. describe the socio-economic characteristics of the respondents;
- ii. identify the trado-medical plants and its prominence for the treatment of STD;
- iii. determine the method of application, major parts used and preparation methods;

- iv. to identify the major STD in the study area.

## **METHODOLOGY**

### **Description of the study area**

The study was carried out in Dutse Local Government of Jigawa State. Dutse Local Government is geographically located on Latitude 11.00<sup>0</sup>N to 13.00<sup>0</sup>N and longitude 8.00<sup>0</sup>E to 10.15 <sup>0</sup>E at an elevation of 435m above sea level Salami *et al.*, (2021); Ilu *et al.*, (2020); Salami and Lawal (2018). Some of the settlements in the studied location include; Fagoji, Kaci, Limawa, Gidadubi, Danmasara, Madobi, Zai, Kude, Takur, And Jigawar Tsada, which are made up of Hausa, Fulani, and Mangawa (a Kanuri dialect). The larger percentage of the local people engaged mostly in farming and rearing of livestock (herdsmen) such as cattle, guinea fowl, sheep, short and long legged goat. The rainy season lasts from May to September with average rainfall of between 600 to 1000 mm while high temperatures are normally recorded between the months of April and September. The southern part of the state has a higher rainfall percentage than the northern part. The area has a total population of 153,000 National Population Commission (2006). Kiyawa Local Government is situated in Jigawa state, Northwest Nigeria and has its headquarters in the town of Kiyawa. The towns and villages that make up Kiyawa LGA include Andaza, Gurchiba, Katanga, Turho, Maje, Kiyawa, Karfawa, and Fake. The Estimated population of Kiyawa LGA is put at 200,845 inhabitants with the area majority population by member of the Hausa and the Fulani ethnic groups. The religion of Islam is widely practiced in Kiyawa LGA while the Hausa Language is extensively spoken in the area Salami *et al.*, (2022); Jigawa Agricultural Rural Development Agency (2016)



**Figure 1:** showing the map of Dutse

**Adapted:** Garba *et al.*, (2021)

### **Data collection**

The studied was carried out in the following stages:

**Stage 1:** collection and reviewed of published and unpublished literatures on ethno botanical survey of plant used for the treatment and cure of Sexually Transmitted Disease (S.T.D) in Dutse and Kiyawa Local Government area, Jigawa state, Nigeria.

**STAGE 2:** Questionnaire Administration

### **Sampling procedure**

A three stage design was adopted to collect data during this study.

**STAGE 1** Selection of the two local government areas to represent primary collection unit; Dutse and Kiyawa Local Government

**STAGE 2** purposive selection of 2 markets in each local government area

To determine the method of application

**STAGE 3:** Random selection of 70 respondents (Herbal practitioners comprising herbal seller and herbal traditional healers) in each specific market of each local government. A total of 140

questionnaires were administered which is equivalent to 40% of the total population of herb practitioners in the area of study (table 1)

### Data analysis

Descriptive statistics was used to get frequency distribution (tables) for better understanding and percentages to determine the proportions of the variables. Data collected were subjected to descriptive statistics in form of frequency and percentage distribution, tables and bar chat.

## RESULTS

**Table 1:** Demographic and Social Cultural Characteristics

S/N	Variables	Categories	Frequency	Percentage (%)
1.	Gender	Male	106	75.71
		Female	34	24.29
		<b>Total</b>	<b>140</b>	<b>100</b>
2.	Age	21-30	45	32.14
		31-40	39	27.86
		41-50	33	23.57
		51-60	23	16.43
		<b>Total</b>	<b>140</b>	<b>100</b>
3.	Educational Background	Non formal Education	89	63.57
		Primary education	04	2.86
		Secondary education	11	7.86
		Tertiary education	36	25.71
		<b>Total</b>	<b>140</b>	<b>100</b>
4.	Religion	Christianity	07	05
		Islam	128	91.43
		Traditional		3.57
		<b>Total</b>	<b>140</b>	<b>100</b>
5.	Marital status	Married	89	63.57
		Single	22	15.71
		Divorce	11	7.86
		Widow	08	5.71
		widower	10	7.14
		<b>Total</b>	<b>140</b>	<b>100</b>
6.	Primary Occupation	Livestock farming	09	6.43
		Crop husbandry	03	2.14

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Civil servant	11	7.86
Business personnel	42	30.00
Herb seller	75	53.57
<b>Total</b>	<b>140</b>	<b>100</b>

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**Source:** Field survey, (2022)

**Table 2:** Showing the Species, Diseases Curing, Part used and Mode of application

S/N	Scientific name	Family	Fre q	Disease curing	Part use	Mode of application	Life form
1	<i>Prosopis africana</i> Guill & Perr	Fabaceae	01	Gonorrhea	Root	Decoction	Tree
2	<i>Ficus thonnigi</i> Joris de Wolf	Mullberry	02	Virginal discharge	Bark	Infusion	Shrub
3	<i>Securidaca longipedunculata</i> Fresen.	Polygalaceae	06	Antiseptic and serve as vasolidator	Leaf	Maceration	Tree
4	<i>Jatropha curcas</i> Linn	Euphorbiaceae	08	Gonorrhea	Root	Decoction	Shrub
5	<i>Buruku</i>		01	elvic inflammatory disease	Whole plant	Infusion	Small shrub
6	<i>Mitagyina inernia</i>	Rubiaceae	02	Chlamydia	Root	Decoction	Shrub
7	<i>Combretum micrathan</i>	Combretaceae	01	Anti inflammatory	Whole plant	Infusion	Shrub
8	<i>Anogeisus leocarpus</i>	Combretaceae	03	Anti septic	Bark	Maceration	Shrub
9	<i>Moringa oleifera</i> (L.) Millsp.	Moringaceae	05	Gonorrhea	Root	Decoction	Shrub
10	<i>Plilostigma reticulates</i> (DC) Hochst	Cercidoideae	03	Syphilis	Bark	Infusion	Shrub
11	Water lily	Nymphaeaceae	01	Virginal itching	Root	Decoction	Acuatic Plant
12	<i>Vitellaria paradoxa</i> G. Don	Sapotaceae	01	Gonorrhea	Bark	Decoction	Tree

13	<i>Cassia occidentale</i> Linn	Legumeneaceae	02	Virginal discharge	Whole seed	Infusion	Small shrub
14	<i>Cassia anglofolia</i> Mill	Legumenaceae	01	Skin disease caused by STD	Whole plant	Ointment	Small erect shrub
15	<i>Ficus anglofolia</i> Linn	Moraceae	01	Syphilis	Bark	Infusion	Tree
16	<i>Termilania indica</i> (Gaertn.) Roxb	Combretaceae	01	Pelvic inflammatory disease	Seed/bar k	Infusion	Tree
17	<i>Andiva inermia</i>	Legumeneaceae	02	Pelvic inflammatory disease	Bark	Decoction	Tree
18	<i>Acacia nilotica</i> (L.) Willd. ex Delile	Legumenaceae	04	Virginal discharge	Seed	Ointment/INf usion	Shrub
19	<i>Guiera senegalensis</i> J.F. Gmel	Combretaceae	02	Anti septic	Whole plant	Infusion	Shrub
20	<i>Ficus pohita</i>	Moraceae	02	Gonorrhea	Bark	Infusion	Tree
21	<i>Mangifera indica</i> Linn	Anarchadiaceae	02	common infection	Bark	Infusion	Tree
22	<i>Lepitadermis hestata</i>	Apolynaceae	02	Skin disease caused by STD	leaf	Ointment	Creepin g Plant
23	<i>Parkia biglobos</i> (Jacq.) R. Br. ex G. Don	Fabaceae	01	pelvic inflammatory disease	Bark	Maceration	Tree
24	<i>Senna spp</i>	Fabaceae	01	Gonorrhea	Whole plant	Infusion	Shrub
25	<i>Vernonia amygdalina</i> Delile	Asteraceae	01	Gonorrhea	Leaf	Infusion	Shrub
26	<i>Citrus aurantifolia</i>	Rutaceae	01	virginal	Fruit	Infusion	Shrub

	Christm.			discharge			
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**Source:** Field survey, (2022)

**Table 3:** Basic techniques of herbal preparation and mode of application

<b>SN</b>	<b>Form</b>	<b>Frequency</b>	<b>Percentage (%)</b>
1.	Powdering	00	00
2.	Liquid	02	04
3.	Maceration	34	68
4.	Infusion	04	08
5.	Decoction	10	20
<b>Total</b>		<b>50</b>	<b>100</b>

**Source:** Field survey, (2022)

**Table 4:** Showing the percentage parts of the plant

<i>SN</i>	<b>Part of plant use</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<i>1.</i>	<b>Root</b>	5	18.51
<i>2.</i>	<b>Bark</b>	9	37.50
<i>3.</i>	<b>Whole plant</b>	5	18.51
<i>4.</i>	<b>Leaf</b>	3	11.11
<i>5.</i>	<b>Seeds</b>	3	11.11
<i>6.</i>	<b>Fruits</b>	1	3.70
	<b>Total</b>	<b>27</b>	<b>100</b>

**Source:** Field survey, (2022)

**Table 5:** Showing the number of Plants use to treat different Sexual Transmitted Diseases

<b>SN</b>	<b>Disease</b>	<b>Frequency</b>	<b>Percentage (%)</b>
1.	Gonorrhea	8	30.77
2.	Virginal discharge	5	19.23
3.	Pelvic inflammatory	4	15.39
4.	Chlamydia	1	3.85
5.	Anti septic and others	4	15.39
6.	Syphilis	2	7.69
7.	Skin infection	2	7.69
<b>Total</b>		<b>26</b>	<b>100</b>

## **Discussion**

### **Demographic and social cultural characteristics**

Data on demographic characteristics of the respondents are presented in Table 1. The table revealed that the age bracket of 21-30 had the highest frequency of respondents while a better percentage of respondents had least non formal education (63.57%). Gender distribution of respondents indicated that 75.71% of the respondents were male while 24% were female. Distribution of respondents' marital status showed that 5.71% were widow, while 63.57% were married. The prominent religious faith in the study area was Muslims (91.43%).

### **Basic techniques of herbal preparation and mode of application**

Result showed that maceration had the highest percentage with the total of 68 followed by decoction method which contain 20% followed by infusion techniques which contain 8% liquid show the least percentage with the total of 4%. The least method was powder without any percentage. Generally the preparation of remedies was in the form of infusions, decoctions and powder from different plant parts mainly with water. Some applications are often prepared using mixture of plants and other ingredients such as, calabash chalk and salt Oladele and Edem (2018).

### **Identified plant use for treatment of STD**

The result from table 2 showed that 26 species of plant were identified and used for treating eight (8) different types of Sexually Transmitted Diseases. *Jatropha curcas* (8) had the highest frequency followed by *Securidaca longepedunculata* (6). *Moringa olifera* is also commonly used (5) other important plants used with their frequency are *Acacia nilotica* (4), *Phliostigma reticulatum*(3), *Anogeisus leocarpus* (3), the least plant used are lime (1) *Velonia* species (1), *Senna italica*(1), *Cassia anglofolia* (1), Water lily(1), Buuruukuu(1), *Combretum micranthum* (1), and *Vitellaria paradoxa*(1).

### **Plant Parts Used in Medicine**

A wide variety of plant parts are used for herbal medicines and reports of the dominant parts varied with cultural backgrounds. In this study, all the plant parts are employed in herbal remedies such as leaves, roots, stem barks, fruit and seeds. Barks constitute the most used (37.50%), roots (18.51%), whole plant (18.51%) and leaf (11.11%) among the Dutse and environs people studied (Table 4). Some studies have found leaves as the most frequently plant parts used in remedy preparations Giday et al., (2003). Oladele and Edem (2018) also, support the study through the observations that plant parts that mostly used were leaves (52.28%), root (37.54%) and barks (3.86%). Oladele and Edem (2018) observed that the use of bark and roots could threaten the existence of individual plants as compared to leaves. Other workers reported that usually the stem bark is preferred for medicinal use in the Caatinga (Brazil) due to its continuous temporal availability Fasola, (2015). However, Poffenberger *et al* (1992) observed that the use of bark and roots could threaten the existence of individual plants as compared to leaves. Also, Togola, (2005) noted that the need for the use of stem bark will increase when leaves and fruits are out of season. In another study of plants used for wound healing in Dogonland (Mali), Inngjerdingen *et al.*, (2004) found that the roots and leaves were the most frequently used plant parts. Nonetheless, the practice of exploiting perennial plant parts, such as roots and stem barks can result in a population decline of important medicinal plant species Dhillion and Amundsen (2000)

### **Taxonomic Distribution and Growth Forms of the Medicinal Plant Species**

The diversity of medicinal plant species used by Dutse/Kiyawa to treat Sexual Transmitted Diseases comprised of 26 species distributed into 15 families used in the management of 8 ailments. Most cited plant families includes; Combretaceae (4 species), Leguminaceae (4 species), Fabaceae (3 species) Moraceae (2 species) and Euphobiaceae (2 species). This is in contrast to Malvaceae and Fabaceae recorded in this work among the Ogba/Egbema/Ndoni ethnics in Nigeria. Also, similar studies have reported 156 plants used for gynecological conditions in South Africa, 42 plant species in Trinidad and Tobago for reproductive problems, 17 plants used for treating infertility, gynecological and obstetric problems by the Esan people of Nigeria. Oladele and Edem (2018) also observed that Malvaceae and Fabaceae are the prevalent family used for curing STD unlike Combretaceae and Leguminaceae found in the study area.

### **Conclusion and recommendations**

Medicinal plants play a vital role in the maintenance of human health throughout the world and notably in the developing country like Nigeria. Traditional medicine has remained the most affordable and easily accessible source of treatment in the primary healthcare system of the rural people in Nigeria. The study has confirmed the fact that herbal medicine presents an alternative source of healthcare for most rural dwellers. A rich heritage of indigenous medicinal plant use and knowledge was represented with a sample of 26 medicinal plants (trees, shrubs, climbers and herbs) recorded in the 2 communities of Dutse - Kiyawa for the treatment of a range of sexual and reproductive conditions. It could be deduced from this study that Combretaceae, Leguminaceae and Fabaceae were the most important ethno-botanic families used in the treatment of sexual ailments in the study area. Results from this study indicate that rural people in Jigawa state of Nigeria still patronize traditional herbal medicine solely or alongside modern medicine for their health care needs. Cultivation of wild medicinal plants in mixed cultures and agroforestry systems need be encouraged among the rural farming population for conservation and sustainable supply. Ethno-pharmacological studies on the reported surveyed medicinal plant species in this study could lead to development of useful drugs.

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