

Full Length Research Paper

Medicinal plants used in ethnoveterinary practices in the Federal Capital Territory, North-Central Nigeria

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A survey of medicinal plants used in ethnoveterinary practices (EVP) was conducted in Federal Capital Territory, Nigeria to document the indigenous use of this plant in the management of animal diseases. Data were collected from fifty informants which included seven traditional medical practitioners and 43 pastoralists using a structured questionnaire. A total of 31 plant species from 25 families were recorded from the study area. The result showed that 86% of the pastoralist practiced EVP, 64% claimed high proficiency though 75% of the pastoralist age between 20 and 39 years were either low in proficiency in EVP. Also, 58% use EVP regularly while only 14% did not use EVP at all in treating health conditions in their herds. The percentage of plant families used in ethnoveterinary practices in descending order was Fabaceae, Cucurbitaceae, Poaceae, and Solanaceae. *Momordica charantia* and *Carica papaya* were mostly cited by the informants with the high relative frequency of citation (RFC), 0.70 and 0.62, respectively. Medicinal plants used in treating diarrhea were having common agreement by most of the informants with informant consensus factor (ICF), 0.90. This study provides plant species used in ethnoveterinary practices in Federal Capital Territory (FCT) for further scientific exploration.

Key words: Ethnoveterinary practice, survey; medicinal plants, Nigeria.

INTRODUCTION

Medicinal plants have been used for prevention and cure of both humans in animal diseases for ages while ethnoveterinary practice (EVP) is the sum total of all practices, methods, supplementary materials and attempts of any kind in which for years have enabled man to protect his animals from sickness and bring healing to increase animal production with minimum cost (Alawa et al., 2002; Mertenat et al., 2020). A large number of pastoralists rely on a range of ethnoveterinary practices to keep their livestock healthy. These traditional animal

healthcare practices include the use of medicinal plants, surgical techniques, and other management practices to prevent and treat a wide range of diseases encountered by livestock farmers (Uwagie-ero et al., 2018). Livestock production in Nigeria is beset by many problems, which include poor nutrition, poor management, and diseases. Poor nutrition has always been considered as the most critical factor in livestock production, but in recent times, diseases cause more economic losses (FAO, 2016). There is a high level of dependence on traditional

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medicine by pastoralist in Nigeria for their primary animal health care, which helps to reduce cost, scarcity and adverse side effects associated with orthodox veterinary drugs.

Ethnoveterinary practice varies from one place to another and is being dictated by the diverse culture and tradition of the people as well as the vegetation of a particular place (Rochfort et al., 2008). Some ethnoveterinary practices have been reported in Nigeria (Alawa et al., 2002; Alhaji and Babalobi, 2015; Pakhtunkhwa et al., 2019).

Mostly, ethnoveterinary knowledge is traditionally passed on verbally from generation to generation within the FCT, and as such practitioners depend entirely on memory for their practice. This mode of knowledge transfer may lead to interrupted knowledge transmission; intergenerational knowledge erosion and its effect are discrepancies between knowledge and actual use of medicinal plants (Srithi et al., 2009; Buwa-komoreng et al., 2019). In order to preserve this delicate knowledge, it must be documented. Therefore documentation and digitalization of our indigenous knowledge of traditional medicine will ensure the permanent preservation of the wealthy knowledge of the use of the medicinal plant for the management of various animal ailments. Also, in our quest for the search for new drugs and nutraceutical, there is a need to document indigenous traditional knowledge about medicinal plants before they disappear due to climate change, land use and plant overexploitation.

There is no previous documentation of the ethnoveterinary practice in FCT and this study is aimed at collecting and documenting the information for future reference.

MATERIALS AND METHODS

Study area

The Federal Capital Territory (FCT) is situated in the middle of the country Nigeria. It has six administrative area councils with a land area of 8,000 km². It is bounded on the North by Kaduna State and on the Western side by Niger State. The South-Eastern and South-Western boundaries states are Nasarawa State and Kogi State respectively. It falls within latitude 7°25'N and 9°20' North of the equator and longitude 5°25'E and 7°39' East of the meridian (Zubair et al., 2015).

Abuja has fertile land for agriculture, hills, and highlands. The vegetation is made up of the savannah grassland of the north and tropical rainforest of the south. The raining season is between the months of April to November. The average annual precipitation fall is 1389 mm/54.7 inches and an average temperature of 25.7°C/78.3°F (Itiowe, 2019). This climatic condition is conducive for livestock production.

The population of Abuja's Urban Area is 2,245,000. The indigenous people (Gbagyis) of Abuja are chiefly subsistence farmers. Their major food crops include yam, maize, guinea corn, and millet. Settlers, however, account for a vast majority of the population amongst who are the Fulanis' and are majorly pastoralists residents of FCT.

Ethnobotanical data collection

A reconnaissance survey was made between 2nd to 7th November to obtain an impression on vegetation characteristics of the study area. The goal of the study was explained to the informants their consent was received before data collection. The ethnobotanical investigation was conducted for a period of 6 weeks in November and December. During that period, 50 informants who freely agreed to participate in the survey were selected purposively based on occupation, knowledge, attitudes, and practices and were interviewed using a semi-structured questionnaire. These informants were selected randomly. The sampling is composed of seven traditional medicine practitioners (2 females and 5 males) and 47 pastoralists. Information about the depth of knowledge of informants was collected and confirmed from local elderly people and opinion leaders within each Fulani settlement visited. The methods used for ethnoveterinary practice data collection were semi-structured interviews, and field observation (Bouyahya et al., 2017). These interviews were conducted in vernacular in Hausa and translated by field assistants.

Data collected include age, sex, level of proficiency, degree of usage of orthodox veterinary drugs versus ethnoveterinary medications, frequency of usage of ethnoveterinary medications, years of experience of informants and occupation of informants as well as animal health indications treated, scientific, common and vernacular plant names and frequency of usage. Threats to medicinal plants, beliefs, and indigenous knowledge transfer were also documented. These interviews were done on the field in order to avoid probable confusion with regard to the identity of the medicinal plants. Available medicinal plants of ethnoveterinary importance were observed, photographed, recorded and collected during and after the interviews; the plants were then confirmed from local elderly people and opinion leaders.

Identification of plants

Collection of voucher specimens of all quoted plant species were collected with the aid of the informants and was taken at the Department of Botany, the University of Abuja for identification using specific taxonomic keys, floras and comparisons of herbarium specimens. Vouchers specimen were prepared and kept in physiology, biochemistry and pharmacology herbarium of the Faculty of Veterinary Medicine, University of Abuja.

Data analysis

The knowledge on medicinal plants used in the treatment of diseases by the Fulani pastoralist population in the study area was analyzed using the relative frequency of citation (RFC) and the informant consensus factor (ICF) of the quoted medicinal plant species.

Relative frequency of citation (RFC)

The local importance of each plant species was calculated based on the relative frequency of citation (Iyama and Idu, 2015). The RFC was calculated as follows: A number of informants, who mentioned the use of the species (Fc), divided by the total number of informants (N). RFC both for the total of informants were assessed. $RCF = Fc/N$.

Informant consensus factor (ICF)

ICF was calculated to identify the agreement of the informants on

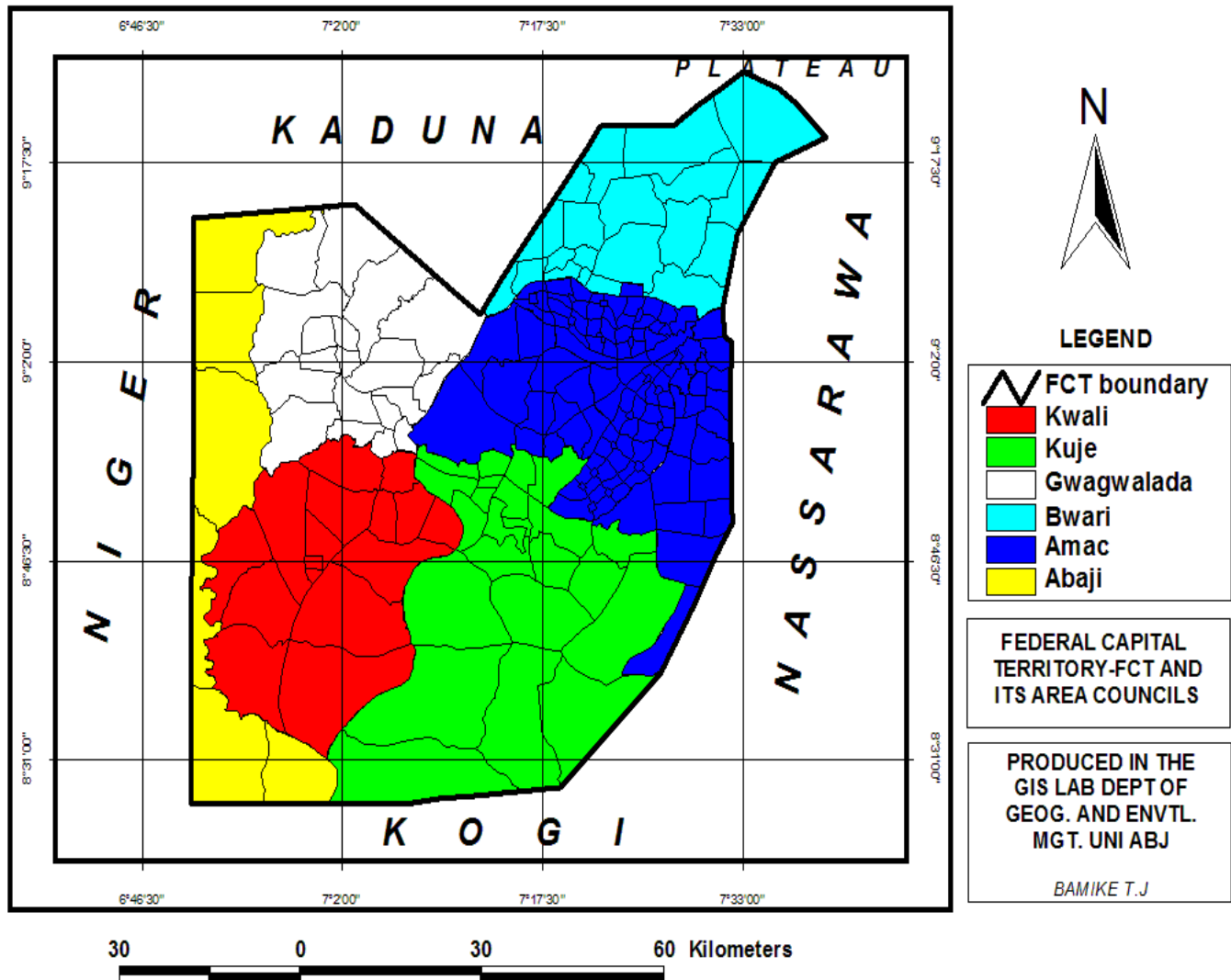


Figure 1. The study location of the ethnoveterinary survey.

the reported use of the plant to treat different animal diseases. The ICF was computed as follows: A number of use citations in each category (Nuc) minus the number of species used (Nt), divided by the number of used citations in each category minus one (Vitalini et al., 2013). $ICF = \frac{Nuc - Nt}{Nuc - 1}$

RESULTS

Fifty copies of questionnaires were administered directly through oral interviews of the pastoralists in each of the six area councils in Abuja (Figure 1) with each area council given a variable number of questionnaires depending on the availability of the pastoralists as at the time of the interview. All the informants were interviewed orally in Hausa language and answers were recorded.

Based on data collected during this study, all informants between the ages of 40 and above engage in the ethnoveterinary practice. Fifteen informants (30%)

were of the age bracket 50 - 59. Other age ranges as follows: 70 - 80 (8%), 60 - 69 (12%), 40 - 49 (18%), 30 - 39 (16%) and 20 - 29 (16%) (Table 1 and Figure 2). Out of 50 informants, 12/50 (24%) were from Gwagwalada, 9/50 (18%) in Kwali, 11/50 (22%) in Abuja Municipal Area Council, 5/50 (10%) in Bwari, 6/50 (12%) in Abaji and 7/50 (14%) in Kwali (Table 1). Also, 48 (96%) were males whereas only 2 (4%) were females.

64% of the informants claimed to have in-depth knowledge of ethnoveterinary medicine, 10% had average knowledge, 12% had low proficiency, while 7(14%) do not have knowledge of EV practice (Table 1). Informants older than 50 years (25/50) claimed to have in-depth knowledge while those below 39 years (16/50) had average or no knowledge of the use of ethnoveterinary medicine (Table 1 and Figure 3).

Thirty-one (31/50) (62%) informants claimed to have more than 10 years of experience in ethnoveterinary

Table 1. Demographical characteristics of informants.

Criteria	Characteristics	Frequency	Percentage
	Age*		
Age	70-80	4	8
	60-69	6	12
	50-59	15	30
	40-49	9	18
	30-39	8	16
	20-29	8	16
Location	Local councils	Frequency	Percentage
Location	Abaji	6	12
	AMAC	11	22
	Bwari	5	10
	Gwagwalada	12	24
	Kwali	9	18
Gender	Male	48	96
	Female	2	4
	No. of years	Frequency	Percentage
Years of experience	<10	31	62
	5-10	5	10
	1-5	7	14
	None	7	14
Source of ethnoveterinary knowledge	Source	Frequency	Percentage
	Ancestral	26	52
	Training	3	6
	Ancestral and training	14	28
	None	7	14
Treatment frequency	Frequency of use of EVP	Frequency	Percentage
	Regular	29	58
	Irregular	14	28
	No response	7	14

Age*: Age* ranges of people engaged in ethnoveterinary practices

practice, 5/50 informants (10%) had 5 - 10 years of experience, 7/50 (14%) had 1 - 5 years of experience whereas, 7/50 informants (14%) has no experience (Table 1).

Twenty-six informants (52%) claimed to have gotten knowledge ancestrally, while 3/50 (0.06%) informants got their knowledge purely by formal training (Table 1). However, 14/50 (28%) of those interviewed reported a mixture of both ancestral knowledge and training as their sources of knowledge.

Twenty-one informants (42%) reported that the plants they needed for their practice were always available in the forest at all times (Table 1 and Figure 4), whereas 22/50 informants (44%) reported that the plants were not

always available these days pointing to factors such as urbanization and climate change (less rain) as the major causes. 7/50 (14%) gave no response.

When interviewed on how frequently they used ethnoveterinary medicine as a means of therapy for their herd, 29/50 informants (58%) reported that they used it regularly, 14/50 of the informants (28%) were irregular users.

Twenty of the informants (40%) used a mixture of both orthodox veterinary drugs and ethnoveterinary practice to treat their herd, 23/50 of the informants (46%) used only ethnoveterinary medicine citing such factors as the high cost of orthodox drugs and superiority of ethnoveterinary medicine as a means of therapy for their animals. Only

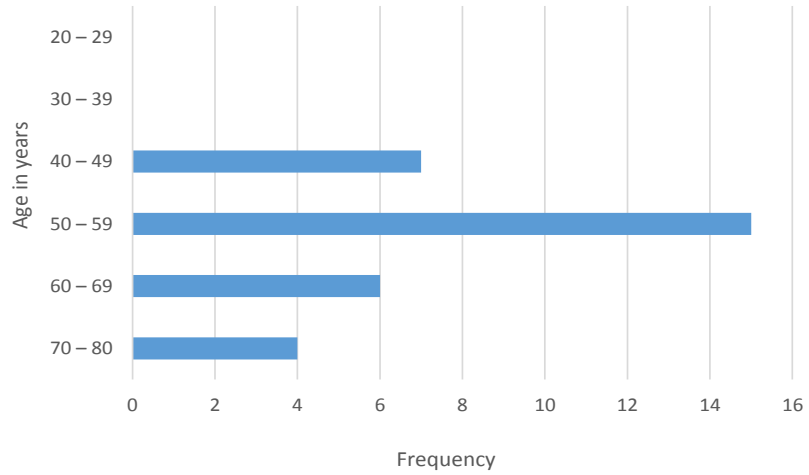


Figure 2. The age range of the informants that were engaged in ethnoveterinary practices.

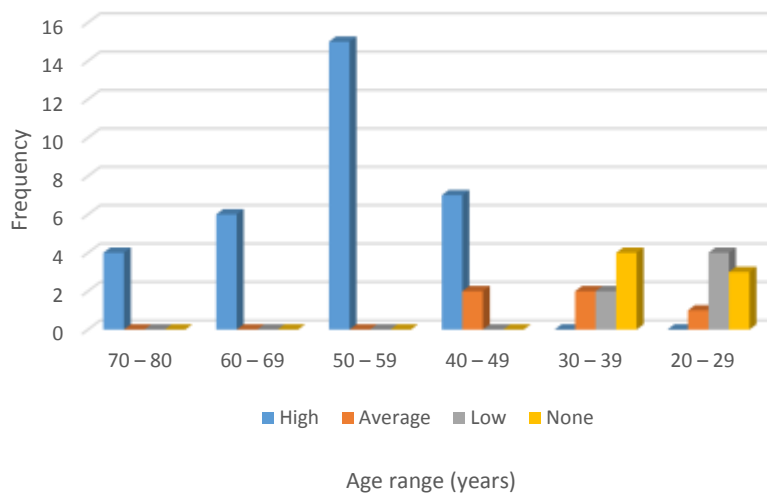


Figure 3. The level of proficiency in the use of ethnoveterinary medicine.

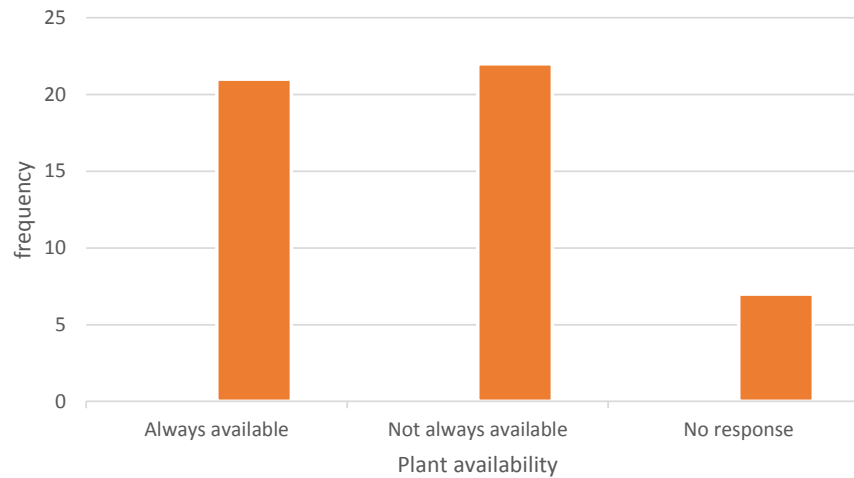


Figure 4. Showing availability of the plants all the year round.

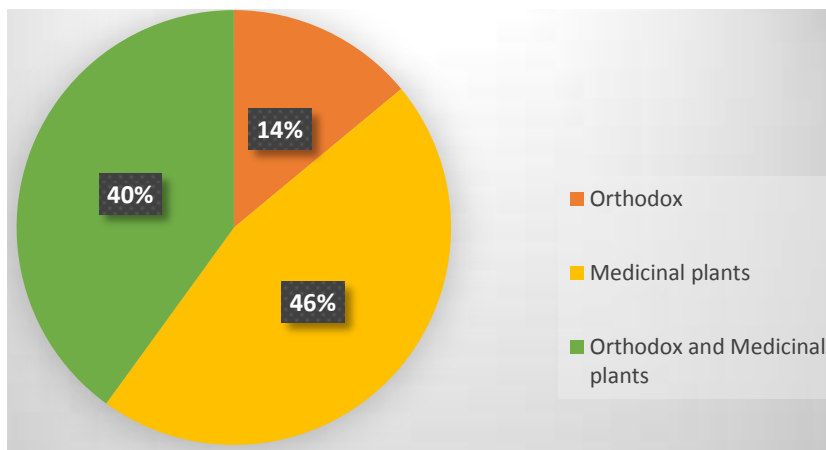


Figure 5. Degree of medicinal plant use.

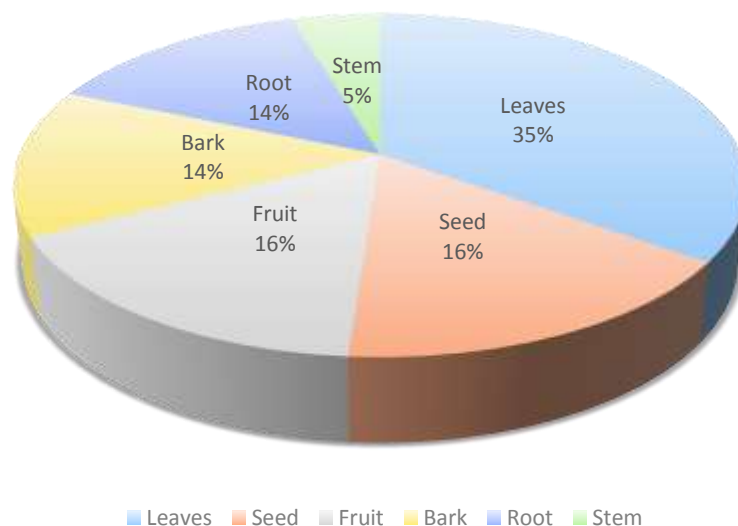


Figure 6. Proportion of different part of plants used in ethoveterinary medicine in FCT.

7/50 informants (14%) used purely orthodox drugs to treat their animals (Figure 5). In the study area, the leaves are the commonly used plant parts (35%), followed by seed and root (16%) each, root and bark (14%) each and then stem (5%) (Figure 6).

Ethnobotanical data analysis

Informant consensus factor (ICF)

Based on the survey result (Table 2), plant species used in treating of diarrhea has a high degree of consensus (ICF = 0.90); it is followed by plants used for deworming, foot and mouth disease, cough and snake bite. The least consensus is found in plant used for laxative and nasal

congestion with ICF 0.15 and 0.14, respectively.

Relative frequency of citation (RCF)

In the result recorded in this study (Table 3), *Momordica charantia* has the highest frequency of citation with RCF 0.70. *Carica papaya*, *Butyrospermum parkii* and *Striga hermonthica* have RCF 0.62, 0.58 and 0.58 respectively. *Khaja senegalensis* common refer to as mahogany has the least RCF of 0.28 among the frequently quoted species used even in FCT, while the Fabaceae family has the highest number of medicinal plant species (Figure 7). Medicinal plants used in ethnoveterinary practices in FCT are recorded in Table 4, while few of such plants as shown in Appendix plates I to IV. Different

Table 2. Ailment categories and informant consensus factor (ICF) values.

Diseases category (signs and symptoms)	Informant consensus factor (ICF)
Diarrhea	0.90
Deworming	0.63
Foot and Mouth Disease	0.59
Cough	0.57
Snake bite	0.57
Poisoning	0.51
Ectoparasite	0.50
Mange	0.50
Increased milk yield	0.30
Delayed placenta	0.30
Laxative	0.15
Nasal congestion	0.14

Table 3. Local importance of the most frequently quoted species for treatment of animal diseases in FCT.

Preferred plant species	Frequency of citation	Relative frequency of citation (RCF)
<i>Mormordica charantia</i>	35	0.70
<i>Carica papaya</i>	31	0.62
<i>Butyrospermum parkii</i>	29	0.58
<i>Striga hermonthica</i>	29	0.58
<i>Ficus gnaphalocarpa</i>	27	0.54
<i>Nicotiana tabacum</i>	23	0.46
<i>Cassia mimosida</i>	21	0.42
<i>Aloe edongesis</i>	19	0.38
<i>Sterculia africana</i>	18	0.36
<i>Cocos nucifera</i>	15	0.30
<i>Khaya senegalensis</i>	14	0.28

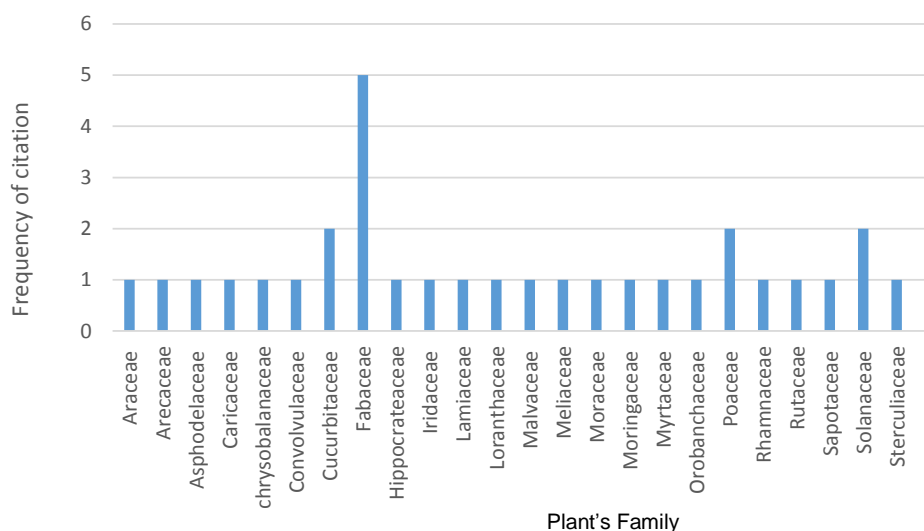
**Figure 7.** The frequency of citation of the families of plants species used in ethnoveterinary practices in FCT.

Table 4. The medicinal plants used in ethnoveterinary practices in the FCT.

Family	Plant species	Common name	Used part	Mode of preparation	Uses
Fabaceae	<i>Arachis hypogea</i> Linn	Peanut	Seed and oil seed	Eating of raw seed	Increase milk yield
Lamiaceae	<i>Vitex doniana</i>	Black plum	Fruit, and seeds	Fruit fed to the animal	Delay placenta, diarrhea and trypanosomiasis
Poaceae	<i>Pennisetum typhoideum</i> Rich	Pearl millet	Leaves and seeds	Tonics made from leaves and seed	Delay placenta
Fabaceae	<i>Vigna sinensis</i>	cowpea	Seed and leaves	Tonics made from leaves and seed	Delay placenta
Poaceae	<i>Sorghum vulgare</i>	Great millet	Seed and leaves	Tonics made from leaves and seed	Delay placenta
Cucurbitaceae	<i>Mormordica charantia</i>	Bitter melon	Leaves	Leaves + salt	After birth infection, deworming and poisoning, treat open wound
Caricaceae	<i>Carica papaya</i>	pawpaw	Leaves, root	Leaves Soak in water	Diarrhea, deworming and mange
Myrtaceae	<i>Psidium guajava</i>	Guava	leaves	Leaves Soak in warm water	Diarrhea, stomach ache
Sapotaceae	<i>Butyrospermum parkii</i>	Shea tree	Bark	Bark soak in water	Diarrhea, post abortion, deworming and nasal congestion, open wound
Malvaceae	<i>Sterculia africana</i>	Mopopaja tree	Leaves, fruit, seeds and bark	Decoction of leaves	Laxatives
Lamiaceae	<i>Ocimum basilicum</i>	Sweet basil	leaves	Leaves soaked in water +salt	Diarrhea and cough
Orobanchaceae	<i>Striga hermonthica</i>	witchweed	root	Root infusion	Diarrhea, abortifacient, poisoning and FMD
Iridaceae	<i>Gladiolus communis</i> L.	Sword lily	leaves	Leaves decoction	Cough
Asphodelaceae	<i>Aloe endogenesis</i>	Aloe vera	leaves	Extract from leaves	Cough, deworming
Araceae	<i>Colocasia esculenta</i>	Coco yam	tuber	Dried tuber	Cough and diarrhea
Meliaceae	<i>Khaya senegalensis</i>	African mahogany	bark	Decoction of the bark	Poisoning, deworming
Moraceae	<i>Ficus gnaphalocarpa</i>	Fig tree	Bark and sap	Decoction of bark	Poisoning, cough, post abortion, in appearance, improve milk yield and snake bite.
chrysobalanaceae	<i>Parinarium latifolium</i> M. R. Hend	Akee apple	Bark	Bark soak in water	Diarrhea and poisoning
Fabacea	<i>Cassia occidentalis</i>	Coffe senna	Root	Root infusion	Cough, deworming and animal weakness and mange
Convolvulaceae	<i>Ipomea repens</i> Lam.		Root	Burnt root	ectoparasite
Solanaceae	<i>Nicotiana tabacum</i>	tobacco	leaves	Burnt leaves or made into paste	Ectoparasite, mange and open wound
Arecaceae	<i>Cocos nucifera</i> L.	coconut	Oil from fruit	Oil	Ectoparasite, mange
Hippocrateaceae	<i>Hippocratea africanas</i> (wild).	Medicine vine	Root	Decoction of the root	Foot and Mouth Disease (FMD)
Rutaceae	<i>Citrus medica</i>	Lime	Fruit	Fruit	Open wound
Fabaceae	<i>Parkia filicoides</i>	African locus bean	Fruit pulp, seed pod and leaves	Make a paste on the infected part	Mange
Solanaceae	<i>Solanum aethiopicum</i> L.	Bitter tomato	Fruit	fruit	FMD
Loranthaceae	<i>Loranthus pentagona</i>	Indian mistletoe	leaves	Leaves infusion	FMD
Moringaceae	<i>Moringa Oleifera</i>	Moringa	Leaves and stem	Decoction of leaves or stem	Open wound
Fabaceae	<i>Pardaniella Oliveri</i> Rolfe	Balsam tree	Leaves and stem	Decoction of leaves	Snake bite
Cucurbitaceae	<i>Mormodica Balsamina</i>	African cucumber	Leaves and stem	Decoction	Snake bite and diarrhea
Sterculiaceae	<i>Sterculia tomentosa</i>	Kola	bark	Soak in water	Snake bite
Rhamnaceae	<i>Zizyphus jujube</i> Mill	Jujube red date	Fruit	Fruit	Snake bite

diseases of animals were described. The plant part, mode of preparation, and identification of the plants were recorded.

DISCUSSION

A total of 50 informants were interviewed through the use of a semi-structured questionnaire throughout the six area councils in the Federal Capital Territory, Abuja. 96% were males while only 4% were females. This result highlighted the gender inequality in ownership, purchase, and transfer of assets. Raising cattle, camel, and donkey are long term investment and it is a male-dominated occupation in Nigeria. Many women are involved in rearing sheep and goats and other non-ruminants like pigs and chicken (Alawa et al., 2002). Food and Agriculture Organization of United nation listed factors responsible for gender inequality in livestock production in rural settlements to include: Land ownership and control which is firmly in the hand of the male, women seldom have rights to their savings and have no right to inheritance (FAO, 2016).

The result showed that 100% of the informants who were involved in pastoralism in the studied areas are Muslims and are married. This suggests that the pastoralists marry early (on or before the age of 24). This result is similar to that of Nyamongo (2000) which places the marriage age of pastoralist at 20 to 24 years. The majority of the informants were in the Gwagwalada area council and AMAC (24 and 22%) respectively, while the least number of informants were in the Bwari area council (10%). This is a result of the presence of the Federal Grazing Reserve Area in the Gwagwalada area council thus the presence of more herdsman settlements in the area and the more centralized location of Abuja Municipal Area Council.

All informants were Nigerians, mainly from Hausa/Fulani ethnic group and 62% claimed to have more than ten years' experience in the practice of EVP. This shows that the study concentrated mostly on individuals who were regarded as experienced within every settlement visited during the survey. This is to ensure that information gathered was relevant and valuable.

Half of the informants obtained their knowledge of ethnoveterinary practice through their parents (52%) whereas only 6% acquired it through formal training from another experienced practitioner. This is in agreement with several authors who have documented the passage of knowledge verbally through the ancestral means (Menale and Muoio, 2014). The demerits of this are highlighted in the loss of interest of the younger generation in learning from the older generation. Thus, this mode of knowledge transfer may lead to interrupted knowledge transmission; intergenerational knowledge erosion and its effect are discrepancies between

knowledge and actual use of medicinal plants. Thus the essence of this study to document and preserve the knowledge of these plants.

Forty-six percent indicated that they use herbal remedies exclusively to manage animal health conditions, 40% used both EVP and orthodox drugs while only 14% stated that they rely on orthodox veterinary preparations alone. The use of medicinal plants in the treatment of diseases of animals is exclusively has been documented by Gras et al. (2018). Other recent studies in some states in Northern Nigeria also reported 15.31% go for orthodox medicine only (De Smet, 1998; Neils et al., 2008), the cost and non-availability of drugs or access to animal health facilities in the rural settlement may be a contributing factor.

This study has shown the existence of many medicinal plants in FCT Abuja used for treating animal ailments. Nigeria is endowed with many plant species useful in traditional medicine. The method of preparation and part used for herbal remedies vary slightly from one culture to another (Buwa-komoreng et al., 2019). During the survey, it was observed that the Fulani herdsman exhibited good knowledge of the etiology, clinical signs, and pathology of various animal health conditions. Also, they clearly described medicinal plant species that can be used in the management of such disease conditions.

A total of 31 plant species from 25 families were identified in this study as medicinal plants used in treating different animal diseases by the Fulani herders in FCT, Nigeria. Some other surveys in another Northern state with bigger landmass but similar vegetation recorded 57 identified plants from 25 families (Offiah et al., 2012). The majority of plant species mention belongs to the family Fabaceae. This finding is similar to other reports of Fabaceae as the family with highest plant species used in the treatment of diarrhea and contagious bovine pleuropneumonia in Plateau and Niger state respectively (Alhaji and Babalobi, 2015; Aremu et al., 2012; Offiah et al., 2012). Other families with higher frequencies are Poaceae, Cucurbitaceae, and Solanaceae. The family was also recorded from previous work (Chinsebu et al., 2014; Verma, 2014).

Among the plant species recorded in this study 11 plants have the highest frequency of citation by the informants. They are *Momordica charantia*, *Carica papaya*, *Butyrospermum parkii*, *Striga hermonthica*, *Ficus gnaphalocarpa*, *Nicotiana tabacum*, *Cassia mimososa*, *Aloe edongesis*, *Sterculia Africana*, *Cocos nucifera* and *Khaya senegalensis*; this is different from the report of Alawa et al. (2002) which recorded *K. senegalensis* as the most frequently cited plant. The reason may be due to plant availability.

Reported pharmacological activities of *M. charantia* include anti-ulcerogenic, antioxidant, antiviral, and immunomodulation. Triterpenes isolated from its fruit has shown anticancer potentials (Chinsebu, 2016; Krishnaiah et al., 2011). All these pharmacological

properties listed and its availability in the FCT may justify its frequent use by the pastoralists. Another highly cited medicinal plant species is *C. papaya* cinn, it is a tropical plant cultivated by farmers for the consumption of its fresh fruit. Other part of the plant possesses medicinal properties. Extracts from seed have been used to treat microbial and parasitic diseases. Pharmacologically, it has antioxidant, anti-inflammatory, and antiseptic properties. Extract from leaves of *C. papaya* has shown hypoglycemic, hypolipidemic potential (Green et al., 2010; Hasani-Ranjbar et al., 2009; Tsouh et al., 2015). Oil extracted from *B. parkii* (shea butter) has been used to treat microbial and parasite diseases; it is also applied to the surface of the wound to aids wound healing. All other parts of the plant have pharmacological relevance. The phenolic compound from *B. parkii* has been documented to have inflammatory, antiviral, and anticancer properties (Alawa et al., 2002). The use of *S. hermonthica* (del) benth and its pharmacological described the treatment of dermatitis, pneumonia antiplasmodial and trypanocidal activities. Farmers burn the leaves as insect repellants (Hammad et al., 2011; Koua, 2011). *Ficus gnaphalocarpa* (miq) A. Rich is a tropical plant with numerous uses; the sap is applied to alleviate pain from strain. It has been used to treat diarrhea, respiratory and urinary diseases pharmacologically, it has an antiinflammatory, antitussive, hepatoprotective and antimicrobial activities (Hubert et al., 2010). While *N. tabacum* is a rich source of alkaloid nicotine used as an insecticide. *N. tabacum* has antispasmodic, sedative, and emetic properties. A paste of the leaves is used to treat skin diseases, swelling, and scorpion sting (Tsouh et al., 2015).

Other medicinal plant species with high RFC includes *Cassia occidentalis*, *Aloe endogenesis* *Sterculia africanas*, *Cocos nucifera*, and *Khaya senegalensis*. They have been previously reported to have medicinal properties which are similar to the findings in this study (Agyare et al., 2018; Atakpama et al., 2012; Chinsembu, 2016; Girardi et al., 2015; Radha and Laxmipriya, 2015).

The informant consensus factor analysis showed diarrhea having a high value of (0.90) among the informants, high ICF is also observed for worms (0.59) which are diseases of the digestive systems. This shows that these diseases are easily described and there is an exchange of information among the pastoralist regarding the clinical signs of these diseases and potent medicinal plants that can be used to treat it. This result will help medicinal plant selection for scientific research into the treatment of the disease.

The plant part mostly used in this study is the leaves; other studies have recorded similar observations (Polat and Satil, 2012). Many reasons may be advanced for the preference leaves, it is the part where photosynthesis occurs in the plant and it contained many biologically active secondary metabolites which the plant used to protect itself from herbivores, insect, pest and several

plant diseases (Adhikari et al., 2018; Ogundajo et al., 2018). Moreover, the use of leaves should be encouraged because it helps in plant preservation.

During this survey, the researcher experienced an unwillingness to part with indigenous knowledge. This is not uncommon with researches on ethnobotanical surveys. The guardians of indigenous knowledge of herbal remedies do not usually document their practices; hence the transfer of knowledge to subsequent generations becomes difficult following their demise. This type of survey serves to fill that important gap in other to prevent knowledge erosion.

Conclusion

Medicinal plants still play an important role in the management of ailments. The majority of the pastoralists' population still relies on herbs for the treatment of their livestock, since most of these herbs are easily accessible within their locality. Therefore, there is a need for research in identifying and isolating the specific compounds responsible for the effect shown by the herbs. This study has highlighted medicinal plants used in ethnoveterinary practices in FCT, Abuja, Nigeria. However, there is a need for further documentation of more ethnoveterinary plants, parts of plant and preparation procedures using ethnobotanical survey and other systematic research.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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APPENDIX**I - *Mormodica charantia*****II - *Vernonia amygdalina*****III - *Solanum americanum*****IV - *Sorghum vulgare***

Plates I-IV. Samples of plants used in ethnoveterinary practices in the FCT, Abuja, Nigeria.