



Role of traditional medicine practitioners in the conservation of medicinal plants in Kwara State, Nigeria

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Abstract

Traditional healers use plant resources in the treatment of diseases throughout the world, however, there is little or no attention to the regeneration of these important medicinal plants used by them. This study was conducted to evaluate traditional medicine practices and the role of traditional medicine practitioners in the conservation of medicinal plants in Kwara state. A Multistage sampling technique was adopted in selecting the communities while referral sampling method was used to select the respondents in the study area. A semi-structured questionnaire was administered to 90 selected respondents. Data collected were analyzed using descriptive statistics. The result shows that majority (82.2 %) of the respondents are married male (84.4 %) of over 40 years (74.5 %) old with over 30 years (58.8 %) of experience. The study shows that majority 54.9 % who inherits the profession from their parents specializes as herbalist (38.4 %). Sixty-nine plant species were identified with leaf been the part mostly used while the most common method of harvesting was by cutting. The study revealed that difficulty in propagation (19.6 %), perishable nature (18.5 %) and herdsmen activities (16.3 %) are some of the challenges faced by the respondents. While selective harvesting (21.0 %), retention on farmland (19.7 %) and backyard planting (18.2 %) among others are measures put in place for conservation purpose. It is therefore recommended that government should urgently embark on establishment of medicinal plant farms in designated communities to ensure stable supply and conservation of medicinal plant in the study area.

Keywords: Traditional medicine; Conservation; Medicinal plants; Kwara State; Nigeria

1. Introduction

The use of traditional medicine in both developed and developing countries for the treatment of many ailments has been in existence for thousands of years and there is no doubt that their importance has been widely acknowledged. Medicinal plant is any plant which one or more of its organs contains substances that can be used for therapeutic purposes or which are precursors for the synthesis of useful drugs [1]. Medicinal plants contribute significantly to rural livelihoods and social equilibrium of the people [2]. In Africa, millions of people rely on traditional medicine derived from biological resources and well-functioning ecosystems.

Since the dawn of mankind, the use of herbs/plants has offered an effective medicine for the treatment of illnesses. Moreover, many conventional/pharmaceutical drugs are derived directly from both nature and traditional remedies distributed around the world. The practice of herbal medicine entails the use of plant species of which large number of them are facing the threat of extinction due to over exploitation [3]. Herbal medicine, also called botanical medicine, phytomedicine, or phytotherapy, refers to herbs, herbal materials, herbal preparations, and finished herbal products

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that contain parts of plants or other materials as active ingredients. The plant parts used in herbal therapy include seeds, berries, roots, leaves, fruits, bark, flowers, or even the whole plants [4].

With the increasing demand for herbal drugs, natural health products, and secondary metabolites of medicinal plants in recent times, the use of medicinal plants is growing rapidly throughout the world [5]. The majority of medicinal plants known by the healers were collected from community forests. Some of them were cultivated as a medicinal plant in the home-gardens or on their farm when the natural habitat was located far away from their village [6]. Many countries have their own traditional systems of healing that usually depend on local folk remedies and traditional medicine that meets their needs to treat ailments [7].

Specialists in traditional medicine include herbalists, bone setters, traditional psychiatrists, traditional pediatricians, spiritual therapists, local surgeons, traditional birth attendants, occult practitioners, herb sellers and general practitioners among others [8]. Traditional medical knowledge is usually passed on orally from generation to generation, in some cases with families specializing in specific treatments, or it may be taught in officially recognized universities [9]. Almost all cultures have their roots in our biological diversity in one way or the other. A healthy biodiversity provides several natural services for everyone such as ecosystem services, biological resources, social benefits and others. There are quite a lot of services we get for free. Unfortunately, anthropogenic activities have been impacting negatively on these naturally conserved flora species.

Overtime, these important flora species have been collected from the wild and used for their medicinal activity in local traditional medicine, but little is known about their conservation status. Since the beginning of this century, there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world [10]. Medicinal plants are globally valuable sources of herbal products, and they are disappearing at a high speed. Population explosion in developing countries has exerted undue pressure on frequently used medicinal plants and natural resources in general [11]. The demands of most of the people in developing countries for medicinal plants have led to indiscriminate harvesting of spontaneous flora including those in forests. Over exploitation of these wild plant sources has led to many species being extinct, threatened or endangered [12]. Hence there is the need for a study of this nature to document strategies and methodologies adopted by traditional medicine practitioners in the study area as a reference for the conservation and sustainable use of this threatened or nearly extinct species.

2. Methodology

2.1. The Study Area

This study was carried out in some selected local government areas of Kwara State. Kwara State lies between Longitude 2° 46' 25" and 6° 25' 40" E and Latitude 8° 25' 55" and 10° 8' 30" N of the Equator. The State is located within the North Central geopolitical zone commonly referred to as the Middle Belt, the State is bounded with Niger State in the north, Kogi State in the east, Oyo, Ekiti and Osun States in the south and an international boundary with the republic of Benin in the west.

The state has 16 LGAs, which are further divided into three senatorial districts i.e. Kwara North, Kwara South and Kwara Central. The primary ethnic groups are the Yoruba, Nupe, Bariba, and Fulani minorities. The state lies within a region of tropical climate consists mostly of woody savanna with forest vegetation in the south. The annual rainfall ranged between 1,000 mm to 1,500 mm. The rainy season begins at the end of March and lasts until late September, while the dry season begins in early October and ends in early March. Temperature is uniformly high and ranges between 25°C and 30°C in the wet season while in the dry season it ranges between 33°C to 34°C [13].

2.2. Sampling Procedure, data collection and analysis

Multistage sampling technique was used in this study. The state was stratified into three districts based on political delineation. Two local governments were selected in each district and three towns were selected from each local government. Using snowball or referral sampling method five respondents were selected in each town. Pre-tested semi-structured questionnaire was administered to ninety respondents in the study area (table 1). Data collected were analyzed using descriptive statistics. Frequency tables and percentages were generated for relevant variables.

Table 1 Distribution of respondents in the study area

| Political region | Local government | Town | No of respondents |
|------------------|------------------|-------------|-------------------|
| Kwara north | Moro | Shao | 5 |
| | | Idiape | 5 |
| | | Ojutaye | 5 |
| | Edu | Juma | 5 |
| | | Lafiaji | 5 |
| | | Songa | 5 |
| Kwara central | Asa | Afon | 5 |
| | | Ogbondoroko | 5 |
| | | Sapati-Ile | 5 |
| | Ilorin West | Alanamu | 5 |
| | | Egbejila | 5 |
| | | Oke-ogun | 5 |
| Kwara South | Ifelodun | Amoyo | 5 |
| | | Jimba-Oja | 5 |
| | | Omupo | 5 |
| | Irepodun | Arandun | 5 |
| | | Oro | 5 |
| | | Owode | 5 |
| Total 3 | 6 | 18 | 90 |

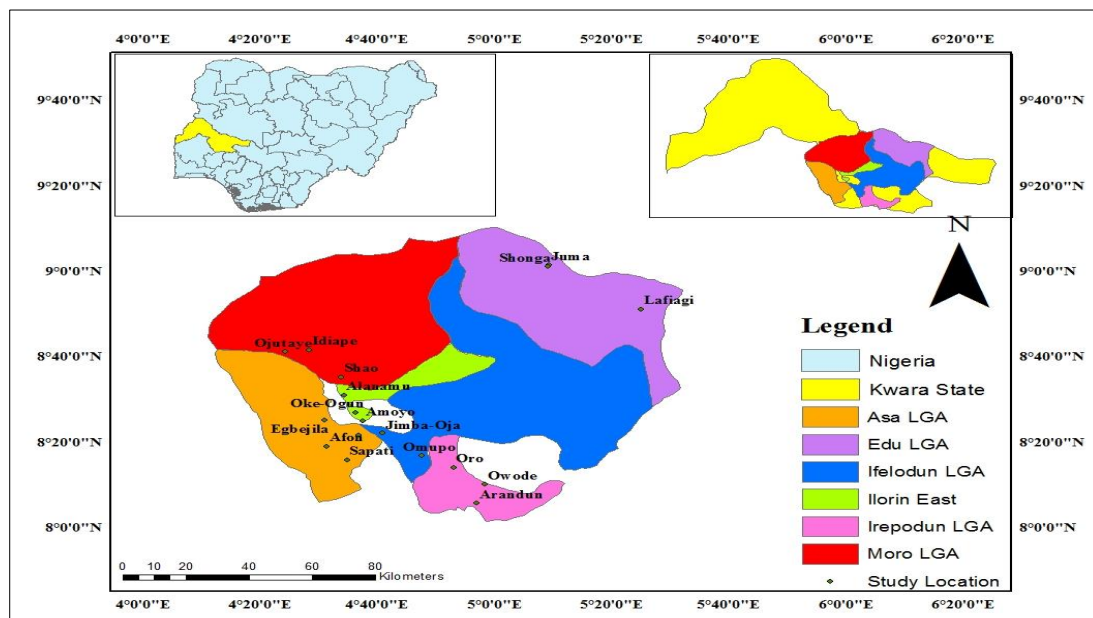


Figure 1 Map of Kwara state showing the study locations

3. Results

3.1. Socio-economic characteristics of respondents

The result in table 2 revealed that 74.5 % of the respondents are above 40 years with majority (84.4 %) been male while female constitutes 15.6 %. The study revealed that majority of the respondents (58.9 %) practice Islam, 32.2 % practice Christianity while 8.9 % practice African Traditional Religion. Result on marital status shows that 82.2 % of the respondents are married, 7.8 % are single and a smaller proportion of 3.3 % are divorced. Result on household size shows that 32.2 % of the respondent have between 1-4 members, while 55.6 % have 5-7 members and 12.2 % have 8 and above. Majority of the respondents (44.4%) had primary education, 16.7 % had no formal education, 28.9% had secondary education, while 10.0 % had tertiary education, and larger proportion (58.8 %) of the respondents had over 30 years of experience.

Table 2 Demographic distribution of respondents in the study area

| Age | Frequency | Percentage (%) |
|-------------------------------|-----------|----------------|
| Below 20 years | 3 | 3.3 |
| 21-30 years | 5 | 5.5 |
| 31-40 years | 15 | 16.7 |
| 41-50 years | 25 | 27.8 |
| Above 50 years | 42 | 46.7 |
| Gender | | |
| Male | 76 | 84.4 |
| Female | 14 | 15.6 |
| Religion | | |
| Islam | 53 | 58.9 |
| Christianity | 29 | 32.2 |
| Traditional | 8 | 8.9 |
| Marital Status | | |
| Single | 7 | 7.8 |
| Married | 74 | 82.2 |
| Divorced | 3 | 3.3 |
| Widow/Widower | 6 | 6.7 |
| Household Size | | |
| 1-4 | 29 | 32.2 |
| 5-7 | 50 | 55.6 |
| 8 and above | 11 | 12.2 |
| Educational background | | |
| No Formal Education | 15 | 16.7 |
| Primary Education | 40 | 44.4 |
| Secondary Education | 26 | 28.9 |
| Tertiary Education | 9 | 10.0 |
| Years of Experience | | |
| Below 10 years | 4 | 4.5 |
| 11-20 years | 14 | 15.6 |
| 21-30 years | 19 | 21.1 |
| 31-40 years | 32 | 35.5 |
| Above 40 years | 21 | 23.3 |
| Total | 90 | 100 |

3.2. Traditional medicine practices

Table 3 present results on traditional medicine practices by respondents in the study area. The study revealed that 54.9 % of the respondents becomes practitioner by inheritance with 38.4 % been herbalists while 28.1 % are general practitioners. Source of collection shows that 26.2 % of the respondents collect from farmland and herb sellers respectively while 25.4 % collect from forest. The frequency of collection shows that 39.5 % of the respondents collect herbs every day while 35.4 % collect as the need arises. Result on availability shows that 70 % of the respondents asserted that the herb products are common in the forest. While 94.4 % said there are taboo associated with the collection of herbs and 42.2 % said the profession is very lucrative.

Table 3 Traditional medicine practices

| Questions | Response | Frequency | Percentage |
|---|----------------------|-----------|------------|
| How did you become a practitioner? | Inheritance | 67 | 54.9 |
| | Apprenticeship | 35 | 28.7 |
| | Divine call | 20 | 16.4 |
| | Total | 122* | 100 |
| Area of specialization | Herbalist | 78 | 38.4 |
| | Bone setter | 5 | 2.5 |
| | Psychiatrist | 3 | 1.5 |
| | Birth attendant | 22 | 10.8 |
| | Herb seller | 38 | 18.7 |
| | General practitioner | 57 | 28.1 |
| | Total | 203* | 100 |
| Where do you get/collect your medicinal plants? | Farmlands | 90 | 26.2 |
| | Herb sellers | 90 | 26.2 |
| | Forest | 87 | 25.4 |
| | Backyard/home garden | 76 | 22.2 |
| | Total | 343* | 100 |
| How often do you go for collection? | Everyday | 85 | 39.5 |
| | Weekly | 54 | 25.1 |
| | As the need arises | 76 | 35.4 |
| | Total | 215* | 100 |
| Are all the products common in the forest? | Yes | 63 | 70.0 |
| | No | 27 | 30.0 |
| | Total | 90 | 100 |
| Any taboo associated with herb collection | Yes | 85 | 94.4 |
| | No | 5 | 5.6 |
| | Total | 90 | 100 |
| How lucrative is the profession? | Very lucrative | 38 | 42.2 |
| | Lucrative | 42 | 46.7 |
| | Not lucrative | 10 | 11.1 |
| | Total | 90 | 100 |

* Multiple responses identified plant species used for traditional medicine

3.3. Some identified plant species used for traditional medicine

Table 4 Plant species, part used. Harvesting method, availability and uses

| S/n | Local name | Scientific name | Part used | Harvesting method | Availability | Medicinal uses |
|-----|------------|-----------------------|---------------------|---------------------------|--------------|--|
| 1 | Abamoda | Bryophyllum pinnatum | Leaf, root, | Cutting, digging | Moderate | Rheumatism, cough, asthma, ulcers |
| 2 | Abeere | Picralima nitida | Fruit | Plucking | Scarce | Blood deficiencies, infections, diabetes |
| 3 | Aberodefe | Desmodium gangeticum | Leaf, seed | Cutting, picking | Scarce | Tonic, anti-catarrhal |
| 4 | Abo | Annona senegalensis | Leaf | Cutting | Scarce | Bark ache |
| 5 | Afeke | Trema orientalis | Bark | Peeling | Moderate | Mouth wash, malaria, cough |
| 6 | Afon | Treculia Africana | Fruit | Plucking | Scarce | Miscarriage |
| 7 | Ahun | Alstonia boonei | Bark | Peeling | Moderate | Malaria |
| 8 | Ajeobale | Croton gratissimus | Leaf, root | Cutting, digging | Abundant | Uterine disorders, constipation, pains |
| 9 | Ajo | Zingiber officinale | Rhizome | Uprooting | Abundant | Malaria, yellow fever, high blood pressure, boil |
| 10 | Akomu | Pycnathus angolense | Bark, exudate | Peeling | Moderate | Malaria, white tongue |
| 11 | Arindan | Tetraplura tetraptera | Fruit | Picking | Scarce | Ulcer |
| 12 | Arojoku | Eclipta prostrata | Leaf | Uprooting | Scarce | Cough, asthma, snake poisoning |
| 13 | Asofeyeje | Rauvolfia mitoria | Root, leaf, bark | Cutting, digging, peeling | Scarce | Insomnia, hysteria, snake venom |
| 14 | Asuwon | Senna alata | Leaf, flower, fruit | Cutting, plucking | Abundant | Gonorrhoea, pile, ringworm, STDs |
| 15 | Atale | Zingiber officinale | Rhizome | Uprooting | Moderate | Ulcer |
| 16 | Atare | Aframomum melegueta | Fruit, | Digging | Abundant | Arthritis, malaria, aphrodisiac |
| 17 | Atorin | Glyphea brevis | Leaf | Cutting | Abundant | Dysentery, diarrhoea |
| 18 | Awusa | Plukenetia conophorum | Leaf, fruit | Picking | Abundant | Typhoid fever, snake bite |
| 19 | Ayin | Anogeissus leocarpus | Root | Digging | Abundant | Cold |
| 20 | Bomu-bomu | Calotropis procera | Leaf | Cutting | Abundant | Diarrhoea, dysentery, pneumonia, fever |
| 21 | Dongoyaro | Azadiracta indica | Bark, leaf | Cutting, peeling | Abundant | Malaria, skin ulcers, stomach upset |
| 22 | Efinrin | Hoslundia opposite | Leaf | Cutting | Abundant | Fever, cold, catarrh |

| | | | | | | |
|----|-----------------|------------------------|-----------------------|----------------------------|----------|---|
| 23 | Efinrin nla | Ocimum gratissimum | Leaf | Cutting | Abundant | Dysentery, diarrhoea |
| 24 | Egbo Inabi | Plumbago zeylanicca | Root | Uprooting | Scarce | Rheumatism, leprosy, ulcers |
| 25 | Ejinrin nla | Momordica feotida | Whole plant | Uprooting | Abundant | Stomach ache, dysentery |
| 26 | Elu | Lonchocarpus cynescens | Leaf | Cutting | Scarce | Burn scar |
| 27 | Epinpin | Ficus exasperate | Leaf, exudate | Cutting, peeling | Abundant | Hypertension, boil, whitlow, ring worm |
| 28 | Esin | Alchornia cordifolia | Leaf | Cutting | Abundant | Dysentery, conjunctivitis |
| 29 | Esunrin funfun | Senna podocarpa | Leaf | Cutting | Abundant | Back ache, dysentery, eczema |
| 30 | Ewe Ailu | Macrosphyla longistyla | Leaf | Cutting | Scarce | Diabetes, diarrhoea, ulcers |
| 31 | Ewe Aje | Myrianthus arboreus | Leaf | Cutting | Abundant | Toothache, bronchitis, pains, fractures |
| 32 | Ewe Ina/Esisi | Mucuna pruriens | Leaf | Cutting | Scarce | Infertility, aphrodisiac, bites |
| 33 | Ewe Jenjokoje | Cissampelos owariensis | Leaf | Cutting | Scarce | Ulcer, wound, fever, asthma, cholera |
| 34 | Ewe Oogbo | Parquentina nigrescens | Leaf | Cutting | Abundant | Measles, dysentery, menstrual disorder |
| 35 | Ewuro | Vernonia amygdalina | Leaf | Cutting | Abundant | Diabetes, nausea, ringworm |
| 36 | Gbegbe | Icacina trichanta | Leaf, tuber | Cutting, uprooting | Scarce | Hypertension, asthma, constipation |
| 37 | Ibepe | Carica papaya | Leaf, fruit, root | Cutting, uprooting | Abundant | Intestinal infections, tract disorders, typhoid |
| 38 | Imi Esu | Ageratum conyzoides | Whole plant | Uprooting | Abundant | Coughs, headache, pains, pile |
| 39 | Ira | Bridelia ferruginea | Leaf, bark | Cutting, peeling | Abundant | Malaria, cough, vomiting, white tongue |
| 40 | Iyere | Piper guennese | Seed | Plucking | Moderate | Tooth ache, |
| 41 | Iyeye | Spondias mombin | Leaf | Cutting | Abundant | Stomach ache, after birth, gonorrhoea, vomiting |
| 42 | Kasu | Anarcadium occidentale | Bark, fruit, leaf | Cutting, peeling, plucking | Abundant | Ulcers, warts, malaria, skin stimulant |
| 43 | Koleorogba | Pergularia daemia | Leaf | Cutting | Scarce | Rheumatism, malaria, cough |
| 44 | Koriko-Oba | Cymbopogom citratus | Leaf | Cutting, uprooting | Abundant | Fever, nervous disorders, analgesic |
| 45 | Kori-Kosun | Waltherica indica | Leaf, stem, root | Cutting, uprooting | Moderate | Pain, inflammation, wound infection |
| 46 | Kuje-kuje | Lycopodium cernum | Whole plant | Uprooting, cutting | Moderate | Dysentery, scurvy, rheumatism |
| 47 | Lapalapa/botuje | Jatropha curcas | Leaf, root, seed, sap | Cutting, plucking, digging | Abundant | Antimicrobial, anticancer, mouth wash |

| | | | | | | |
|----|---------------|-------------------------|------------------------|------------------------------|----------|---|
| 48 | Mafowobomomi | Argemona Mexicana | Leaf | Cutting | Abundant | Diuretic, cough, inflammation |
| 49 | Mango | Magnifera indica | Leaf, root, stem, bark | Cutting, peeling, uprooting | Abundant | Malaria, high blood pressure, insomnia, lesion |
| 50 | Marugbosanyan | Ocimum basilicum | Leaf, flower | Cutting | Scarce | Headaches, constipation, warts |
| 51 | Oju-Musu | Abrus precatorius | Leaf, root, seed | Uprooting, cutting, plucking | Abundant | Fever, cough, cold, sores & wounds |
| 52 | Omisinminsin | Abrus canescens | Leaf, root, seed | Cutting | Abundant | Cancer, tonic, piles |
| 53 | Omonigelegele | Cassytha filiformis | Whole plant | Cutting, uprooting | Scarce | Ulcers, malaria, hepatitis |
| 54 | Omosao | Clematis hirtusa | Leaf, flower | Cutting | Scarce | Pain, headache, gout |
| 55 | Orijin | Hannoa undulate | Leaf | Cutting | Moderate | Fevers, malaria |
| 56 | Oriro | Antiaris Africana | Bark | Peeling | Moderate | Malaria |
| 57 | Orogbo | Garcinia kola | Seed | Picking | Moderate | Cough, ulcer, sore throat |
| 58 | Oruwo | Morinda lucida | Bark, root | Peeling, digging | Moderate | Malaria, convulsion, diabetes |
| 59 | Osun | Pterocarpus osun | Bark | Peeling | Moderate | Craw-craw, filaria |
| 60 | Osunsun | Carpolobia lutea | Root, leaf, stem | Cutting, uprooting | Scarce | Sterility, worm infestation, aphrodisiac |
| 61 | Owu | Gossypium arboretum | Leaf | Cutting | Abundant | Black tongue, typhoid fever |
| 62 | Padimo | Biophytum petersianum | Leaf | Cutting | Abundant | Pains, antidotes, convulsions |
| 63 | Pandoro | Kigelia africanna | Fruit | Plucking | Scarce | Ulcer, yellow fever |
| 64 | Paran | Dalbergia saxatilis | Leaf, | Cutting | Scarce | Cough, small pox, lesions, tooth ache |
| 65 | Pohan | Lophira alata | Leaf | Cutting | Moderate | Ulcer, stomach ache |
| 66 | Rinrin | Peperomia pelucida | Whole plant | Uprooting | Abundant | Acne, boils, gout |
| 67 | Sawerepepe | Cyathula prostrate | Leaf, seed | Uprooting | Abundant | Rheumatism, fever, dysentery, eye trouble |
| 68 | Tannapowo | Synedrella nodiflora | Leaf | Cutting | Abundant | Wound infections, laxative, diarrhea |
| 69 | Tude | Caliandra portoricensis | Root | Uprooting/digging | Scarce | Constipation, epileptic seizures, fever, rheumatism |

Table 4 presents list of some plants used for traditional medicine by the respondents in the study area. The result shows the names, part used, method of harvesting, level of abundance and uses. Observation from the study revealed that leaf was the part mostly used while the most common method of harvesting was by cutting. Result on availability shows that 34 species are abundant, 21 are scarce while 14 species are moderately available

3.4. Challenges and Conservation methods

Table 5 present challenges faced by the respondents in the conservation of medicinal plants in the study area. The result shows that 19.6 % of the respondents opined that the critical challenge faced by them is difficulty in propagation, while perishable nature accounted for 18.5 %. These were followed by herdsmen activities and lack of storage facility with 16.3 % and 14.5 % respectively. Table 6 present method of conservation adopted by the respondents in the study area. The result shows that selective harvesting (21.0 %) has the highest frequency of mentioning followed by retention on farmland/plantation (19.7 %) and backyard planting (18.2 %). Conservation through sacred groove has the least value of 10.6 %.

Table 5 Challenges to Conservation

| Challenges | Frequency | Percentage (%) |
|---------------------------|-----------|----------------|
| Scarcity | 47 | 10.5 |
| Seasonal availability | 34 | 7.6 |
| Societal stigmatization | 58 | 13.0 |
| Perishable nature | 83 | 18.5 |
| Lack of storage facility | 65 | 14.5 |
| Herdsmen activities | 73 | 16.3 |
| Difficulty in Propagation | 88 | 19.6 |
| Total | 448* | 100 |

* Multiple responses

Table 6 Methods of Conservation

| Methods of conservation | Frequency | Percentage % |
|-------------------------------------|-----------|--------------|
| Sacred groove | 43 | 10.6 |
| Preservation of herbs in dried form | 68 | 16.7 |
| Backyard planting | 74 | 18.2 |
| Retention on farmland | 80 | 19.7 |
| Plantation establishment | 56 | 13.8 |
| Selective harvesting | 85 | 21.0 |
| Total | 406* | 100 |

* Multiple responses

4. Discussion

The study clearly showed that matured men with low educational background are mostly involved in traditional medicine practice (TMP) in the study area (table 2). The observed involvement of this group of people in this business in the study area could be attributed to the fact that, harvesting of herbal materials (either by climbing or digging) is tasking and may be too demanding for female gender. Also, collection of the herbs at times involves travelling a long distance alone into the forest which security wise may be too dangerous for women. The observed low level of younger generation in TMP profession could be attributed to the migration of the youths from rural communities to urban cities for white collar and other more lucrative jobs. This assertion corroborates Oledede et al, [14] who reported low

involvement of younger generation in the profession as they care less about acquisition of knowledge in the use of plant resources for health care delivery.

The study also established that majority of the respondents claimed they inherited the profession from their parents or relatives while few acquired it through apprenticeship or divine order. This submission corroborates the report by WHO [9] which asserted that traditional medicine practice is a family business where medical knowledge is often passed on orally from generation to generation. The study also revealed that the respondents specialize in different areas of health care delivery such as herb selling, herbalists, bone setting, birth attendance among others. Observed specialization in this study is in agreement with that of Lawal [8] who reported some area of specialization in traditional medicine. The study revealed that medicinal plants were purchased from herb sellers or collected from farmland, forest and backyard. In most cases, collections are done every day or when the need arises. This is an indication that there is pressure on demand for these plant materials to the extent that some have become scarce to get in the forest.

The study also revealed that sixty-nine (69) different plant species are harvested and used (either singly or in combination) by traditional physicians for the treatment of different ailments in the study area. This observation attests to the fact that forest products are of immense importance to rural communities, which heavily depend on them for health care delivery. Also, the diversity of plant species used for traditional medicine in the study area (Table 4) could be attributed to large vegetation cover of the study area with different ecological zones that ranges from Rain forest to Derived savanna and Guinean savanna vegetations. Result from the study showed that the leaf is the plant part most frequently used in herbal preparation. The use of leaves may be due to the fact that it is the easiest means by which plant can be identified. Another reason could be that in addition to the presence of abundant chemical constituents responsible for healing in the leaf, it also contains higher percentage of nutritive substance needed for normal growth [15].

This study revealed that traditional medicine business is not without challenges as expressed by the respondents (Table 5). This challenges in the order of ranking includes difficulty in propagation, perishable nature of the herbs, herdsman activities (some land that used to be covered with vegetation have been over-grassed and turned to grass land), lack of storage facility, societal stigmatization (belief that the profession is for poor uneducated people), scarcity of some plant and seasonal availability of some herbal plant. Similar observation has been reported by Aghebati *et al* [16]. Results from this study revealed that some level of conservation measures are put in place by the respondents to ensure continuous availability of the plants for herbal medicine. Some of these measures as shown in table 6 include selective harvesting, retention on farmland, backyard planting and preservation of herbs in dried form among others. Some herbal material that are frequently used or required in emergency cases are usually propagated in home garden or preserved in dried form. This assertion is in agreement with the reported by Msuya and Kideghesho [17], who identified domestication and selective harvesting as some traditional practices used to ensure sustainable use and conservation of plant species.

5. Conclusion

This study assessed traditional medicine practices and the role of traditional medical practitioners in conservation of medicinal plants in Kwara State. Considering the rural setting of most of the villages visited and the low standard of living resulting from low income, majority of the people in the study area depends on herbal medicine for their primary health care delivery. The frequent exploitation of these herbal materials has greatly put pressure on the forest resources to the extent that some plant species are becoming scarce to come by. The study showed that traditional medicine is an aged long practice among the people in the study area and it is a means of livelihood especially for the herbalist and herb sellers who depend on the plant as source of income. Having realized the danger of scarcity and possible extinction of some of these plant species in the nearest future, the respondents have put some conservation measure such as selective harvesting, retention on farmland and backyard domestication in place to ensure continuous availability of these resources. For more robust conservation of these herbal resources and by extension our ecosystem, government and other stakeholders in renewable natural resources management should as a matter of urgency embark on establishment of medicinal plant farms in designated communities to ensure stable supply and conservation of medicinal plant in the study area.

Compliance with ethical standards

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Disclosure of conflict of interest

We the authors of this article hereby stated that there was no conflict of interest, and that we are responsible for the contents and writing of the article.

Authors contribution

We, the authors of this manuscript declare, that the article is an honest work, and agree with the below-listed contributions of each author to the result of the work.

- Olagunju Olujobi; Conceptualization, draft proposal, writing of the manuscript, editing, correspondent.
- Musa Iyanda; Review of literature, preparation and administration of questionnaire.
- Moyosore Ayotunde-Ojo: Administration of questionnaire, data preparation.
- Ademola Omoyeni: Administration of questionnaire, typing of the manuscript.

Statement of informed consent

This study is not about any individual it is a survey study on the use and conservation of medicinal plants whereby respondents/informants were interviewed after obtaining their consent.

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