ORIGINAL RESEARCH

Ethnobotanical Survey of Medicinal Plants Used in the Management of Tumor Related Ailments in Some Local Government Areas in Kwara State, Nigeria

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ABSTRACT

Background: Plants materials have been used for medicinal purposes over the years. It is important that natural medicines used in various Nigerian communities are identified and studied for the potentials for standardization and development as sources of new drugs. This survey is an effort in this direction.
Objective: Precisely, the study aimed to survey four Local Government Areas (LGAs) of Kwara State (Central Nigeria) for the medicinal plants used in the management of tumor related ailments by traditional medical practitioners (TMPs).
Method: Data relating to the identities of the natural medicines, level of education and demographic information of participating TMPs were collected using interviewer-administered, semi-structured questionnaires. This study is cross-sectional and descriptive, and sampling was purposive. IBM SPSS (V23) software was deployed for data analysis, with p-value set at 0.05 for significance.
Results: A total of forty-five respondents were interviewed (56% male and 44% female). Most of them are fairly educated with 11 to 20 years' experience as traditional healers. A total of 50 plants were mentioned as being used in the management of tumors and related ailments. Tumor regression was mostly monitored by patients' verbal responses and physical examinations of affected parts by the practitioner. Most of the healers do not keep records of their treatments.
Conclusion: Several herbs were identified by the TMPs for tumors and related ailments in Kwara, Nigeria. From their responses, the need for improvement is dire. These identified herbs may provide natural sources for drug development of cheaper alternatives in developing countries and globally.

Keywords: Medicinal Plants; Traditional Medicine; Traditional Healers; Tumors; Kwara state

INTRODUCTION

The burden of cancer remains very significant in this 21st century. An estimated 14 million people were diagnosed with cancer and over 8 million people died in 2012[1]. Over half the cases and nearly two-thirds of deaths occurred in Africa and other

low- and middle-income regions. These numbers are expected to rise to almost 22 million cases (60% in low- and middle-income countries) and 13 million deaths (70% in low- and middle-income countries) by 2030[1]. The most common types of cancers in Nigeria include breast, prostate, liver, colorectum, cervix uteri and non-Hodgkin lymphoma[2]. Over one hundred thousand cases of cancer were recorded in Nigeria with 26.7% for breast cancer, 13.8% for cervix uteri, 11.8% for liver and 11.7% for prostate cancer[3]. According to the World Health Organization, over 10 million deaths were recorded globally in 2020, because of cancer[4]. Disturbingly, cancer is set to become the newest epidemic in the developing world, claiming a lot of lives; with limited funding available to tackle this disease. Raising awareness of this looming epidemic and initiating innovative therapy strategies in Africa is the expected step to take. If we take concerted action now, we can prevent major tragedies in future.

In recent years, cancer was ranked the 5th cause of death in Africa[5]. The damaging effects of tumors are becoming more challenging in Africa because of factors relating to a rapid growth of its population and a depreciating economy. According to the World Health Organization (WHO), it was reported that in developed countries like United States of America and other western countries, incidence and mortality rates of most cancers are decreasing, but in developing countries like Nigeria the situation is the contrary. For instance, in Kano-Nigeria, the pattern of cancer recorded in its cancer registry over the last ten years revealed a concerning increase in number of tumor cases[5]. This increase agrees with the World Health Organization's prediction that there will be a remarkable increase in the prevalence of cancer in developing countries[6]. Synthetic chemotherapeutic agents have overwhelming side effects stemming from lack of specificity for tumor cells and are not easily accessible in rural areas[7]. In addition, the new challenge is that the cancerous cells are resistant to *chemotherapeutic* drugs which has led to deleterious outcomes[8,9]. Herbal medicines play a major role in the prevention and management of tumors and associated diseases. Many of the pharmaceutical research works done in technologically advanced countries like USA, Germany, France, Japan, and China have significantly enhanced the presentation and quality of some herbal medicines used in cancer therapy[10].With advancements in molecular science and refinement in isolation & structure elucidation techniques, there are improved techniques used to identify and characterize more anticancer herbs and develop new remedies that can treat cancer. The therapeutic mechanism of most anticancer herbs is executed by inhibiting cancer-activating enzymes, stimulating DNA repair, and enhancing activity of the immune cells[10]. Some herbs act as body protectants from cancer by improving the detoxifying activities of the body[11]. Certain derivatives of herbs are also known to inhibit growth of cancer by modulating the activity of specific hormones and enzymes[12]. Some plants minimize adverse effects due to chemotherapy and radiotherapy. Scientists are now concentrating on herbal medicines to boost immune cells of the body against the formation of tumors. By understanding the synergy in the activities of various constituents of anticancer herbs, the naturally derived formulations can be designed to fight cancerous cells without hurting the normal cells of the body.

Various ailments have been treated with an array of medicinal plants in the past centuries amongst which about seventy thousand species have been screened for their pharmacological activities[13]. Raw materials sourced from tropical countries are used for modern drug development where a fraction of essential drugs is from plant origin while some are chemically synthesized based on natural products[14]. To the African continent, phytomedicine is not entirely new; plant materials have been used for varieties of medicinal and nutritional purposes over the years. Medicinal plants are used in the

delivery of healthcare services in Nigeria where its citizens in the rural settings are highly dependent on medicinal plants and TMPs[15]. Nigerians have deployed traditional medicines in their crude and refined forms as remedies to many health deficiencies. TMPs were found to be more accessible when compared to medical doctors to the populace as opined in an earlier report[16]. Of note is the high recognition of ethnobotanical studies as the most practical method of discovering new medicinal plants or working further on bioactive constituents earlier reported[17]. This method reveals greater proportion of bioactive useful medicinal compounds over other methods of random selection and screening[18].

Natural medicines are abundant and usually accessible. In addition to this, the comparative advantage of affordability and efficacy has favored the use of traditional medicines in recent times[19]. While these prospects are encouraging, it is worrisome however that some populations procure, use and store these medicines inappropriately and indiscriminately. There are also safety concerns associated with the use of natural medicines; against the popular and convenient general perception that all herbs are harmless. Furthermore, the materials used are not documented in some cases; they are not usually similar or uniform among the practitioners which may hamper the quest for and process of standardization. As a result, it is important that natural medicines as used in various Nigerian communities are identified and studied for the potentials for standardization and development as sources of new drugs of immense benefit to humanity. This survey is an effort in this direction. It aims to survey four local government areas of Kwara State for the medicinal plants used in the management of tumor related ailments. Identifying the different local therapies used for tumor management in a region of central Nigeria will provide baseline data for subsequent improvement and standardization of herbs used for tumor care in this region and beyond. The herbs identified can be further investigated as potential new sources of drugs in cancer management.

METHODS

Study Area

Kwara State exists at the North Central geo-political zone of Nigeria. As of the 2006 census, it had a population of 777,667, making it the 6th largest city by population in Nigeria[20].

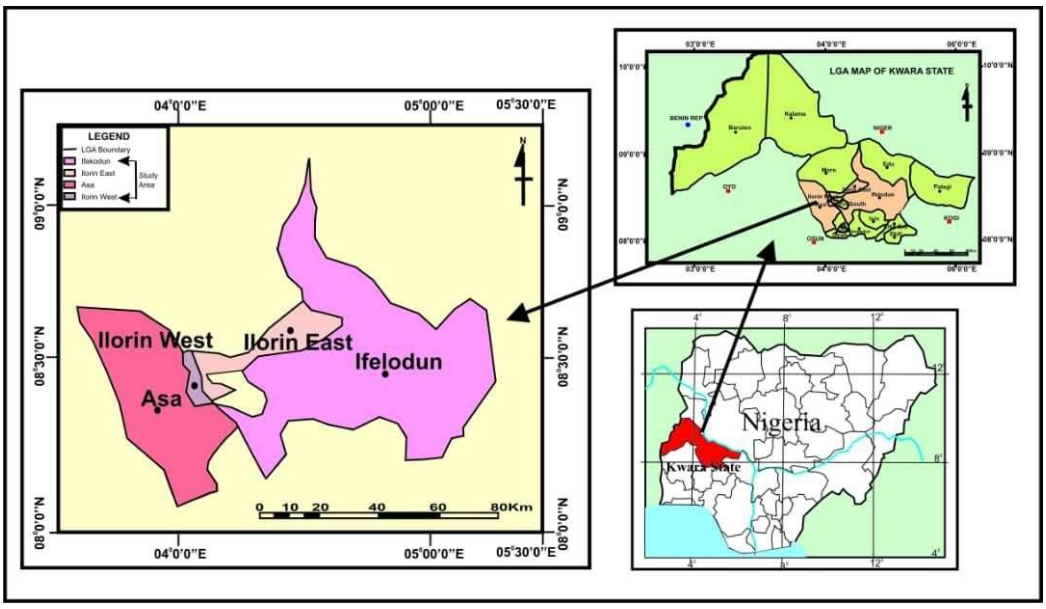

Figure 1: Map showing the local governments where the survey was conducted.

It is located 8.50 latitude and 4.54 longitudes and is situated at elevation 320 meters above sea level with a temperature ranging from 18.1 to 33.5 ºC through the year[21]. The following local government areas were considered for this study based on economic, social, and population dispersion across Kwara State. In total, Kwara has sixteen local government areas. The four local governments used in the study include: (i.) Asa (ii.) Ifelodun (iii.) Ilorin-East (iv.) Ilorin-West.

Study design

This study is a cross-sectional descriptive study. In a cross-sectional descriptive study, information and potentially related factors are measured at a specific point in time for a defined population. In the case of this study, TMPs resident in specific areas of Kwara State were interviewed for information relating to traditional management of tumors. Only TMPs' resident in Asa, Ifelodun, Ilorin East and Ilorin West Local Government Areas were voluntarily enrolled. Individuals who are not TMPs in the focus local government areas, TMPs that did not give consent to participate and those with disabilities preventing them from communicating verbally were excluded from the study.

The sampling method utilized is purposive. TMPs were deliberately targeted as subjects of the research for the wealth of information and experience they are expected to possess on the intended study subject of traditional remedies used in their communities for the management of tumors and related ailments. All identified and willing respondents were recruited for the study.

Data Collection Tool

The questionnaires used as data collection were self-designed by the researcher based on the range of information required for the study and the peculiarities of the focus population. Prepared questionnaires are semi-structured and divided into two sections: Part A collecting demographic information and Part B on responses relating to traditional medicines and approaches in tumor management. Questions were tested for appropriateness and suitability using four subjects: one from each of the local government areas.

Data Collection Procedure

Data relating to the identities of the natural medicines, nature of ailments, demographic information of participating TMPs and users were collected using interviewer administered, semi-structured questionnaires. Each potential participant was first educated in simple and clear terms on the scope and importance of the information that will be provided. Emphasis was laid on the harmless nature of the process and that all information divulged are to the ultimate benefit of humanity. This facilitated the issuance of verbal consent by all the respondents. Questionnaires were administered by the researcher with assistance from two research assistants that were recruited. These assistants were trained for two weeks by the researcher on methods of approach, consent seeking, and techniques of information collection and documentation; before being deployed to the field. The questionnaires focused on collecting information on local names of plants, part of plants used and demographics of the practitioner. Some of the plant parts mentioned were identified from literatures using their common names. The few unidentified ones were reported as unknown. The research assistants were compensated for their engagement. Data collection was done for a total of four weeks across the four local government areas of Kwara State.

Data Analysis

The questionnaire responses were coded and then entered as data into relevant computation software. Data was organized into data and charts using the Microsoft Excel software. Descriptive statistics are presented as frequency, percentages, mean and standard deviations where necessary. Statistical comparison of some of the

demographic responses provided for associations with responses on tumor management by traditional medical practitioners was done using the Chi Square statistical tool on the IBM SPSS (V23) software package. P-value was set at 0.05 for measure of significance.

RESULTS

A total of 45 traditional medical practitioners were enrolled for this study across the four local government areas. This number represents the total number of practitioners in these areas that consented and were available to participate in the study.

Table 1 represents 47 herbs used by the traditional practitioners to treat tumours and related illness and part of the plants employed. The respondents disclosed the source of procuring the herbs and natural products as bushes and open herbal markets within the state. Most of the plant parts were used by maceration in either water, alcohol, or soft drinks. The plants were reported to be mostly utilized in curing physical tumours and most especially tumours in women.

The methods by which response to therapy is assessed by traditional medical practitioners are represented in Table 2 with 40% using a combination of patient's verbal response and physical examination.

Table 1: Medicinal Plants and Materials used in the Management of Cancer in the Four LGAs

Scientific Names	Voucher Numbers from Authentication	Plant family	Local Names in Yoruba (English names)	Parts used
Alstonia congesis	UILH/006/999/2022	Apocynaceae	Ahun (Stool wood)	Bark
Lecaniodiscus cupanioides	UILH/002/1057/2022	Sapindaceae	Aika/Akika	Leaves
Capsicum cayenne	UILH/023/751/2022	Solanaceae	Ata Ijosi (African Pepper)	Fruit
Petiueria alliacea	UILH/050/1224/2022	Burseraceae	Awogba arun (Bush candle, African olive, African elemi, canarium)	Bark
Anarcardium Occidentale	UILH/024/835/2022	Anacardiaceae	Kasu (Cashew)	Bark
Ocimum gratissimum	UILH/025/984/2021	Labiatae	Efinrin / Efinrin nla (Clove Basil)	Leaves
Erythrophleum suaveolens		Leguminosae	Epo Obo (Sasswood)	Bark
Corpolobia lutea	UILH/026/1424/2022	Polygalaceae	Igi Osunsun (Cattle stick)	Root
Argemone mexicana	UILH/028/974/2022	Papaveraceae	Mafowokan Omomi (Mexican Prickly Poppy)	Leaves
Ocimum basilicum	UILH/005/1354/2021	Labiatae	Efinrin Wewe (Common Basil, holy basil, sweet basil, lemon basil)	Leaves (used in combination with other herbs)
Terminalia avicennioides	UILH/029/1405/2022	Combretaceae	Orin Odan	Bark
Eragrostis tenella	UILH/022/104/2022	Poaceae	Ori Igun	Whole plant

Euphorbia latifolia	UILH/030/1423/2022	Euphorbiaceae	Oro Adete (Cactus)	Root
Euphorbia deightonii	UILH/030/1403/2022	Cactaceae	Oro Agogo (Prickly spear)	Stem/whole plant
Citrus aurantifolia	UILH/132/1195/2022	Rutaceae	Oronbo /osan wewe (Lime)	Fruit
Unknown specie		-	Singo	Leaves
Unknown specie		-	Awon Aja	Leaves
Potash		-	Kaun	-
Uvaria afzelii		Annonaceae	Gbogbolese	Root
Alafia barteri		Apocynaceae	Agbari Etu	Leaves
Entandrophragma	UILH/033/1325/2022	Meliaceae	Jebo	Bark
Panax ginseng		Araliaceae	Tamolabiya	Leaves
Clerodendrum volubile	UILH/034/1254/2022	Lamiaceae	Marugbo sanyan	Leaves (used in combination with other herbs)
Unknown specie		-	Teyo	Bark, Root
Kigelia africana	UILH/035/958/2022	Bignoniaceae	Pandoro (Sausage tree)	Leaves
Brassica oleracea	UILH/036/1405/2022	Brassicaceae	Agano (Mustard)	Bark
Xylopia aethiopica (Dunnal)	UILH/037/1089/2022	Annonaceae	Epo Erun	Bark
Chassalia kolly (Schumach.)		Rubiaceae	Isepe Agbe	Bark
Bidens Pilosa	UILH/038/1004/2022	Asteraceace	Oro Abebe	Leaves
Securidaca longepedunculata	UILH/002/192/2022	Polygalaceae	Idi-Ipeta	Bark
Unknown specie		-	Kasan	Leaves
Phyllanthus aruceus	UILH/039/1051/2022	-	Eyinolabe	Leaves
Euphorbia hirta	UILH/042/848/2022	Euphorbiaceae	Ewe Emi ile	Leaves (used in combination with other herbs)
Sorghum bicolor	UILH/043/1043/2022	Leguminosae	Poroporo	Whole plant
Unknown specie		-	Sonsoneyi	Bark
Khaya ivorensis	UILH/040/1132/2022	Euphorbiaceae	Agawo	Bark
Cypraea moneta		-	Owo Eyo (Cowrie shells)	Shells
Gun powder		-	Etu Ibon	-
Gladiolus dalenii	UILH/041/1151/2022	Iridaceae	Baka	Leaves, whole plant
Unknown specie		-	Iseta	Leaves
Ficus exasperata		Moraceae	Ipin (Sandpaper plant)	Leaves
Unknown specie		-	Enu Opiye	-
Cochlospermum planchonii	UILH/044/922/2022	Cochlospermaceae	Feru	Bark
Aframomum melegueta	UILH/048/1166/2022	Zingiberaceae	Atare	Seeds

Lawsonia inermis	UILH/045/606/2022	Lythraceae	Laali	Leaves
Citrus sinensus	UILH/046/996/2022	Rutaceae	Epo osan	Peel
Creteva adansonii		Capparaceae	Egun orun	Leaves
Agava sisalana		Agavaceae	Aboro	Leaves
Tetrapleura tetraptera	UILH/047/1131/2022	Leguminosae	Aidan onigun	Seeds
Byrsocarpus coccineus	UILH/049/729/2022	Connaraceae	Amuje	Bark

Table 2. Methods of Assessing Response of Patients to Therapy

Monitoring	Distribution	Percentage %
Medical Check Up Within 1-4 Months	1	2.22
Patient's Verbal Response	2	4.44
Patient's Verbal Response, Physical Examination	18	40.00
Patient's Verbal Response, Physical Examination (Within 10 Days)	2	4.44
Patient's Verbal Response, Physical Examination (Within 14 Days)	2	4.44
Patient's Verbal Response, Physical Examination (Within 15 Days)	1	2.22
Patient's Verbal Response, Physical Examination (Within 21 Days)	4	8.89
Patient's Verbal Response, Physical Examination (Within 25 Days)	1	2.22
Patient's Verbal Response, Physical Examination (Within 3 Days)	1	2.22
Patient's Verbal Response, Physical Examination (Within 5 Days)	1	2.22
Patient's Verbal Response, Physical Examination (Within 7 Days)	4	8.89
Physical Examination, Medical Check Up	8	17.78
Total	**45**	**100**

From the study, there were more male respondent than females with 56% males. The respondents had one form or education or the other.

About 60% of them have a minimum of primary education with only about 9% being graduates of tertiary institution as represented in Figure 2.

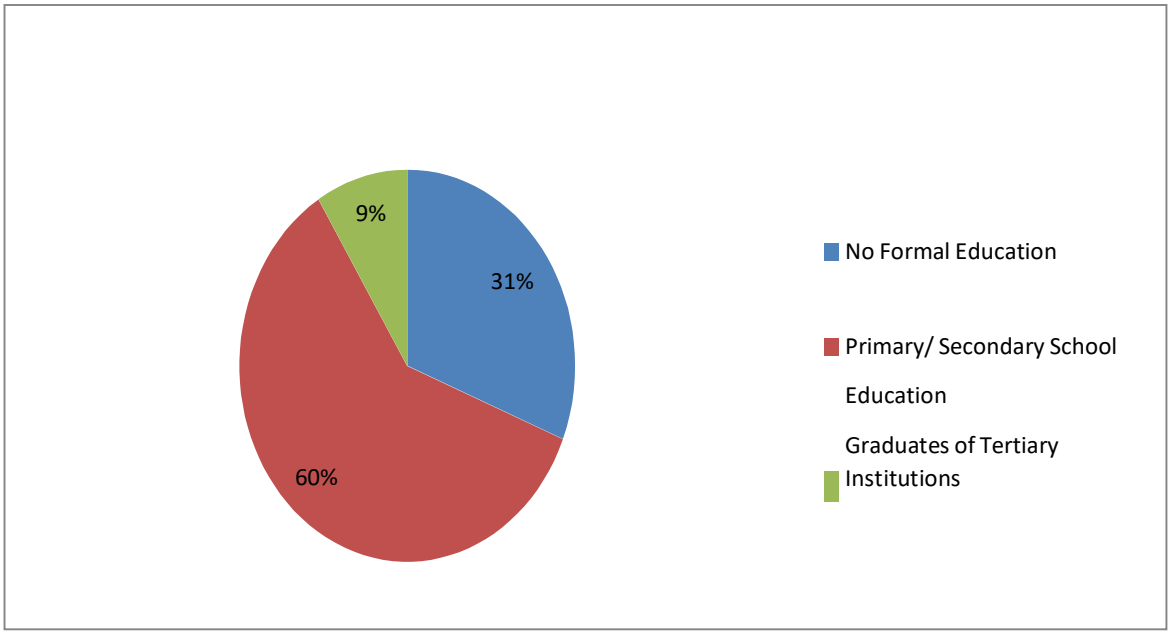

Figure 2. Educational Status of respondents

Majority of the respondents did not disclose their age and of those that did, most (27%) fell within the age range of 41-60 (Figure 3).

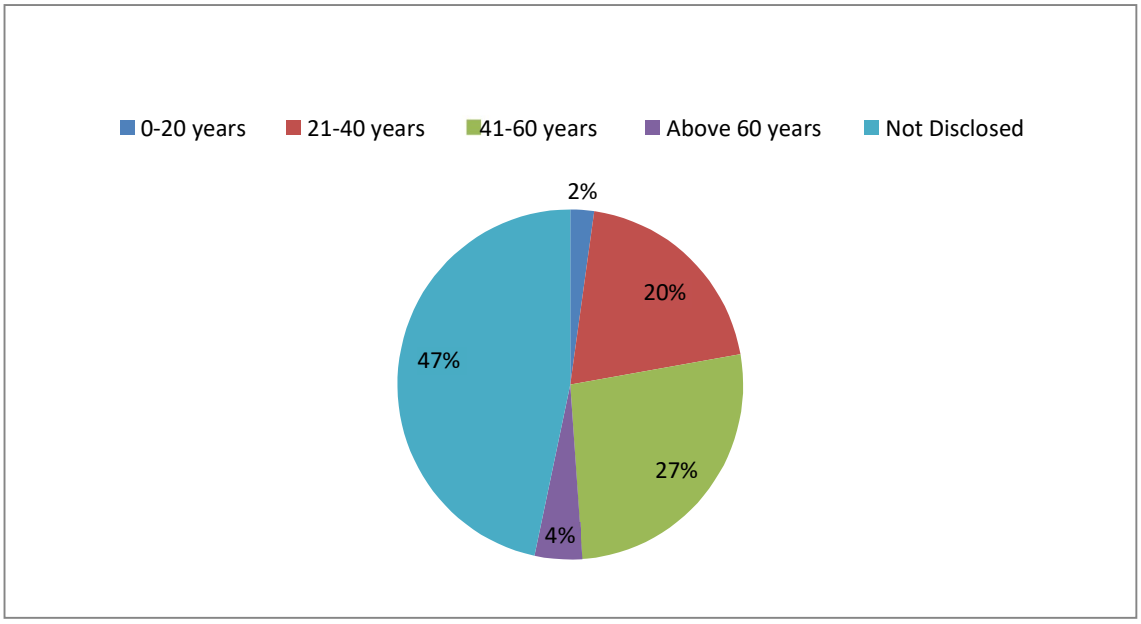

Figure 3. Age Distribution of Respondents

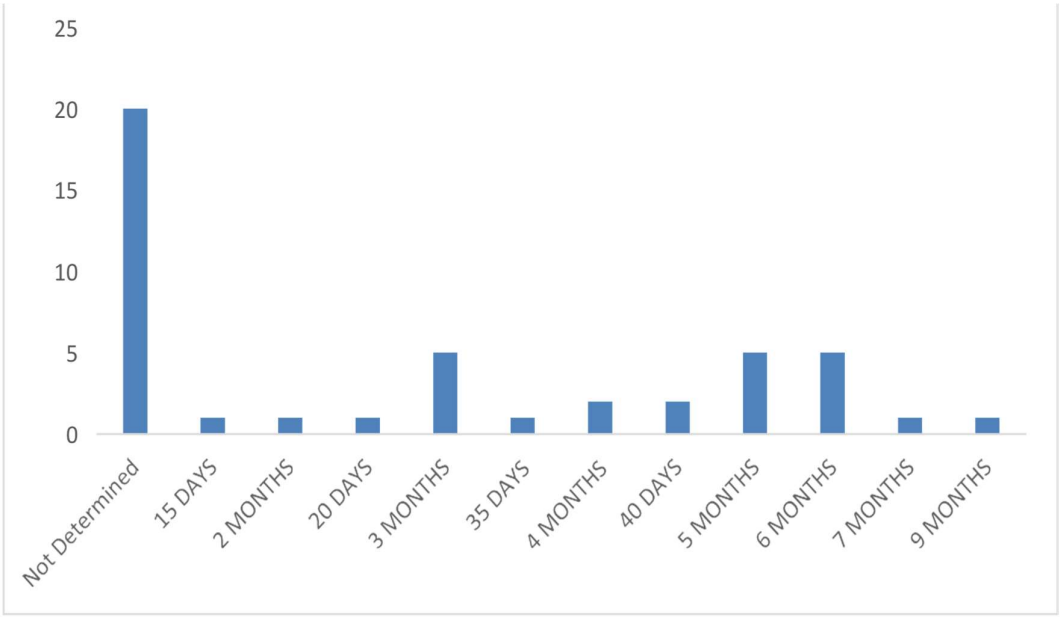

Figure 4: Typical Duration of Herbal Therapy

Figure 4 shows that typical duration of treatment is not determined by many of the respondents and many patients were adjudged to require 3 to 6 months for treatment to occur.

The respondents kept records of their patients in books and in telephones, 44% of patient information was recorded in books and telephone while 56% of patients did not have their records kept as depicted in Figure 5.

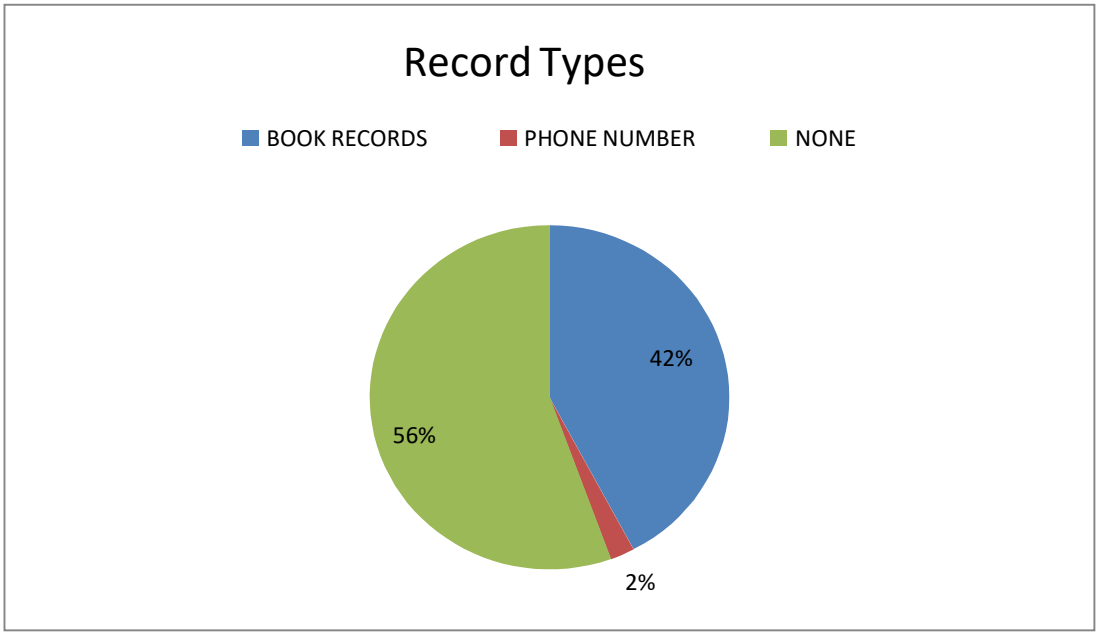

Figure 5: Type of Records of Patients Kept by Practitioners.

Table 3 shows that none of the respondents know most of the patients they treat for tumours, 44% of them keep records of their clients, that all of them know that some orthodox medicines used in tumour management are obtained from plants and that medicinal plants they use are going into extinction.

Table 3. Structured Responses to Questions on Traditional Tumour Management

Questions	Responses	
	YES (%)	NO (%)
Do you know most of your patients?	0	100
Do you keep records of your clients?	44	56
Do you belong to an Association/Union of TMPs?	100	0
Do you treat tumors, cancers, or related ailments?	100	0
Do you consider yourself a specialist in tumor management?	100	0
Do you have conservation methods for the plants you use?	100	0
Are these medicinal plants used as food?	100	0
Are the medicinal plants used going into extinction?	100	0
Are you aware that some orthodox medicines used in tumors are obtained from plants?	100	0
Do you think there is room for improvement in your practice?	100	0
Do you make referrals to the hospital?	44	56

DISCUSSION

The study was targeted at TMPs from representative communities of Kwara State, Nigeria. It is undeniable that most of these practitioners are usually reluctant to divulge details of materials related to their therapies and procedures[22]. Documented indigenous knowledge of traditional healers is greatly utilized in the discovery of pharmacological active medicinal plants[23]. In this study however, a detailed description of the scope of the study and its relevance to our survival as a generation neutralized the fears of the practitioners, causing them to open up and respond comprehensively to the various questions presented. Of the forty-five TMPs that participated, the dominating presence of

the male gender can be explained by the traditional placement of women in most African societies; they are seen more responsible for domestic upkeep and family care than being engaged in trainings to become TMPs[24]. Also, women may be discouraged based on the danger associated with traditional medicine as could be experienced while collecting medicinal plants from the wild which is a natural habitat for dangerous animals[25]. About sixty percent of the practitioners are fairly educated, it can be expected that they possess the minimum capacity required to document their therapies and exhibit acceptable levels of organization in their approaches to tumor management. This will mean that if adequate structures are put in place and they are sufficiently sensitized, innovative solutions to tumors and related ailments' management might just be underway. The goal is to standardize these therapies and ensure that usage poses no debilitating effects during and after treatment. Over fifty plant materials belonging to different scientific class were mentioned as being used in the State for the management of tumors. These plants were named and described in their native Yoruba names. As a first step in a multi-phased project, these plants have been collected for further actions. The scientific names and common names of the herbs was sourced from literatures and herbariums within Africa. Efforts will thereafter be made to characterize the plants, validate the claims of traditional use in tumors following standardized pharmacological models and isolate the principles responsible for their actions in tumors and related diseases. These medicines can then be presented in stable formulations and dosage forms for safe and convenient use. The possibilities of macro-molecular and particulate enhancements via techniques such as nanotechnology will then be explored and deployed to improve pharmacokinetics and ensure targeted actions at sites of tumor cells. As an initial study that is to lead to this big picture, the prospects appear encouraging.

It was observed that a good proportion of the participating practitioners offered treatments without financial compensations at all. This goes to establish that some of them, branded 'healers' are not in the business for monetary gains. They seemed to be more interested in healing their communities and preventing loss of lives to tumors and other ailments. It can be inferred therefore that their motives are generally good, and they are willing to make sacrifices. In Africa, herbals usage spans all strata of the society, though the poor people use it more, and a few others who are not poor but still belief in their traditional values[26]. A lot of patients patronize the TMPs and the level of income of the patients might influence their preference for herbal medicines[19]. The only thing left will be to help them improve their processes and practices to achieve better outcomes. This underscores one of the objectives of this study.

In the world today, there is an increasing interest in the natural product remedies with a basic approach towards the nature. The prospects of availability, affordability, reduced side effects and resistance have favored the use of herbal medicine recently in Africa[27]. Traditional medicine is preferred by several cancer patients because of its perceived levels of safety, tendency to cause less side effects, and lesser chances of causing dependency[28]. Nigerians are actively tending towards herbs and natural medicines in tumor management, this can be seen as an indication to intensify efforts and create policies that will coordinate and sanitize the procurement and administration of these natural medicines to minimize the incidences of long term organ damage and ensure safety in therapy. The National Agency for Food and Drugs, Administration and Control (NAFDAC) are making regulatory efforts in this direction.

A close assessment of the duration of therapy (mostly undetermined) and methods of checking patient's response to therapy as presented in Figure 4 and Table 2 respectively showed obvious deficiencies. The methods described are mostly ineffective, especially considering the pathophysiology of cancers and tumors in the human body. It is not ideal for instance, to measure the growth or regression of tumors without objective data on

the status of the affected cells and body tissue. It is therefore possible that a temporary, latent state in treatment is seen as completion of therapy by these TMPs in Kwara, Nigeria. This observed pattern is like what was observed by Bahal in 2017; in his research on the 'prevalence, patterns, and perceived value of complementary and alternative medicine among cancer patients' in Trinidad and Tobago[29]. It is therefore crucial that these practitioners are retrained and re-educated through their representative associations or other proactive channels; on more appropriate means of disease monitoring and assessment. The possibility of collaborations with well-established hospitals and laboratories can also be considered. The current trends of subjective diagnosis and assessment can be misleading and potentially dangerous. The traditional word for cancer in Yoruba language used by the TMPs is 'jejere' which literarily means a devouring disease.

Herbal medicines contain a combination of pharmacologically active plant constituents that are claimed to work synergistically to produce an effect greater than the sum of the effects of the single constituents[30]. In line with this, there is a general belief by the public that herbal medicines are all safe because they are natural. However, this is a hazardous oversimplification. Since all herbal medicines are mixtures of more than one active ingredient, such combinations of many substances obviously increase the likelihood of interactions taking place. These interactions may be traced to the tendency of induction or inhibition of liver enzymes by metabolites of these herbs or direct pharmacological actions of the herbs. In any case, there is need for more care and professional interventions geared towards minimizing interactions caused by medicinal plants.

Several plant parts summing up to 47 species especially the leaves, roots, barks, fruits, and seeds were found to be used by the TMPs for anti-tumor management in this study. The practitioners used polyherbals which contained plants used together. This was based on the practitioners' belief in the use of polyherbals as against the use of individual plants in the management of diseases generally. The use of polyherbals in traditional medicine as stated in earlier reports is hinged on synergism of the polyherbals in the treatment of diseases based on individual contribution to the overall therapeutic efficacy[31,32]. The most common plant species used in the polyherbals by the TMPs are *Clerodendrum volubile, Euphorbia hirta, Ocimum basilicum* and others listed which emphasized their importance in the management of tumour. Apocynaceae and Euphorbiaceae families were found to occur more frequently. Research has shown that plants belonging to these families have shown varying level of anti-tumor activities. Indole alkaloids isolated from *Alstonia yunnanensis Diels* belonging to the family Apocynaceae were found to exhibit cytotoxic effects against tumor cell lines[33]. Similarly, two diterpenoid esters obtained from *Euphorbia helioscopia* showed modest cytotoxic activity against MDA-MB-231, a human cancer cell line[34].

A statistical assessment and comparison of the different categories of variables obtained in this study reveals significant correlations ($p < 0.05$) between various demographic parameters and the ideology and treatment process of the practitioners. This confirms that the age, level of education, type of training and years of experience of these practitioners influence the way they practice and their choice of treatment. These correlations can be a useful guide to researchers and policy makers on ways to improve the practice of traditional medicines and enhance phytotherapies in tumors. Therefore, it has become imperative to further assess the antitumor potential of the bioactive components of the claimed active plants used by the TMPs and establish their mechanisms of actions. This will form a basal template for discovering the potential natural plant sources of antitumor agents.

There was a bit of difficulty communicating clearly with the TMPs as most of them were uneducated. Despite the intervention of recruited translators by the researcher, a noticeable gap still existed in communication,

especially when clinical terminologies were to be described in the prevailing local language, Yoruba. In addition to this, a few of the practitioners were initially reluctant to divulge information relating to their therapies. However, upon presentation of the research motives and coverage to each of the practitioners, they became convinced about the harmless nature of the study and the huge benefits it could potentially hold to knowledge and humanity. They thereafter cooperated fully.

CONCLUSION

The herbs identified in this survey are used by traditional medical practitioners for tumors and related ailments in four local government areas of Kwara, Nigeria. Other pieces of information regarding their use were disclosed by the healers. It was inferred from their response that the herbs were not prepared under the most ideal conditions. In addition to this, they are not well preserved and adequately dosed. Considering the risks of toxicity and contamination due to these, the need for improvement is dire. All drugs, synthetic or herbal should be safe and effective. Hence, the herbal ingredients used by traditional medical practitioners require tools for determining identity, purity, and quality. They are to be used in correct proportions and preserved effectively. Standardization of herbal drugs and derivatives, therefore, remains a priority. Furthermore, a deficiency in education was observed in some of the TMPs, indicating that traditional medical practitioners in Nigeria should be constantly engaged by academic bodies, research institutes and government agencies such as NAFDAC on ways to improve their practice and standardize their therapies.

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