

Treatment of Prostate Cancer Using Indigenous Plants in Nnewi South Local Government Area

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ABSTRACT

Background and Objective: Medicinal plants are vital sources of easily accessible remedies used in the countryside healthcare system. This study aimed at determining the medicinal plants used in the treatment of prostate cancer in Unubi Nnewi South L.G.A and documentation of the various plant species used for curing diseases. **Materials and Methods:** Ethno study on the indigenous plants used for the treatment of prostate cancer in Unubi, Nnewi South Local Government Area was carried out through oral interviews and the use of questionnaire for data collection. Plant samples with their leaves, fruits, flowers, stems, barks and roots were collected and used for the interview. The common and vernacular names of the described species were also of interest and standard literature were then consulted for their proper identification. **Results:** The highest number of questionnaires 60 was retrieved from Amakobam village and the least 40 was obtained from Etitinabo village. The respondents showed that they got access to information on the plants species used for the treatment of prostate cancer through apprenticeship (93.3%) and some were informed through folklore (68.3%) while newspapers and the internet were the least sources of information about plant species relevant in the treatment of prostate cancer. The result showed that the most notable mode of preparation of herbal medicine for the treatment of prostate cancer was extractions and decoctions 89.2 and 75.8%, respectively. For the treatment of prostate cancer in the study area, the most frequently used plant is *Talinum triangulare* (85%) and *Telfaria occidentalis* (74%). *Dennettia tripetala* (40.8%), *Cassia occidentalis* (61%) and *Spondias mombin* (53%) were moderately used or rarely used. **Conclusion:** These plants are effective when administered properly and taken daily. Since plant species comes with many benefits like medicinal purpose, it is therefore, encouraged to consume them as food or medicine.

KEYWORDS

Plants, cancer, healing, medicinal, Nnewi, Anambra, herbal, drug, ethno-study

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INTRODUCTION

Plants which have medicinal values and are widely used for medical purposes are called medicinal plants¹. Medicinal plants constitute an effective source of both traditional and modern medicine. These plants have been shown to have genuine utility and about 80% of the rural population depends on them as primary health care². Despite the remarkable progress in synthetic organic medicinal products of the



twentieth century, over 25% of prescribed medicines in industrialized countries are derived directly or indirectly from plants³. However, plants used in traditional medicine are still understudied⁴. In developing countries, notably in West Africa, new drugs are not often affordable. Thus, up to 80% of the population uses medicinal plants as remedies⁵.

The economic importance of medicinal plants is much more to countries such as India than to the rest of the world. These countries provide two third of the plants used in the modern system of medicine and the health care system of rural population depend on indigenous systems of medicine. Of the 2,500,000 higher plant species on earth, more than 80,000 are medicinal⁶. India is one of the world's 12 biodiversity centres with the presence of over 45000 different plant species⁷. This study focuses on the documentation of medicinal plants and the roles they play in both modern and traditional healthcare systems.

Medicinal plants and their use by indigenous cultures are not only useful for the conservation of cultural traditions and biodiversity but also for community health as care and drug development now and in the future. Considering the yearly loss of forest reserves, one can easily foresee a drastic reduction in the size and quality of this biotope. The documentation of medicinal uses of Nigerian plants is becoming increasingly urgent because of the rapid loss of the natural habitat for some of these plants due to anthropogenic activities.

The use of traditional medicine in various therapies by the indigenous population over the world cannot be overemphasized, according to the World Health Organization (WHO), as many as 80% of the world's people depend on traditional medicine for their primary healthcare needs. Due to poverty, ignorance and unavailability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common day ailments, most of these people are from the poorest link in the trade of medicinal plants⁸. A vast knowledge of how to use plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance⁹. In the developed countries, 25% of medical drugs are based on plants and their derivatives.

The use of plants in the tropical and subtropical regions is diversified and most of the uses are for medicine, sources of food, clothing and shelter. But the medicinal uses of plants are rapidly declining among the present generation of local people as a consequence of modernization and civilization¹⁰. The younger generation is showing little interest in learning this valuable science of healing. Usage of medicinal plants to cure diseases has also been much influenced by religious practices¹¹. All over the world, several ethnobotanical studies focusing on medicinal plants have been documented. But in Nigeria, very little information about ethnobotanical studies has been documented. Therefore, there is need a for proper documentation of medicinal plants useful in the treatment of prostate cancer among the people in Nigeria. This study represents an attempt to document information on the traditional medicinal plants used in Unubi, Nnewi South Local Government Area of Anambra State.

This study aimed at determining the medicinal plants used in the treatment of prostate cancer in Unubi Nnewi South Local Government Area and documentation of the various plant species used for curing diseases. The objectives of this study included:

- Identify and document commonly used plant species for the treatment of prostate cancer
- Record traditional knowledge on the use of these plants to cure this ailment
- Create general awareness among the local community for the conservation of indigenous medicinal plants
- Collect those relevant medicinal plants of the area for proper identification and future reference

MATERIALS AND METHODS

Study area: This study was carried out between December, 2020 and August, 2021 at Unubi town in Nnewi South Local Government Area in Anambra State. Unubi is bounded on the North by Osumenyi, on the East by Ukpor, on the West by Ezinifite and on the South by Osumoghu of Imo State. It lies within the coordinates of Latitude 6°01'00.0"N and Longitude 6°55'00.0"E.

Plant collection and identification: Surveys were carried out for plants used in the treatment of prostate cancer in three villages in Unubi Nnewi South Local Government Area, Anambra State: Etitinabo, Amakobam and Nkwu-ukwo. Some useful plants for prostate cancer treatment in these villages were recorded. Photographs of plant samples were taken and fresh samples were collected. Plant samples with their leaves, fruits, flowers, stem barks and roots were collected and used for the interview. All plant samples collected in the field (20 leaves of each plant) were properly identified by Mr. Iroka Finian, a Taxonomist in the Department of Botany herbarium. Voucher specimens were kept in the herbarium and numbers were assigned to them.

Data collection: A survey was conducted in the three villages making up Unubi town. An oral interview was conducted and interviewees were chosen without distinction of gender after seeking consent from each respondent.

Field trips were made to four villages within the study area. A total of 80 willing respondents DXCF comprising elderly men and women, family heads, housewives, young farmers, herbalists, settlement heads and young people were interviewed in each of the 3 villages in Unubi. Information regarding the plants used for the treatment of prostate cancer was sort. Also, the common and vernacular names of the described species were of interest.

Corroboration of any ethnobotanical information by at least two independent sources was considered to enhance fidelity and thus documented. The respondents assisted in the collection of plant samples from home gardens, grasslands, farms and forests within the study area. Standard literature was then consulted for their proper identification.

Statistical analysis: The results were analyzed using Analysis of Variance (ANOVA) to know the effectiveness of each plant, while the difference in means between locations was determined by the Least Significant Difference (LSD) at $p < 0.05$ test as recommended by Kasole *et al.*¹².

RESULTS

The highest number of questionnaires 60 was retrieved from Amakobam village and the least (40) were obtained from Etitinabo village (Table 1). The highest age bracket of respondents who have indigenous knowledge of some plants used for the treatment of prostate cancer was obtained in Nkwu-Ukwo village 31-40 years old with 43.63% respondents while the least occurred in Etitinabo village 71-80 years having 2.5% (Table 1).

The respondents have access to information on the treatment of prostate cancer using plant species shown in Table 2. Those who got their information through apprenticeship were 93.3%. Those who were informed through folklore were 68.8% while newspapers and the internet were the least sources of information about the plant species used for the treatment of prostate cancer (Table 2).

The mode of preparation of plant species for the treatment of prostate cancer was ascertained among the rural dwellers in the study area. Table 3 showed that, the most notable mode of preparation of herbal medicine for treatment of prostate cancer was extractions and decoctions 89.2 and 75.8%, respectively.

Table 1: Age range of respondents from 3 Villages in Unubi Community Nnewi South LGA

Village	Number of questionnaires retrieved	31-40%	41-50%	51-60%	61-70%	71-80%
Etitinabo	40	22.50	32.50	32.50	10.00	2.50
Amakobam	58	20.69	43.11	17.24	8.62	8.62
Nkwu-Ukwo	55	43.63	29.09	12.75	9.09	5.45

Table 2: Percentage distribution of respondents on their source of knowledge of plants used for the treatment of prostate cancer

Source of knowledge	Response (%)	Frequency of access (%)		Preference (%) Most preferred
		Regular	Occasional	
Folklore	68.8	25.8	42.5	74.2
Radio	50.8	56.7	36.6	35.8
Apprentice	93.3	18.3	32.5	-
Friends/relatives	35.8	18.3	17.5	9.2
Television/video	44.2	8.3	35.9	28.3
Newspaper/pamphlets	4.2	-	4.2	6.7
Mobile phones	29.2	21.7	7.5	35.8
Internet	1.6	-	1.6	-

Table 3: Percentage distribution of respondents on the most efficient mode of preparation of herbal drugs in treatment of prostate cancer

Mode of preparation	Yes (%)	No (%)	Non-response (%)
Extractions	89.2	10.8	-
Decoction	75.8	24.2	-
Infusions	60.8	32.5	6.7
Tinctures	62.5	31.7	5.8
Liniment	59.2	45.0	3.3

Table 4: Percentage distribution of respondents on plants used in treatment of prostate cancer

List of plants used	Local name in Igbo	Frequently used (%)	Moderately used (%)	Rarely used (%)	Never used (%)
<i>Aframomum melegueta</i>	Ose oji	0.8	42.5	12.5	44.2
<i>Garcinia kola</i>	Aki inu	36.7	41.7	-	21.6
<i>Zea mays</i>	Oka	71.7	2.5	20.0	5.8
<i>Calotropis procera</i>	Otokwuru	4.1	9.2	39.2	47.5
<i>Cucurbita pepo</i>	Anyu	52.5	10.0	0.8	36.7
<i>Launaea teraxacifolia</i>	Nahianwu	57.5	29.2	13.3	-
<i>Annona muricata</i>	Shawashopu	44.2	9.2	19.1	27.5
<i>Moringa oleifera</i>	Okwe-oyibo	51.6	32.5	15.9	-
<i>Telfairia occidentalis</i>	Ugu	74.1	24.2	1.7	-
<i>Cassia occidentalis</i>	Akedi-agbara	61.0	37.3	-	1.7
<i>Musa paradisiaca</i>	Ugede, Omeji	34.1	4.2	4.2	57.5
<i>Talinum triangulare</i>	Mbolongi	85.0	9.5	-	5.5
<i>Myrianthus arboreus</i>	Ujuju	40.8	44.2	-	15.0
<i>Spondias mombin</i>	Ijikere	53.3	24.2	-	22.5
<i>Dennettia tripetala</i>	Mmimi	40.8	19.2	40.0	-

The plant species used for the treatment of prostate cancer in the study area were shown in Table 4. The most available plant was *Talinum triangulare* (85%) and *Telfairia occidentalis* (74%). *Dennettia tripetala* (40.8%), *Cassia occidentalis* (61%) and *Spondias mombin* (53%) were not prominent as shown in Table 4.

Fifteen different plant species used in the treatment of prostate cancer were identified in this study as the most well-known among the people of Unubi (Table 5). They collect and consumed these plants as food or medicine. The respondents interviewed provided vital information on the indigenous uses of these plants, the parts used, mode of preparation, method of administration and their dosages.

Table 5: Responses on parts used, mode of preparation and mode of administration of plants in treatment of prostate cancer

List of plants	Family	Part of the plant used	Mode of preparation	Mode of administration	Dosage
<i>Aframomum melegueta</i> K.	Zingiberaceae	Entire parts, fruits and rhizomes	Cut open fruit to release seeds boil parts for 2 hrs	Chewed raw or drink as tea	4-5 seeds at least four times daily
<i>Garcinia kola</i> H.	Clusiaceae	Seed	Cut fruit open to bring out seed then wash	Chewed raw	Chew 3-4 seeds daily
<i>Zea mays</i> L.	Poaceae	Silk and tassel of plant	Boil for 3-4 hrs	Drink as tea	One warm glass 3 times daily
<i>Calotropis procera</i> A.	Asclepiadaceae	Stem bark, root and flower	Boil with water, soak with alcohol	Drank as tea/beverage	One glass 2 times daily and 1 shot of macerate
<i>Cucurbita pepo</i> L.	Cucurbitaceae	Fruit, seed and leaves	Fruit is cooked	Eat with oil, stew/soup	Eat as desired
<i>Launaea taraxacifolia</i> C.	Asteraceae	Leaves and whole plant	Boiled, soaked	Drank as tea or soup	2-3 times daily
<i>Annona muricata</i> L.	Annonaceae	Fruit and leaves	Fruit is peeled, leave is boiled	Eaten raw after peeling, drank as tea	Eat fruit as desired, drink a glass of leave tea 3 times daily
<i>Moringa oleifera</i> Lam.	Moringaceae	Aerial parts and seeds	Boiled, ground into powder	Drank as tea, mix powder with food	One glass 3 times daily or 2 teaspoons of powder
<i>Telfairia occidentalis</i> H.	Cucurbitaceae	Seed	Cooked	Eaten as snack	4-5 seeds daily
<i>Cassia occidentalis</i> L.	Fabaceae	Leaves and seed	Ground into powder	Mix with water or oil to form a gel	Apply on the skin surface of prostate
<i>Musaparadisiaca</i> L.	Musaceae	whole fruit, root	Cooked, grind to form syrup then mix with honey	Eaten as porridge, drink syrup with a spoon or glass	Eat porridge as desired, take a half glass or 3 teaspoons twice daily
<i>Talinum triangulare</i> W.	Portulacaceae	Root	Boiled	Drink as tea	One glass 3 times daily
<i>Myrianthus arboreus</i> P.	Moraceae	Stem bark, leaves and roots	Boiled, cooked as a vegetable, ground into powder	Eaten as a vegetable in soup, drank as a tea	Eat as desired and drink one warm glass 3 times daily
<i>Spondias mombin</i> Linn.	Anacardiaceae	Fruit, leaves and bark	Fruit is washed and leaves and bark are dried	Eaten raw, drank as tea	Eat 3-4 fruits twice daily, drink 2 glasses twice daily
<i>Dennettia tripetala</i> B.	Annonaceae	Seeds	Cut fruit open to release seed	Chewed as snack	Chew as desired

DISCUSSION

The use of ethno medicinal plants contributes to the primary healthcare of people in their local area. There are several traditional practitioners (traditional healers, nature pathologists and herbalists) in the study area. However, getting to these practitioners or getting information from these practitioners was a huge challenge. Nonetheless, some understood the importance of the study and volunteered their knowledge on the subject matter. The finding that about 93% of respondents had apprenticed as an information source supports the finding by many researchers that apprenticeship and folklore were among the media used successfully in rural areas. The findings of this study revealed that various parts of the plants including roots, leaves, flowers, fruit and bark are used to cure diseases, this is in agreement with reports of Omara *et al.*¹³. Besides using them to cure diseases, fatal diseases like cancer can be controlled by daily consumption of such medicinal plants¹⁴. Despite the remarkable progress in synthetic organic medicinal products of the twentieth century, over 25% of prescribed medicines in industrialized countries are derived directly or indirectly from plants³. The deduction from this study that the test plants used have potential to be used as anti-cancer agents because of their rich phytochemical contents is in tandem with the reports of so many researchers¹⁵⁻¹⁹. However, plants used in traditional medicine are still under investigation²⁰.

The knowledge of herbal medicine is gradually vanishing because of the lack of truthful documentation of this valuable heritage, although some traditional healers and aged men and women are still practicing and using this art of healing, young generations hardly believe in or have an interest in traditional medicine. Medicinal plants and their use by indigenous cultures are not only useful for the conservation of cultural traditions and biodiversity but also for community healthcare and drug development now and in the future. Fifteen different species of plants used for the treatment of prostate cancer were identified in this study as the most well-known among the people of Unubi Nnewi South. This work showed these were *Aframomum melegueta*, *Garcinia kola*, *Zea mays*, *Calotropis procera*, etc. The people of Unubi in Nnewi South collect and consumed these plants as mostly food or medicine. They also gave useful information on local names, mode of preparation, method of administration and particular parts of the plant to be used. The respondents interviewed provided vital information on the indigenous ways of using these plants, such as the use of the fruit and leaves in *Annona muricata* by eating the fruit raw and boiling the leaves and drinking it as tea.

The work went further to show the use of some other plant species in the study area. The frequently used plants were *Talinum triangulare* (85%), *Telfairia occidentalis* (74.1%) and *Zea mays* (71.7%) because they constitute the level of the food intake either a food ingredient or the main food component. *Aframomum melegueta* (0.8%) and *Calotropis procera* (4.1%) were not prominent, possibly because they are not readily available.

On the mode of preparation of plant species for the treatment of prostate cancer, it was ascertained among the rural dwellers in the study area that the most used and effective mode of preparation of herbal medicine for the treatment of prostate cancer was extractions and decoctions 89.2 and 75.8%, respectively. Extractions are preparations containing the active principles or crude drugs, prepared by extracting the ingredients with suitable solvents like water or alcohol, while decoctions are made by boiling plant parts that are cut into small pieces for a specific period of time and filtering before use¹⁹. The results of this study clearly showed that indigenous plants are used for the treatment of prostate cancer in Nnewi, Anambra State. What is less clear is the dosage for effective treatment because of the paucity of information on the therapeutic substances present in some of these plants. Therefore, further pharmacological evaluation and toxicological studies are needed to give a deep knowledge of the biologically active substances in these plants. This study is very vital to all the major stakeholders in the health sector. One major step in the development of plant-based drugs is the ethno-study to widen the probability of selecting more promising plants. These indigenous plants are readily available in the study area and hence can be used for further research by researchers in the field of medicine and biological and pharmaceutical sciences.

CONCLUSION

Evidence from this study has shown that there are various common plants that can be used in the treatment of prostate cancer. These plants are effective when administered properly and taken daily, therefore, it is clear that the therapeutic power of plants can be useful for prostate cancer treatment. This study also indicated that the ecosystem of Unubi is still richly blessed despite the effect of human influence on indigenous medicinal plants that can be exploited for immediate use and for the development of anti-cancerous drugs.

SIGNIFICANCE STATEMENT

This study discovered many plants that can be beneficial for the treatment of prostate cancer. This study presents a background for researchers to study the biologically active ingredients in these plants responsible for the treatment of prostate cancer in these plants. Thus a new theory on the medicinal values of some common plants may have arrived.

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