SELECTIVE CULTURAL APPROACH TO PUBLIC HEALTH PRACTICES IN NIGERIA

By

Ede, E. Lemy
Department of Science Laboratory Technology, Faculty of Science, Delta State University, Abraka, Nigeria

Abstract

Plants, animals, soil, water and other natural resources are important components of human life which have found their applications as cultural approach to public health practices. African traditional medicinal practice has been a major aspect of public health. In Nigeria, selective cultural approach (SCA) in public health practices involves the application and use of medicinal plants, animals, soil/water and other resources for sickness and disease management and control. Medicinal plants, their different parts and extracts such as decoction and infusion from. *Aframomum melegueta, Azadirachta indica, Ocimum gratissimum, Vernonia amygdalina* extracts and exudate from *Dioscorea* species, *Manihot esculenta, Hevea spruceana*, spices, including *Allium* species, ginger as well as fibre from plants have shown therapeutic potentials for diseases such as asthma, helminth infections, snake repellant, dysentery. Animals are also essential components of cultural approach in public health practices across Nigeria. Species such as *Achantina* species (giant snail), *Crocodilus niloticus* (crocodile), *Numidia Meleagris* (Guinea fowl), *Oreochromis niloticus* (Tilapia) and *Phyton sebae* (python) have also been documented for their therapeutic functions to include wound healing, prevention of polio, treatment of broken bones cold, rheumatism and skin infection. Soil, in different forms including clay and chalk has also been used for the management of pregnancy related ailments, body pain management and skin infections. With the importance of cultural practices in public health, there is need for adequate conservation of natural resources to sustain the rich biodiversity hotspot of Nigeria and also preserve the cultural heritage of traditional medicinal practice within rural communities.

Keywords: Cultural practices, public health, medicinal plant, animal, natural resources

Introduction

With the recent development in science and technology and advancement in public health approach for disease prevention, management and control using both surgical and synthetic drugs, there is the tendency that the crude cultural approach of natural drugs of plants and animal origin would have been eliminated. However, this is not true in the case of most developing countries and rural communities, especially in Africa, one of the world's largest continent with diverse ethnic groups, each unique with peculiar and diverse practices [1]. The African traditional medicinal practice has been reported to be 1:500 compared 1:40 000 of the orthodox medical doctors [2] (Table 1). Nigeria, located in West Africa is not exempted from this list as it is a home for different traditional health care practitioners [3]. Nigeria as a country is comprised of diverse ethnic groups with different cultures estimated to over 250 different ethnic group, each with her own unique practice. The African traditional healthcare system has been noted to be practiced in Nigeria since the pre-colonial era. Hence, Nigeria has been in the practice of natural medicine before the advent of orthodox medicine and British colonization [4].

In Nigeria, there is a cultural approach to every public health challenges and this selective approach is unique to different communities. Disease prevention, management and control in one community varies from the other community [5]. Cultural approach involves the use of naturally available resources and materials in form of plants, animals, water, soil, sun and moon reflections, air and all possible nature's resource in handling public health issues. These natural resources are utilized in different forms and pattern to include boiling of leaves [6], crushing and mixing of muds with plant materials, use of certain reptiles alongside plant materials and mixture of plant materials, soil and other substances with water. Public health practice is broadly defined as the process of collecting and analyzing health data of identifiable sources by public health authorities geared towards protecting and sustaining

the health of a community, at such, the risks and benefits of such analysis accrues to that particular community [7]. Public health practices are also channeled towards preventing diseases and injuries, improve community health through disease surveillance, program evaluation and investigation of outbreak [8]. All this and more are incorporated in the cultural practices within rural communities and among trado-medical practitioners in Nigeria.

Nigeria is biodiversity hotspot, endowed with varieties of animal and plant species. According to the Nigeria Biodiversity Report, the country is blessed with about 7,895 species of plant which has been identified to belong to 338 families and 2,215 genera in the plant kingdom. Also, different animal species dominating the country's vegetation has been recorded to about 22,000 including vertebrates and invertebrates. Insects account for the highest to be approximately 20,000, followed by birds and fishes accounting for about 1,000, while mammals and reptiles account for about 247 and 123 species respectively. Microorganisms are also essential parts of these biodiversity with over 1,489 species identified within the country (Table 2). Owing to the nature of man and the quest for food, ivory materials and wealth, there has been several threats to this biodiversity of which about 0.14% of animal species is threatened while endangered species amount to 0.22% [9].

Table 1. Ratio of traditional health practitioners to orthodox medical practitioners to the population

Countries	Ratio of Traditional Health Practitioners to Population	Ratio of Orthodox Health Practitioners to Population
Kenya, Urban (Mathare)	1: 833	1: 987
Rural (Kilungu)	1: 143-345	1: 70 000
Zimbabwe	1: 600	1: 6 250
Swaziland	1: 100	1: 10 000
Nigeria (Benin City)	1: 110	1: 16 400
National Average	No data	1: 15 740
South Africa (Venda Area)	1: 700-1 200	1: 17 400
Ghana	1: 200	1: 20 000
Uganda	1: 700	1: 25 000
Tanzania	1: 400	1: 33 000
Mozambique	1: 200	1: 50 000

Source: [2].

Table 2. Inventory of plant species in Nigeria

Plant Group	Families	Genera	Species
Algae	67	281	1335
Lichens	-	14	17
Fungi	26	60	134
Mosses	-	13	16
Liverwort	-	16	6
Pteridophytes	27	64	165
Gymnosperms	2	3	5
Chlamydosperms	2	2	6
Monocotyledons	42	1396	1575
Dicotyledons	172	1396	4636
Total	**338**	**2215**	**7895**

Source: [9].

Natural Products in Cultural Practices

The concept of cultural approach to public health practices should not be confided to the use of plant materials alone as other materials such as soil, water, whole and animal parts, air, sun and moon reflections are also incorporated in cultural practices.

1. Medicinal Plants

Plant and plant materials have in time found its way in medicine as it is regarded as the origin of orthodox medicine. Plant is termed medicinal when it is observed culturally or scientifically to contain or bear fruit, seed, leave, produce exudate or liquid which has therapeutic potentials or can be used for the production and synthesis of useful drugs

[6]. Over the years, numerous plants have been implicated in the African traditional medicine which has been acclaimed to be effective in public health practices within rural communities. In pharmaceutical practice, medicinal plants are referred to as crude drugs which denotes their origin from natural and biological origin. According to [6,10], medicinal plants should be classified based on the following:

i. Plant and its associated parts used medicinally for extract preparation such as decoction and infusion. E.g. *Ocimum gratissimum, Vernonia amygdalina, Azadirachta indica*.
ii. Plants that are used for pure substance extractions for the purpose of synthesizing medicinal compound or direct use. E.g. synthesizing of sex hormone from diosgenin obtained from *Dioscorea* species, *Manihot esculenta, Hevea spruceana*.
iii. Spices, condiments, food plants and perfumery. E.g. *Allium* species, ginger, cedar, Ceylon cinnamons and cassia.
iv. Microscopic plants such as fungi, actinomycetes used for isolation of antibiotics. E.g. *Claviceps purpurea, Streptomyces griseus*.
v. Fiber plants used for the preparation of surgical dressing materials. E.g. cotton, jute, flax.

2. Medicinal Animals

The use of animals either whole or in part for therapeutic purposes has been practiced by most ancient culture across the globe and it is still very prevalent in modern society today. Culturally, humans have been in the practice of consuming animal meals with the believe that they possess some disease preventing and healing potentials [11]. Trado-medical practitioners within some rural communities have gained specialty in the use of animals and animal parts treatment and prevention of various diseases which may have been devoid of orthodox approach such as severe epilepsy and paralysis [12]. Species of animals such as the giant African snail (*Achantina* spp), chameleon (*Chamaeleon* spp), crocodile (*Crocodylia* spp), tortoise (*Kinixys* spp.), phyton (*Python regius*), porcupine (*Hystrix cristata*), pangolin (*Phataginus tricuspis*), vulture (*Necrosyrtes monachus*), well gecko (*Tarentola boettgeri*) [13,14] among others have been included in traditional medicine for public health purposes globally.

Animal parts and products such as their skin, tail, nails, horns, teeth, tusks (elephant), honey, milk, nest (spider), antlers, scales (fish and some reptiles), feaces, urine, eggs and oil have been documented to be effective in some culture and termed medicinal animals and animal parts [15]. In India, over animals have been termed medicinal and used for traditional medicinal purposes. China has documented over 1500 animal species with different therapeutic uses [16]. In Brazil, specifically the Northern region, record of over 250 animal species has been documented for the purpose of medicinal practices [15]. Africa has been the hub of natural practices and trado-medical center with numerous animals having varying therapeutic uses. The studies of [17,18,19] have reported the use of different animals for medicinal purposes in Nigeria, Ghana and South Africa respectively.

3. Medicinal Soil, Water and Other Natural Materials

Soil has been consumed over the years in different forms and by different categories of people with the belief that it has therapeutic properties. Among such practice is geophagia, a practice carried out mostly by pregnant women involving eating of soil particles and chalk [20,21]. The act of geophagy is undertaken by people for the religious purposes, medicinal uses and as functional part of their diet. One of the earthen materials consumed in West Africa communities and Nigeria in particular is the calabash chalk, referred to as Calabar stone, eaten for pleasure and as remedy for the frequent morning sickness by pregnant women [22,23]. Clay has been used as natural remedy for bacterial and fungal skin infection. Buruli ulcer is a flesh-eating skin infection caused by *Mycobacterium ulcerans*, which has been reported to be treated using natural clay [24]. Mud has also been implicated in natural medicine in African setting where mud bath is practiced by digging mud peat in deep swamps used for relaxation and stress relief.

Cultural Applications of Natural Products for Public Health Practices in Nigeria

1. Medicinal Plants in Public Health Practices

Medicinal plants are regarded as the major and functional unit cultural practices in public health. They are the basis and foundation for disease management and treatment. They are applied in whole, as parts, extracts and poultice. Parts of plant such as bark, stem, leaves, root, mesocarp, fruits and flowers [25,26,27]. In Nigeria, different studies have documented the uses of plant and their functional units in addressing public health issues. Table 3 shows the application of plants in public health practices in some communities and states in Nigeria.

Table 3. Some medicinal plants for cultural public health practices in Nigeria

Medicinal Plant	Parts Use	Public Health Use	References
Abrus precatorius	Leaves	Asthma, bronchitis, cough	[28]
Adansonia digitata (Baobab)	Leaves, Stem Barks, Roots	Indigestion, skin infections, Vitamin C Deficiency	[29]
Aframomum melegueta (Alligator pepper)	Fruits	Small Pox, Chicken Pox, Cough, sore, Asthma, expectorant	[28,29,30]
Ageratum conyzoides (Goatweed)	Leaves	Wounds, rashes, ulcer	[30]
Aloe banardensis (Aloe vera)	Leaves	Boil, dandruff	[30]
Allium cepa	Bulb	Convulsion, cough, rash, scorpion bite, diabetes	[25,29,30,31]
Allium sativum	Bulb	Convulsion, cough, snake repellent, diabetes, asthma	[28,29,31,32]
Alstonia boonei	Leaves, stem bark	Diarrhea, jaundice, malaria, snake bite, arrow poison, cough	[25,28,29,30]
Amaranthus spinosus (Prickly amaranthus)	Whole plant	Sores	[30]
Anacardium occidentale (Cashew)	Leaves	Rheumatism, arthritis, wounds, diabetes, asthma, tuberculosis	[25,28,30,31]
Annanas comosus	Juice	Constipation	[29]
Azadirachta indica (Neem)	Leaves, stem bark	Dysentery, Fever, Helminth infestation, diabetes, tuberculosis	[28,29,31]
Bryophyllum pinnatum (Resurrection plant)	Leaves	Wound healing, cough, navel treatment	[25]
Cajanus cajan (Pigeon pea)	Leaves, Seeds	Small pox, Measles	[29]
Calotropis procera	Leaves	Cough	[29]
Carica papaya (Pawpaw)	Unripe fruit, leaves	Jaundice, malaria, sore, diabetes	[25,29,31]
Cassia fistula (Golden shower)	Leaves, Stem barks and Roots	Convulsion, mouth sore	[29]
Chrysophyllum albidum (Cherry)	Leaves	Asthma	[28]
Citrus limon (Lemon)	Fruits, leaves	Stomach ache, convulsion, diabetes	[29,31]
Colocasia esculentum (Cocoyam)	Leaves and roots	Snake bite, rheumatism	[25,30]
Corchorus olitorus	Seeds	Helminth infestation, abscesses, swelling	[25,29]
Dacryodes edulis (African pear)	Bark	Swollen feet	[25,30]
Datura stramonium (Green thorn apple)	Leaves, seeds	Sores and sting	[30]
Ficus exasperate (Sand paper plant)	Leaves	Ringworm	[30]
Garcinia kola (Bitter Kola)	Nuts	Cough, Catarrh, Jaundice, Snake repellant, asthma	[28,29,32]
Gossypium barbandense	Leaves	Dysentery	[29]
Hibiscus rosa sinensis (Garden hibiscus)	Leaves, flower, buds	Wound, boil	[30]
Jatropha curcas (Physic nut)	Leaves, stem	Pneumonia, Stomach ache, skin infections (eczema), diarrhea, boil, tuberculosis	[25,28,29,33]

Kalanchoe crenata (Never die)	Leaves	Small pox, ear problem, sore, tumor	[29,30]
Lawsonia inermis (Cypress)	Leaves	Skin tonic, skin disease	[30,33]
Mangifera indica (Mango)	Tree bark, leaves	Eczema, ringworm, diabetes	[25,31]
Mezoneuron benthamianin	Leaves	Teething	[29]
Mimosa pudica (Sensitive plant)	Leaves	Boils, Guinea worm	[29,30]
Mirabilis jalapa (4 O'clock plant)	Leaves	Eczema, wound, colic, purgative	[29]
Monodora myristica (African nutmeg)	Seeds	Guinea worm	[25,30]
Momordica charantia (African cucumber)	Leaves	Convulsion, Disorder, measles, chicken pox	[29]
Morinda lucida	Leaves	Malaria	[29]
Moringa oleifera (Drumstick)	Leaves	Diabetes, skin disease	[31,33]
Musa sapientum (Banana)	Fruit	Diarrhoea, cough, jaundice	[29]
Ocimum gratissimum (Scent Leave)	Leaves	Cough, insect repellant / bite, dysentery, snake repellant	[25,29,30,32]
Perquatina nigrescence	Leaves	Dysentery	[29]
Perquatina nigrescence (African parquatina)	Leaves	Anti-anaemic, dysentery, stomach disorber, skin disease	[29]
Psidium guajava (Guava)	Leaves	Diarrhoea, dysentery, fever, cough, malaria, small pox, measles, diabetes	[25,29,31]
Rauwolfia vomitoria	Leaves	Convulsion	[29]
Rauwolfia vomitoria	Roots	Malaria	[29]
Rauwolfia vomitoria	Leaves	Small pox / chicken pox	[29]
Rauwolfia vomitoria (Serpent wood)	Leaves	Nervous disorder, jaundice, scabies, diarrhoea	[29]
Ricinus communis (Castor oil plants)	Leaves, Seeds	Catarrh, constipation, ring worm, itching, purgative	[29]
Saccharium officinarum (Sugar cane)	Stems	Helminthic infestation, joint pain	[29]
Senna alata (Candle bush)	Leaves	Ringworm, eczema	[25,33]
Sessamum indicum (Gingerfly)	Culm	Dysentery, ear ache	[29]
Sorghum bicolor	Shoots	Blood shortage	[29]
Sorghum bicolor (Guinea corn)	Shoots, Leaves	Blood tonic, malaria, fever	[29]
Terminalia catappa (Almond tree)	Leaves	Fever, dysentery, diarrhoea, laxative, leprosy, scabies	[25,29,30]
Vernonia amygdalina (Bitter leaf)	Leaves, Stem	Stomach disorder, dysentery, skin infection, malaria, measles, diabetes	[25,29,31,33]
Vitellaria paradoxa (Shea butter)	Leaves, Stem barks	Skin rashes, nasal decongestion, asthma, whooping cough	[28,29]
Xylopia aethiopica	Leaves, fruits	Convulsion, cough, rheumatism, arthritis	[25,29]

Zingiber officinale	Rhizomes	Convulsion, cough	[29]

2. Medicinal Animals in Public Health Practices

Animals have also been incorporated into cultural practices in public health through the use of their parts such as skin, shell, feather, blood, scale, fin, teeth (Ogoanah and Omijie, 2017). Like plant, cut across different genera in the animal kingdom and have been found important with varying therapeutic properties (Izah and Seiyaboh, 2018). In different parts of Nigeria, species of wildlife has been reported with their therapeutic uses. Table 4 shows some species of animal with therapeutic implications in public health practices across Nigeria.

Table 4. Some medicinal animals for cultural public health practices in Nigeria

Medicinal Animals	Parts Use	Public Health Use	References
Achatina achatina (Giant snail)	Fluid	Treatment of ear problem	[34,35]
Agama agama (Lizard)	Meat	Whooping cough	[34,35]
Atherurus africanus (Porcupine)	Bile	Treatment of ulcer	[34,35,36]
Chamaeleo calyptratus (Chameleon)	Meat	Treatment of chest pain and cough	[34,35]
Crocodilus niloticus (Crocodile)	Teeth	Protection from polio	[34,35]
Crocuta Crocuta (Hyena)	Skin	Cure for children bed-wetting, dispel of spirit	[34,35]
Francolinus bicalcaratus (Bush fowl)	Leg	Cure of ear problem	[34,35]
Kinixys belliana (Tortoise)	Shell, anus	Ease of labour pain, menstrual pain	[34,35]
Loxodonta africana (Elephant)	Bone, droppins	Anti-convulsion, strength, cancer, pile, hemorrhage	[34,35]
Myomis daltoni (Mouse)	Any part	For treatment of swelling sickness	[34,35]
Numidia Meleagris (Guinea fowl)	Body parts	Cure for delayed child birth	[34,35]
Ololithes ruber (Tigertooth croaker)	Bones	Wound healing	[37]
Oreochromis niloticus (Tilapia)	Skin	Wound healing	[38]
Pan troglodytes (Chimpanzee)	Skin, bone	Prevention of miscarriage, protection from witchcraft	[34,35]
Panthera leo (Lion)	Fat, bone, skin	Dislocation, fracture, skin treatment	[34,35]
Phyton sebae (Python)	Fat, bile	Broken bones, rheumatism, ulcer, cold, pneumonia, swollen skin	[34,35]
Syncerus caffer (Bufallo)	Ear	Cure for ear ache	[34,35]
Veranus niloticus (monitor lizard)	Liver	Treatment of cough	[34,35]

3. Medicinal Soil, Water and Other Natural Materials in Public Health Practices

Soil, water and other available physical resources are natural gift present in large quantity for use by man. However, due to the quest for solutions to health challenges, inquisitiveness has led to the application of these natural materials which has proven to be effective in handling several public health issues. soil, in form of mud, clay, chalk and dry sand has been applicable in treatment of body weakness, early morning sickness during pregnancy [23] among other

ailments. Table 5 below shows some uses of soil and water with therapeutic implications in public health practices across Nigeria.

Table 5. Some medicinal uses of soil/water for cultural public health practices in Nigeria

Soil / Water	Public Health Use	References
Clay	Treatment of skin disease	[39]
Native chalk	Treatment of sweaty rashes during pregnancy, treatment of rheumatism	[40]
Mud water / peat	Treatment of body pain, relieve stress,	[41]

Conclusion

The advent of scientific and orthodox approach to public health challenges has brought about more organized and cleaner processes of treatment. However, this has not phased out the roles and importance of traditional medicinal practices which has been the earliest and crude form of disease prevention, management and control. Cultural practices have been and is still the most practices public health approach in rural and most remote communities in Nigeria where there is little or no access to scientific and orthodox medicine. This is an indication that the importance of cultural practices in public health issues cannot be wiped out nor overemphasized. It is still thriving despite the advent of modern medicine as most people in the urban setting still patronize cultural approach for disease management, prevention and control. With the importance of cultural practices in public health within the grassroot level and the importance of medicinal plants and animal resources in modern medicine, there is need for adequate conservation of natural resources to sustain the rich biodiversity hotspot of Nigeria and also preserve the cultural heritage of traditional medicinal practice within rural communities.

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