



Prevalence and Predictors of Use of Herbal Medication for Dermatological Conditions in South-South Nigeria

Bolaji I. Otike-Odibi¹, Enu Timipre¹ and Dasetima Altraide^{1*}

¹Dermatology Unit, Department of Internal Medicine, University of Port-Harcourt Teaching Hospital (UPTH), Port-Harcourt, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Author BIOO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ET and DA managed the analyses of the study. Author DA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To assess the prevalence of herbal use and factors that predispose (predictors) dermatology patients to the use of herbal preparations and medications at the Dermatology clinic of University of Port-Harcourt Teaching Hospital (UPTH), Port-Harcourt, Nigeria.

Study Design: A descriptive cross sectional design was used.

Place and Duration of Study: The Dermatology clinic in UPTH over a four-month period. (September 2020- December 2020).

Methodology: Data was collected using an interviewer administered questionnaire designed by the study researchers. It consisted of demographic characteristics, dermatologic history and participant's awareness, use, duration of use, outcome, side-effects and cost of remedy to herbal medications as well as overall satisfaction.

Results: One hundred and seventy patients were recruited for the study over the four-month period. The age range was 1 to 75 years with mean age of 30.8years \pm 14.9 with a male to female ratio of 1:1.7. There were females 63.5%, with participants being mostly in their third decade

*Corresponding author: E-mail: daltraide@yahoo.com;

28.2%, single 65.3% with tertiary level of education 64.1%. Most dermatologic lesions started as rashes 50.6%, itching 48.8% with the hands (48.2%) and the legs (47.6%) being the most affected parts of the body. 85% of participants were aware of herbal use and 37.6% had used them to treat dermatological lesions. Some herbs used include “gbogbonise”, ginger, garlic, paw-paw leaf, lemon, lime moringa and turmeric. Predictors for herbal use were lesions on the face and duration of skin lesions for (1-5 years).

Conclusion: There is a high prevalence of herbal use for dermatologic conditions in this locality with a female preponderance. Healing of dermatological lesions with the herbs was not recorded. Duration of skin lesion and lesion location on the face were identified predictors of herbal use for dermatologic conditions in this locality. This study is important because it shows that people are interested in herbal treatments and are looking for suitable alternatives to medicinal oral and topical therapies.

Keywords: *Medicinal plants; traditional health care system; therapeutic systems; affordable health resource; knowledge; skill and practice.*

1. INTRODUCTION

The use of medicinal plants as a fundamental component of the African Traditional Health Care System is perhaps the oldest and the most assorted of all therapeutic systems [1]. In many parts of rural Africa, traditional healers prescribing medicinal plants are the most easily accessible and affordable health resource available to the local community. At times, the traditional healer is the only health care giver that subsist [1].

According to the World Health Organization (WHO), Traditional Medicine is defined as “the sum total of the knowledge, skill and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental illness. “The term complementary medicine or alternative medicine”, refers to a broad set of health care practices that are not part of that country’s own tradition or conventional medicine and are not fully integrated into the documented health care system. There has been a continuing demand for, and popular use of traditional and complementary medicine worldwide even as patients seek treatment options [2].

According to WHO, 80% of the world population use medicinal plants for their basic health needs due to poverty and lack of access to modern medicine [3]. In African countries, the rate is much higher [3]. The use of traditional and complementary medicine varies in the different regions of the world. Whilst 25% of modern medicines are made from plants globally,

traditional herbal preparations in China accounts for 30-50% of the total medical consumption. Primary health care survey in Germany and Canada showed that at least 70% of their populations have tried complementary or alternative medicine at least once [4].

Skin diseases present a major health burden worldwide and skin problems significantly affect quality of life. Approximately 34% of occupational diseases encountered are skin related [5–7].

Traditional Medicinal resources, especially plants have been found to play a major role in managing skin disorders [8]. Herbal therapies have been used successfully in treating dermatological disorders for thousands of years in Europe and Asia. In Germany, regulatory commission oversees herbal preparations and recommends use. Currently, the United States of America does not regulate herbal products, as they are categorized as dietary supplements [9]. There are many reports of use of various herbal medicines for various skin disorders in Europe, Asia, and Africa [10].

There are different types of herbal medications used in Nigeria for different dermatologic conditions. Few examples include *Ocimum gratissimum* used in treatment of eczema, insect bite, acne vulgaris; *Phyllanthus amarus* euphorbiceae used in eczema and psoriasis; *Curcum longa* zingibereae used for skin parasites, leprosy, hirsutism, indolent ulcer and human papilloma virus; *Garcinia kola* used in malignant tumours, wound dressing, parasitic skin disease and gonococci infection; *Cassia alata* caesalpiniceae used for pityriasis versicolor, dermatophytoses and wounds; *Cajanus cajan* leguminosae used in

chickenpox and other pustular skin lesions; *Alstonia boonei* apocynaceae used in syphilis and rheumatic disease; *Baphia nitida* leguminosae used in ringworm, wound dressing, scabies and lice; *Anacardium occidentale* anacardiaceae used in eczema, psoriasis, leprosy, filariasis, wart, corns, ringworm, leishmaniasis, scrofula and syphilitic ulcers [4,11–13].

In this study, a few herbal medications were used by participants including “gbogbonise” which is composed of several herbs ranging from leaves, roots, bark of trees which serve as elixir for various medical conditions in the study environment. Ginger which contain 6-gingerol, 6-shogaol, 6-paradol and terpenes as active ingredients has anti-inflammatory and antibacterial properties. Similarly, garlic contains allicin, allin, ajoene, diallyl disulfide, allyl-cystein as its active ingredient, and modulates immunity, has anti-inflammatory, antibacterial effect as well as is useful in treatment of papillomas. Pawpaw leaf has flavonoids, chymopapain and papain as active ingredient which have antibacterial anti-inflammatory and anti-tumor properties. Lemon contains myrcene, citral and neral and is effective against skin infections. Lime contains oxides that are used in treatment of measles. Moringa contains myrecytin, quercetin, kaempferol, rutin, caffeine and ellagic as active ingredient as anti-inflammatory and antibacterial properties in addition to other benefits. Similarly, turmeric with curcuminoid as its active ingredient is effective against skin parasites, viruses, eczema, leprosy and useful in hirsutism.

Though about 85% of Nigerians use traditional/herbal preparations and medicines for health care, [14] many of the herbal preparations and medicines in circulation and in use in Nigeria are not registered with National Agency for Food and Drug Administration and Control (NAFDAC), [15] the government agency formed in 1993 under the Federal Ministry of Health, saddled with the responsibility of regulating and controlling the manufacture, importation, exportation, advertisement, distribution, sale and use of food, drugs, cosmetics, medical devices, chemicals and packaged water in Nigeria [16,17].

According to Ajose, in her study at Lagos State University Teaching Hospital (LASUTH), 65% of dermatology patients have used one form of herbal medication before presenting to the dermatology clinic [4]. Kazeem et al. [14] and Ijeoma et al. [15] in their respective studies recorded prevalence of herbal use of 31.0% and

84.7% respectively for conditions other than skin diseases in Nigeria. Similarly, Fawzi et al recorded herbal use prevalence of 39.3% for skin conditions in Mauritius [3], while Eser et al noted herbal use prevalence of 21% in Turkey, 69% in both United States of America (U.S.A) and England, 26.5% in Germany, 35% in Switzerland, 41% in Taiwan and 29% in Italy [18–20]. This suggests that the use of herbal preparation for dermatological condition is practiced worldwide, though its prevalence might vary from place to place.

Several factors have been identified in literature to influence the use of herbal preparations. De wet et al identified effectiveness, availability and low cost as reasons for herbal use among dermatology patients in South Africa [8]. Preeti et al. [3] in their review also noted relative safety, affordability, and profound therapeutic effect as predictors of use of herbal medication among dermatology patients. Cultural beliefs, minimal side effects, low cost and effectiveness were factors responsible for herbal use reported by Fawzi et al in Mauritius.

The aim of the study is to determine prevalence and predictors of use of herbal medication for dermatological conditions in South-South Nigeria. These dermatological conditions were present and treated with the herbs prior to their visit to the dermatology clinic with their present ailments.

2. MATERIALS AND METHOD

2.1 Study Area

The study was conducted in the dermatology clinic of University of Port Harcourt Teaching Hospital, which is part of the medical outpatient clinic that cares for 35 new dermatological patients on the average, weekly. University of Port Harcourt Teaching Hospital is a tertiary health care facility with 740 beds, that serves as a referral centre for primary and secondary health facilities in Rivers State and neighboring states like Bayelsa, Imo, Abia and Akwa Ibom States.

2.2 Study Design

It was a descriptive cross sectional design.

2.3 Study Population

Dermatology patients attending the dermatology clinic of University of Port Harcourt teaching

hospital, for the period of the study who gave informed written consent were recruited. Patients with dermatologic emergencies were however, excluded from the study.

2.4 Sample Size Calculation

The minimum sample size needed for the study was calculated using Cochran formula for estimating single proportion in a cross-sectional study which is:

$$N = \frac{Z^2 X P X Q}{d^2}$$

Where N is the minimum sample needed for the study, Z is the standard normal deviate at 95% confidence interval, which is 1.96, P is the prevalence of herbal use reported by Ajose in LUTH which was 65% (0.65), [4] Q represents 1 – P which is 35% (0.35), and d is the precision allowed in the study set at 8% (0.08%). After substitution, a minimum sample size of 136 was obtained. The sample size was further adjusted for non-response using a non-response rate of 10%, which brought the sample size to 150 persons.

2.5 Study Instrument

Data was collected using an interviewer-administered questionnaire designed by the study researchers. The study instrument had 3 sections. The first section investigated the socio-demographic characteristics of participants. The second section explores the participant's dermatologic history and the final section assessed participants' awareness of herbal remedies, the use, duration of use, outcome, side effect, cost of remedy and overall satisfaction.

2.6 Study Procedure

Participants were briefly introduced to the study, and its objectives. Questionnaires were self-administered by participants with minimal support from trained research assistants. Questionnaires were checked for completeness before retrieval from participants. Data was collected from September 2020 to December 2020.

2.7 Data Analysis

Data generated from the study was directly entered into IBM SPSS 23.0 version which was also used for analysis. Analyses were done to explore sociodemographic features, type of

dermatological lesions, duration of lesion, part of the body affected, awareness and prevalence of herbal use among participants. Results were presented in frequencies and percentages.

A binary logistic regression was done to identify factors that predispose participants to the use of herbal preparations/medicines. Participants who used herbal preparations for their dermatological condition before presenting to the health facility were coded as '1', otherwise were coded '0'. A bivariate analysis was first done to examine how independent variables like sociodemographic features and characteristics of dermatological conditions influence herbal use among participants. A multivariate analysis was consequently done to test the model created by variables statistically significant during the bivariate regression analysis. Statistical significance level was set at pValue <0.05,

3. RESULTS

3.1 Sociodemographic Status of Study Participants

One hundred and seventy patients were recruited for the study. Table 1 shows that of these, most were female (63.5%), in the third decade of life (28.2%), single (65.3%) with tertiary level of education (64.1%) and of the Christian faith (97.6%). Age range was 1 to 75years with a mean of 30.8 ±14.9.

3.2 Features of Dermatological Lesions among Study Participants

Most dermatological lesions started as rashes (50.6%) and itching (48.8%) with the hands (48.2%) and legs (47.6%) being the most affected parts of the body (Table 2). Almost half of the participants had lesions that have lasted between 1 and 5 years. Most of the patients were not sure of their diagnosis. 4 patients had acne, 2 had psoriasis, 1 case each of atopic dermatitis, systemic lupus erythematosus, ulcer, seborrheic dermatitis, scabies, darrier's disease, wart, contact dermatitis, tinea corporis, neurofibromatosis, vitiligo, eczema, herpes zoster, lichen planus and pseudo folliculitis barbae.

3.3 Prevalence and Features of Herbal Use among Study Participants

Though more than 4 in every 5 participants was aware of herbal use (86.5%), slightly above a third of participants had used herbs in the

treatment of their skin lesions, giving us herb use prevalence of 37.6% (Table 3). Of the participants who used herbs, less than a tenth were satisfied with the outcome of herbal use (6.3%), no participants reported that their dermatological lesion was healed after the use of herbs (Table 3). Table 3 further shows that complications of herbal use included itching (20.3%) and skin burn (15.6%).

Local names of some herbs used include Action bitters, Black soap, Gbogbonise, Ghana soap, Ginger, Garlic, Igodo cleanser, Jedi jedi, Pawpaw leaf, red soap, Ude, Ogogoro. English names of some herbs include Lemon, Lime, Moringa, Tumeric.

3.4 Predictors of Herbal Use for Dermatological Lesion

The logistic regression analysis showed that duration of skin lesion (1 – 5 years: OR – 2.18; p-0.042; 6 – 10 years: OR – 4.73; p-0.010) and having a skin lesion on the face were significant predictors of herbal use in the treatment of dermatological lesions in the study population.

Sex, age, marital status, educational level, occupation (p>0.05) did not contribute significantly to the use of herbs in managing skin lesions.

4. DISCUSSION

The awareness about herb was 86.5% while herbal use prevalence was 37.6%. This is similar to Fawzi et al. record of 39.3% [3] of herbal use prevalence but far above that of Eser et al record of 21% [20]. However, it is below that recorded by Ajose (65%) among dermatology patients possibly due to the duration of the study that spanned July 2004 to July 2006 and the sample size.

Participants who combined herbs with orthodox medicine and expressed satisfaction with the use of herbal medication were not substantial. However, Ijeoma et al and Fawzi et al. in their studies recorded 40.0% and 43.9% respectively of combination of herbs and orthodox medications [1,15] The difference maybe most likely due to the disparity in the sample size.

Table 1. Sociodemographic status of study participants

Characteristics	Frequency N = 170	Percent (%)
Sex		
Male	62	36.5
Female	108	63.5
Age		
≤ 10years	14	8.2
11 - 20years	29	17.1
21 - 30years	48	28.2
31 - 40years	35	20.6
>40years	44	25.9
Marital Status		
Single	111	65.3
Married	50	29.4
Separated/Divorced /Widowed	9	5.3
Highest level of Education		
No formal education	4	2.4
Primary	17	10.0
Secondary	40	23.5
Tertiary	109	64.1
Occupation		
Unemployed	32	18.8
Student	68	40.0
Civil Servant	35	20.6
Professional	23	13.5
Artisan	12	7.1
Religion		
Christian	166	97.6
Muslim	4	2.4

Table 2. Features of Dermatological lesions among study participants

Characteristics	Frequency N = 170	Percent (%)
Duration of Dermatological Condition		
<1years	59	34.7
1 - 5years	78	45.9
6 - 10years	16	9.4
>10years	17	10.0
How did the dermatological lesion start (more than one option applies)		
As a Rash	86	50.6
As a swelling	45	26.5
As itching	83	48.8
As a colour change	47	27.6
As peeling	36	21.2
Part of the body affected (more than one option applies)		
Hands	82	48.2
Legs	81	47.6
Face	63	37.1
Head	42	24.7
Trunk	37	21.8
Foot	33	19.4
Neck	22	12.9
Back	14	8.2
Nails	13	7.6

Table 3. Prevalence and features of Herbal Use among study participants

Characteristics	Frequency N = 170	Percent (%)
Awareness and Prevalence		
Awareness about herbs	147	86.5
Used herbs before for skin conditions	64	37.6
Features of herbal Use		
	N = 64	
Did you use herbs with orthodox medicine - Yes	11	17.2
Are you satisfied with herbal use – Yes	4	6.3
Duration of herb use for skin condition		
<1months	33	19.4
1 - 6months	23	13.5
>6months	8	4.7
Mode of Use		
Water solution for drinking	39	60.9
Topical application of crude extract	31	48.4
Mix in water for bathing	16	25.0
Alcohol solution for drinking	6	9.4
Apply by a compress	4	6.3
Outcome of Herbal Use		
No change in skin condition	29	45.3
Skin condition subsided	20	31.3
Skin condition was healed	0	0.0
Skin condition became worse	11	17.2
Complication following herbal use		
Itching	13	20.3
Skin burn	10	15.6
Dryness	9	14.1
Lightening	9	14.1
Peeling	8	12.5
Darkening	6	9.4
Would you recommend herbs?	14	21.9

Characteristics	Frequency N = 170	Percent (%)
Why would you recommend herbs?		
It is readily available	8	12.5
It is effective	7	10.9
It is cheap	7	10.9
It has no side effect	5	7.8
Other*	2	3.2

*Others include it gives immediate relief and dries lesion.

Table 4. Predictors of Herbal Use for dermatological lesion among study participants

Characteristics (Reference category)	Bivariate analysis				Multivariate analysis					
	B	OR	95%CI		pValue	B	OR	95%CI		p Value
			Min	Max				Min	Max	
Sex (Male)										
Female	0.15	1.16	0.61	2.21	0.659					
Age Group (<10years)										
11 - 20years	0.57	1.77	0.45	6.98	0.418					
21 - 30years	0.83	2.30	0.63	8.36	0.206					
31 - 40years	0.27	1.30	0.34	5.05	0.700					
>40years	0.05	1.05	0.28	3.96	0.944					
Marital Status (Separated)										
Single	-0.68	0.51	0.13	1.99	0.329					
Married	-0.98	0.38	0.09	1.59	0.184					
Education level (No Formal education)										
Primary	0.22	1.25	0.10	15.11	0.861					
Secondary	1.10	3.00	0.29	31.35	0.359					
Tertiary	0.47	1.61	0.16	15.97	0.686					
Occupation (Unemployed)										
Student	0.49	1.64	0.67	3.98	0.278					
Civil Servant	-0.13	0.88	0.31	2.51	0.811					
Professional	0.16	1.17	0.38	3.66	0.783					
Artisan	1.13	3.08	0.78	12.12	0.107					
Duration of skin lesion (<1year)										
1 - 5years	0.71	2.04	1.07	4.28	0.049*	0.78	2.18	1.03	4.64	0.042*
6 - 10years	1.59	4.89	1.52	15.75	0.008*	1.55	4.73	1.45	15.46	0.010*
>10years	0.72	2.05	0.66	6.36	0.212	0.72	2.06	0.66	6.47	0.216
Part of the body (Face – No)										
Yes	0.67	1.95	1.03	3.70	0.041*	1.02	2.65	1.02	3.85	0.043*

*Statistically significant; Shaded part of Table represent variables not included in the predictive model.

The commonest mode of use of herbs included water solution for drinking, topical application of crude extract and herbs mixed with water for bathing, in decreasing order. Similarly, Ijeoma et al in their study reported the oral route (87.1%) as the dominant route of administration of herbal medication [15].

The outcome of herbal use in this study showed, no change in skin condition (45.3%),

improvement in (31.5%) and 17.2% noticed worsening of skin conditions. Ijeoma et al. [15] in their study had no effect in (2.5%) and 24.4% could not see any difference in clinical outcome.

The complications recorded were itching, skin burn, dryness and lightening in descending order. However, Philip et al. [9] noticed worse complications like erythroderma, atopic dermatitis and nodular lichen planus. It is not

known if there was a history of these disorders prior to the use of the herbal medications.

A third recommended use of herb based on availability, 12.5% for effectiveness and 10.9% for low cost.

In this study, the duration of skin conditions and the location of the lesion on the face were significant predictors of use of herbal medications in dermatologic condition. The duration of skin lesion may have influenced the use of herbal preparation because the longer the skin lesion remain intractable to treatment, patients become agitated and likely to find alternative solutions which may include the use of herbs. Furthermore, beyond 10 years it was observed that herbal use was no longer significantly different from duration less than one year, this may be because many herbal preparations may have been tried by such participants without success and they have resulted to fate or to stick to any option conventional medicine offers. When the skin lesion affects the face, the chance of using herbal preparation is two times more than, when other parts of the body are affected. The face is the most conspicuous part of the body and impact on self-image particularly among women. Skin blemishes that affect the face attract a lot of attention from self and others. Most individuals will stop at nothing to ensure the disappearance of such blemish and a restoration of facial beauty. This may account for the higher use of herbal preparation/medicines in the treatment of skin lesions on the face. Surprisingly, though herbal use was more common in women than men, this difference was not statistically significant. Women are known to be more conscious of their looks and worry about skin lesions especially in the exposed parts of the body. The attitude of women to dermatological lesions is different from men, however this difference was not reflected in herbal use for the management of skin lesions, as seen in this study.

5. CONCLUSION

Herbal use prevalence for care of dermatologic conditions is high in this locality with a female preponderance. None of those who used herbs recorded healing of their dermatological lesions. Duration of skin lesion and lesion location on the face were identified predictors of herbal use for dermatologic conditions in this locality.

CONSENT

An informed written consent was obtained after a proper understanding of the demands of the study by patients.

ETHICAL APPROVAL

Ethical approval was obtained from the ethical committee of the University of Port Harcourt Teaching Hospital.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Prevalence and Predictors of Use of Herbal Medications in Dermatological Conditions in South-South Nigeria

Questionnaire:

A	Socio Demographic Data
	<ul style="list-style-type: none">• Age: ... Sex: Male/Female• Marital Status: Single [], Married [], Separated [], Divorced [], Widow [], Widower []• Educational Status: None [], Primary [], Secondary [], Tertiary []• Occupational Status: Unemployed [], Student [], Civil Servant [], Professional [], Artisan []• Religion Status: Christian [], Muslim [], Traditionalist [], Others
B	Dermatology History
	<ul style="list-style-type: none">• How long have you had the skin condition? Days.....weeks.....months• Did it start as a Rash? [Yes/No], Swelling [Yes/No], Itching [Yes/No], Colour Change [Yes/No], Peeling [Yes/No]• What part of the body is involved? Head [Yes/No], Face [Yes/No], Neck [Yes/No], Trunk [Yes/No], Hands [Yes/No], Legs [Yes/No], Foot [Yes/No], Nails [Yes/No].• What is the diagnosis?
C	History of Herbal Awareness/Use
	<ul style="list-style-type: none">• Have you heard of herbs? [Yes/No].• Have you used any herbs for your skin condition? [Yes/No]• What was the mode of use? Drinking [Yes/No], apply with herb mixed with alcohol [Yes/No], application of crude extract of herb on the skin [Yes/No], bathing with it in water [Yes/No], application as poultices and compresses [Yes/No]• How long did you use it? Days: ..., Weeks: Months:• What was the outcome? No Change [Yes/No], Subsided [Yes/No], Healed [Yes/No], Worsened [Yes/No].• Any complication from herbal use? Burning of skin [Yes/No], Dryness of skin [Yes/No], Itching of skin [Yes/No], Skin Peeling of skin [Yes/No], Other complications.....• What was the Cost? Cheap [Yes/No], Expensive [Yes/No], Readily Available [Yes/No].• Were you satisfied? [Yes/No].• Was the herb combined with conventional drug? [Yes/No].• If yes to the above, what is the name of the drug?.....• Would you recommend the use of herbs for skin conditions [Yes/No]?• If yes to the above question give reasons. cheap [Yes/No]. effective [Yes/No]. availability [Yes/No].no side effect [Yes/No]. others.....• What was the local name of the herb used?• Do you know the English name?• Is it grown commonly in your locality? [Yes/No].• Are there other herbs you know that are used for skin conditions [Yes/No]?• If yes to the above question, then list their names and the possible conditions they are used for• Worsening of Condition [Yes/No]. darkening of skin [Yes/No]. lightening of skin [Yes/No]. <p>----- ----- -----</p>

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