



Assessment of Pharmacists Knowledge, Attitude and Practices Regarding Herbal Drug Information Services

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ABSTRACT

Rational: Research suggests that increased consumption of herbal drugs is raising important public health concerns such as safety issues that may involve adverse effects and herb-drug interactions. The main objective of this study is to investigate the role of Pharmacists in herbal drug information dissemination.

Method: We investigated the demographics, knowledge, attitude and practices regarding herbal drug information and regulatory laws among Pharmacists living in the six (6) States that constitute the Niger-Delta region of Nigeria. A total of 300 self-administered questionnaires were distributed to Pharmacists aged 21 years and above.

Findings: About half of the respondents (48.72 %) were Hospital based Pharmacists. Knowledge of herbal drugs was 46.33 % while 64.0 % showed positive attitude towards its use. Most of the information on herbal drugs were sourced from the internet (23.08 %) while 53.48 % were aware of the laws and regulations controlling herbal drugs in Nigeria. 88.64 % were in favour of the establishment of a National Herbal Drug Research and Development Agency and 55.68 % strongly agreeing to the setting up of a Herbal Drug Information Centre.

Conclusion: The availability of herbal drug information services will not only enhance the performance of the Pharmacists, but will also add value to the life of the patients.

KEY WORDS

Drugs, Herbal, Pharmacist, Information services

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INTRODUCTION

Medicinal plants are commonly used in treating and preventing specific ailments and diseases, and are generally considered to play a beneficial role in health care. Medicinal plants are important to the global economy and demand is steadily increasing not only in developing countries but also in the industrialized nations [1]. World Health Organisation (WHO) estimates that approximately 80 % of the developing world's population meets their primary health care needs through traditional medicine [2].

Concerns have been raised about the quality and safety of Complementary alternative medicine products, particularly because many herbal medicines, vitamins and nutritional supplements can be purchased directly from health food stores, mail- and internet-order catalogs and mainstream food markets and pharmacies without the proper information on interactions with prescription and out-of-the-counter (OTC) medications [3]. Data regarding the safety profiles of many herbal products are scarce. In Nigeria, it was only recently that a Pharmacovigilant group was set up by National Agency for Food, Drug Administration and Control (NAFDAC). Nevertheless, patients are less likely to report, voluntarily, adverse reactions resulting from use of an herbal product compared with adverse events resulting from consumption of prescription drugs [4]. This puts the burden of identifying and reporting herb-related adverse effects on health care providers. Although many herbal drugs may be safe when taken alone, the risk of significant interactions increases when several agents are ingested in combination [5].

This study has become necessary in today's contemporary world, because of the proliferation of various herbal products with emergence of

divers herbal practitioners and self-styled traditional medical practitioners. Different herbal medicines abound and they are inadvertently advertised with bogus and exaggerated claims of healing ranging from common diseases to terminal diseases such as HIV/AIDS, and these are carried out without regards to existing regulatory laws. The role of the Pharmacist in information dissemination on herbal drugs has thus become imperative, especially in identifying appropriate intervention strategies to improve Pharmacist-Physician and Pharmacist-Patient relationships.

METHODOLOGY

Setting

The study was carried out in the six [6] States that make up the South-South geopolitical region of Nigeria, namely Edo, Delta, Bayelsa, Rivers, Akwa-Ibom and Cross-River States. Respondents were Pharmacists who were 21 years old and above and must have at least one year post qualification experience.

Study design

A two-part self-completion questionnaire was employed in the survey. The first part was designed to obtain demographic data (age, sex, marital status, religion, area of and years of practice). The second part consisted of 18 items, where attempts were made to gather data on knowledge, attitude and practices regarding herbal drug information dissemination. Acquisition of additional degrees, workshops, and interactions with practitioners in herbal medicine field were some of the factors used in assessing the Pharmacists' knowledge while self use or recommendation of herbal medicine to others indicated positive attitude. While items on existing laws and regulations followed the Likert-type scale which requires the Pharmacist to state the degree to which he or she agrees or disagrees with

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statements (items), others were more informative requiring respondents to give specific information.

Validity and reliability of instrument

The survey and administration techniques were approved by a panel of five independent assessors and only the recommended items were included in the final instrument after a pretest. The criteria for inclusion was that the Pharmacist must have worked in his current post for not less than 12 months and must be domiciled in one of the States in the Niger-Delta region of Nigerian, referred to as the South-South geopolitical zone. During the recruitment of the Pharmacists for the in-depth interviews, the purpose and extent of the study as well as the confidentiality of the information provided was clearly explained to the Pharmacists. Questionnaires were introduced by one of the researchers and in all 300 questionnaires were distributed.

Data analysis

Data collected were collated and computed into a database using Excel and SPSS 11 packages.

Statement of proposition

General hypothesis: The general proposition remains that the role of Pharmacists in herbal information services depends on a number of factors such as:

- I. Pharmacists’ knowledge about herbal medicine, i.e. what is the knowledge base of Pharmacists on herbal medicine in Nigeria that will enable them play a leading role?
- II. Pharmacists attitude towards the acceptability of the herbal drugs, i.e. do Pharmacists have a positive attitude towards herbal medicine?
- III. Availability of adequate laws and regulations on the practice of herbal medicine in Nigeria.

To test the general proposition, we specifically proposed the following:

- a. Adequate and up-to-date knowledge on herbal medicine can positively influence Pharmacists to take leading roles in herbal drug information services.

Null hypothesis: $H_0 : b_1=0$

There is no significant relationship between adequate knowledge on herbal medicine and Pharmacists’ role in information services.

Alternate hypothesis: $H_1 : b_1 \neq 0$

There is significant relationship between adequate knowledge on herbal medicine and Pharmacists’ role in information services.

- b. Pharmacists positive attitude to herbal medicine influence their readiness to take leading roles in herbal drug information services.

Null hypothesis: $H_0 : b_2=0$

There is no significant relationship between Pharmacists positive attitude to herbal medicine and their roles in information services.

Alternate hypothesis: $H_2 : b_2 \neq 0$

There is a significant relationship between Pharmacists’ positive attitude to herbal medicine and their roles in information services.

- c. Availability of adequate regulatory laws influences Pharmacies in taking up leading roles in herbal drug information services.

Null hypothesis: $H_0 : b_3=0$

There is no significant relationship between availability of adequate regulatory laws and Pharmacists’ role in herbal drug information services.

Alternate hypothesis: $H_1 : b_3 \neq 0$

There is a significant relationship between availability of regulatory laws and Pharmacists’ role in herbal drug information services.

Specification of the empirical models

The role of Pharmacists in herbal drug information services is a function of the following:

- I. Adequate knowledge of herbal medicines (AK)
- II. Positive attitude to the use of herbal medicine (PA)
- III. Regulatory laws for control of the use and practices of herbal medicines (RL).

This can be expressed thus:

$$RP = f(AK, PA, RL)$$

RP = role of Pharmacists in herbal drug information services i.e. for the Pharmacists to play a leading role in herbal drug information services is a function of their adequate knowledge of herbal medicines, having a positive attitude to the use of herbal medicines and availability of requisite laws and regulations for the control of the use and practice of herbal medicines.

Therefore, for Pharmacists to take up a leading role in herbal drug information services, one or all of the variables identified have to be effected. Given that we have more than one variable determining the changes in the dependent variables i.e. the role of Pharmacists, we have to adopt a multiple regression model (6).

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + U$$

Where Y = Dependent variable
 $X_i = (i = 1, 2, 3, \dots, n)$ independent variables
 U = Stochastic error term
 $b_1, b_2, b_3, \dots, b_n$ = Coefficient of the explanatory variables
 b_0 = Interception

Therefore, for our proposition, the test equation is of the form:

$$Y_{RP} = b_0 + b_1AK + b_2PA + b_3RL + U.$$

Statistical tests and analysis

The statistics that will be used to analyse the relationship between the dependent and independent variables are:

- I. R-square (R2) or the square of correlation coefficient
- II. Adjusted R-square (R2)
- III. The F-ratio or F-statistics
- IV. The “t” statistics
- V. The Durbin-Watson statistics.

RESULTS

There were 273 completed questionnaires out of the 300 distributed at the six States, giving a response rate of 91 %. While Hospital practice had 48.72 % of the respondents, Community practice had 27.84 %, Academic (3.66 %), Industrial (10.99 %) and others (8.79 %). Majority of the Pharmacists who participated in the study were married (48.72 %) with over 73 % aged between 21 and 40 years. Although respondents were mostly Christians (76.19 %), about 15 % of them were Moslems with less than 15 % acquiring over 20 years of practice. Both

Table 1: Pharmacists' Demographic Data.

Demographic variables	Number reporting	(%) (n = 273)
Gender		
Male	143	52.38
Female	130	47.62
Age		
21-30	95	34.80
31-40	106	38.83
41-50	54	19.78
51-60	18	06.59
60 and above	0	00.00
Religion^(a)		
Christians	208	76.19
Moslems	41	15.02
Others	8	02.93
Marital Status ^(a)		
Married	133	48.72
Single	101	37.00
Widowed	8	02.93
Separated	6	02.19
Years of practice		
1-5	46	16.85
6-10	73	26.74
11-15	80	29.30
16-20	36	13.19
21-25	30	10.99
26 and above	8	02.93

^(a) The data do not add up to total number of respondents because not all answered the question

sexes were well represented with 52.38 % males and 47.62 % females (Table 1).

Table 2a shows the distribution according to States of the Pharmacists knowledge of herbal medicines and positive attitude towards it as well as the level of awareness of the laws and regulations controlling herbal medicines in Nigeria. While the knowledge and positive attitude was highest in Rivers State (60.00 % and 73.75 % respectively), there was no significant difference in the level of awareness of laws and regulations controlling herbal medicines in Nigeria across the States in the South-South region. Most of the respondents showed a high level ICT as the Internet facility formed the main basis of their source of information with regards to herbal medicines (Table 2b).

The views of respondents concerning the advocacy for integration of herbal medicines into orthodox practices, need for Pharmacists to acquire more knowledge as well as establishment of National Herbal Drug Research and Development Agency (NHDRDA) and Herbal Drug Information Center (HDIC) are summarized in Table 2c.

Reliability of Results

The regression result for data is presented as follows:

$$Y_n = 5.467 - 0.270AK + 0.321PA + 1.481RL$$

$$S(E) (5.557) (0.529) (0.665) (0.907)$$

$$t_value (0.984) (-0.511) (0.482) (1.633)$$

$$R^2 = 96.9 \%$$

$$Adj R^2 = 92.2 \%$$

$$F\text{-ratio} = 20.56$$

$$Durbin\text{-Watson} = 2.694$$

From the above result, we observe that:

- Constant Value ($b_0 = 5.467$): The positive value of this result indicates that herbal medicine will survive even without the intervention of the Pharmacist. A value of 5.467 shows high patronage of herbal medicine, irrespective of the Pharmacists' role.
- Adequate knowledge: This result shows that only 27 % (coefficient of AK (i.e. b_1) of -0.270) of Pharmacists had adequate knowledge of herbal medicine in the area of study.
- Positive attitude (PA): This result (with coefficient b_2 of 0.321) shows that only 32.1 % of Pharmacists had positive attitude towards herbal medicine in the area of study. The result also showed a positive relationship between positive attitude and the role that Pharmacists play in herbal medicine practice. This means that if Pharmacists develop interest in herbal medicine, it will go a long way in promoting awareness among the public, sensitize the people on the merits and demerits of herbal medicine, thereby helping in regulating the practice in Nigeria.
- Regulatory laws (RL): This result shows that a high percentage (the coefficient of RL i.e. $b_3 = 1.481$) of Pharmacists agreed that provision of adequate regulatory laws will enhance or encourage the Pharmacist to take a leading role in herbal medicine practice.
- The R^2 : The examination of the result of coefficient of determination showed that multiple R is 96.9 % i.e. R^2 is 96.9 % and adjusted R^2 is 92.2 %. This shows that over 95 % of the variables that account for the variability of the dependent variables i.e. Y_n had been taken into the regression such that only less than 5 % of the variability could not be accounted for by the independents considered, therefore the model is fit.
- The F-ratio: The F-ratio indicates that at 5 % level of significance, $F^* > F$, hence the entire regression result is accepted as significant. i.e. the computed F-value of 20.56 is greater than the tabulated F-value of 3.10. In the light of this, the null hypothesis is rejected and infers that the difference between the mean is significant.
- The Durbin-Watson test: The Durbin-Watson test for data showed that there is no auto-correlation between the successive values of random stochastic errors included in the regression. i.e. the result of 2.69 falls within the acceptable region.

Table 2a: Pharmacists knowledge, attitude and awareness.

State of Practice	Edo	Delta	Bayelsa	Rivers	Akwa- Ibom	Cross- Rivers
1. Knowledge of herbal medicines	36.67 %	40.00 %	53.33 %	60.00 %	42.50 %	40.00 %
2. Positive attitude towards herbal medicines	61.67 %	56.00 %	46.67 %	73.75 %	65.00 %	72.50 %
3. Awareness of laws and regulations controlling herbal medicines in Nigeria	55.36 %	45.83 %	58.33 %	57.90 %	48.48 %	52.78 %

Table 2b: Pharmacists sources of information.

	Respondents No	(%) (n = 273)
Area of practice		
Hospital	133	48.72
Community	76	27.84
Academic	10	03.66
Industrial	30	10.99
Others	24	08.79
Sources of information on herbal medicines		
Herbal Journals	44	16.12
Internet	63	23.08
Herbal Books	31	11.36
Interaction with herbalists	56	20.51
TV Adverts	44	16.12
None	35	12.81
Information on use of herbal medicines ^(b)		
Fever	194	71.06
Hypertension	103	37.73
Diabetes	69	25.27
Infections/Germs	78	28.57
Constipation	31	11.36
Rheumatism	27	09.89
Others	55	20.15

Table 2c: Pharmacists advocacy.

	Respondents No	(%) (n = 273)
Advocacy for integration of herbal medicine into orthodox medical practice		
Total integration	71	26.01
Partial integration	46	16.85
Co-recognition	118	43.22
No integration	38	13.92
Need for Pharmacists to acquire more knowledge on herbal medicine		
Strongly agree	146	53.48
Agree	92	33.70
Strongly disagree	12	04.39
Disagree	23	08.43
Advocacy for the establishment of a National Herbal Drug Research and Development Agency		
Agree	242	88.64
Disagree	13	04.76
No Opinion	18	06.60
Advocacy for the establishment of Herbal Drug Information Centre		
Strongly agree	152	55.68
Agree	102	37.68
Strongly disagree	7	02.56
Disagree	6	02.20
No opinion	6	02.20

^(b) The respondents had the opportunity of choosing more than one option

Table 3: Dependent variable (Y_n) and the independent variables (AK, PA and LR).

State of practice	No. of respondents (Y_n)	AK	PA	RL
Edo	56	22	37	31
Delta	48	20	28	22
Bayelsa	24	16	14	14
Rivers	76	48	59	44
Akwa-Ibom	33	17	25	16
Cross-Rivers	36	16	29	19
	273	139	192	146

DISCUSSION

Our study was carried out in the six States that make up the South-South geopolitical zone of Nigeria. The fact that the average number of registered Pharmacist per State is about one hundred makes the result a true reflection of the state of Pharmacy practice in the zone. It is apparent that Pharmacists in Nigeria still show apathy to traditional medicines despite the recent growth in demand for their products. Some of the reasons could be due to the age-long beliefs about the attitude and practice of the herbalist of old. There were no proper documentation of the plants used and knowledge was passed down by illiterate herbalists, hence practice was vulnerable to medical errors in diagnosis and prescription. Several studies have highlighted key problems related to primary care delivery by traditional healers in Africa [7, 8, 9, 10 & 11]. Their premises and mode of preparation of remedies were not standardized, leading to potential contamination, toxicity and therapeutic failures [12]. Pharmacists show indifference to this area of health care system partly because of the lingering constrains and limitations in herbal medicine practice. This includes its lack of a systematic body of documented principles of diagnosis and treatment, the secrecy of its practitioners and its failure so far to adopt modern scientific methods in its development.

The Pharmacists' lack of interest in herbal medicines and lack of awareness in herbal drug information has therefore given room for incursion by charlatans and quacks in the distribution and sales of herbal products with the attendant abuse and misuse of these products by the populace. Though some of the respondents attested to having knowledge of herbal medicines being dispensed in the Niger-Delta region of Nigeria, the coefficient of adequate knowledge of the study showed that only 27 % of Pharmacists had adequate knowledge which is very poor. Concerted efforts should be made towards broadening the knowledge base of the Pharmacists in herbal medicine related issues, especially through the Mandatory Continuing Professional Development (MCPD) Programme by the Pharmacists Council of Nigeria.

The universal aim of all medical systems, traditional or orthodox, is to heal or prevent diseases. The primary differences center on the beliefs about the causation of diseases from which the concept and approaches to treatment spring. With re-professionalisation of Pharmacy towards

patient oriented practice, adequate and accurate information about medicines are needed to be disseminated by the Pharmacists. A greater percentage of the respondents agreed that a National Herbal Drug Research and Development Agency be established in Nigeria. This is necessary because, additional research is needed to satisfactorily determine the role of herbal drugs in health care. Well-designed, randomized, controlled clinical trials would best evaluate the efficacy, tolerability and safety of herbal products, their comparative efficacy with conventional therapy and potential drug interactions. Other areas needing research include assessing trends in usage, determining quantitative standards for products and evaluating long-term impacts on clinical outcomes, quality of life and Pharmacoeconomics. Because many individuals combine herbal products with conventional medicine as well as with other types of alternative medicines, research on these combined uses would be valuable. Pharmacists with their background knowledge in these areas will perform better in changing the battered face of practice of herbal medicines in Nigeria through research developments.

It will be of utmost importance if various sources of drug information available to orthodox medicines were equally established through Herbal Drug Information Centers (HDIC). This will encourage more Pharmacists to seek for information on herbal products. It is not encouraging that only 13.43 % (internet) and 8.96 % (herbal books) of the respondents sourced for information on herbal drugs with about 33.58 % not consulting any source. 44.03 % of the respondents were of the opinion that Nigeria should adopt the Indian system of co-recognition of herbal/traditional system with orthodox medical system as against 25.37 % who preferred co-integration. An integrated health care system of the Chinese could be considered a long term objective for Nigeria.

CONCLUSION

From the findings in this study, the knowledge base of Pharmacists in herbal medicines is low and Pharmacists have a key role to play in providing care to patients who are taking or contemplating taking herbal drugs. Pharmacists should approach the use of all therapeutic interventions with scientific vigor, whether they are traditional or complementary in nature. Many Pharmacists are reluctant to discuss herbal therapies because they

are unfamiliar with or skeptical of alternative treatments. This attitude is attributed in part to a lack of conclusive scientific evidence, consensus guidelines, standardization of herbal ingredients and preparations and formal didactic training for herbal therapies. However, it is imperative that health care providers should give informed recommendations concerning the efficacy, safety and other basic principles of herbal products. Patients will benefit as more information is known and widely disseminated. By actively embracing the responsibility for counseling individuals on the appropriate use of herbal products, Pharmacists will become a recognized source of expert information in this rapidly growing area yielding important improvement in quality care.

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