Genomics in Traditional African Healing and Strategies to Integrate Traditional Healers into Western-Type Health Care Services- A Retrospective Study

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Abstract: This study explores genomic insights into the process of traditional African healing; the use of medicinal plants, their therapeutic benefits and the application of biotechnology to enhance the exploitation of the active principles of these herbs and the removal of alkaloids that are most likely toxics to unsuspecting patients. This study also examines the attitude of health care consumers towards the integration of traditional healers into primary health care delivery system in Nigeria. Additionally, the attitude of medical and nonmedical students towards the utilization of traditional healers at primary health care centers was compared. Cluster sample of 1000 respondents participated in the study from the urban, rural, and isolated villages in kwara State, Nigeria. A total of 960 questionnaires were mailed to all the university students; 480 to the medical and 480 to the nonmedical students. Established in this study, was the shortage of health manpower. In Nigeria, over 30% of the respondents from the three communities indicated positive attitude toward the utilization of traditional healing service for orthopedic and mental health care. Over 60% of the respondent stated that they will never patronize traditional healer for oracular consultation. Although statistically significant relationships existed between professional background and attitudes toward the acceptance of traditional healer into primary health care system, the fact that the magical component of traditional medicine will constitute a barrier for the cooperation of physicians was highly significant (X^2=101.5, 4df; p<.01). To enable planners to salvage the beneficial aspect of traditional medicine, it was recommended that the mode of healing adopted in traditional healing should be empirically evaluated. [Researcher. 2009;1(6):69-79]. (ISSN: 1553-9865)

Key Words: Genomics, Traditional African Healing, Western-Type Medicine, Primary Health Care Services, Retrospective Study

1. Introduction

In Genomics and the Public's health in the 21st Century, the Institute of Medicine (2005) defined Genomics as "the study of the entire human genome". The expert committee at IOM also echoed the potential benefits of genomics in improving the health of the public and by differentiating genomics from genetics. The latter deals with the study of functions and effects of single genes while the former explores not only the actions of single genes, but also the interactions of multiple genes with each other and with the environment.

In the same vein, genomics is the study of the whole genome of living organisms. This branch of biological science focuses on the development and application of more effective mapping, sequencing, bio-informatics and computational tools. Scientists with profound background in genomics apply large scale molecular techniques for linkage analysis, physical mapping, and the sequencing of genomes to generate detailed data which are subjected to analysis using high-speed computer facility. The new international tools of genomics include the high-throughput DNA sequences,   and the large scale DNA arrays (DNA chips). These scientific tools have the capacity to analyze thousands of genes promptly and accurately. These devices can be used to study cells of virtually all living organisms. A typical genome is the entire collection of chromosomes which are present in the nucleus of each cell of an individual organism (CDC, 2004; Ebomoyi and Srinivasan, 2008). We must underscore how the Human Genome project has spurred a revolution in biotechnology innovation worldwide and continue to play significant role in making the United States and China leaders in biotechnology field. Genomic technology continues to unveil the therapeutic benefits of many plants and their lethal components which must be discarded. Hitherto, both traditional healers and western-type physicians had adopted trial and error modality to expunge many pharmaceutical products which routinely poison patients. But today through pharmacogenomics and human genome sequencing, efficient titer and adequate applications of many drugs have been compiled (Kayser and Quax, 2007).

The utilization of herbal products in traditional African medicine is widespread in virtually many African communities most especially in the rural areas and many medically isolated

villages in Africa. To illustrate, the plant <u>Combretum mucronatum</u> was identified as a warm expeller at a calculated dose of 0.8gm/kilogram. To alleviate the symptoms of bronchial asthma, various plants were identified which include: Desmodium adscendens, Papilionacea, Thonningia sanguine— Balanophoraceace and Deinbolia pinnata sapindaceae. Collaboration between Western-trained physicians, botanists, and African traditional healers has yielded so much benefits and the development of clinical drug trials in Nigeria, Ghana and many West African nations (Ebomoyi and Akwawua,2006).

The leaves of <u>Eleophorbia drupifera</u> and <u>Itilleria latifolia</u> taken with palm oil soup preparation acts as a filariacide and aginst guinea-worm (<u>Dracunculus mendinences</u>). The local application of guava leaves, ground into paste with kaolin or white clay and piper guineense, and twice a day heals the infection in about ten days. The late President of Ghana, Dr. Kwame Nkruman, emphasized some of the philosophical tenets of the Western African model as(1) to uphold, protect and promote the best in psychic healing, (2) to encourage the establishment of advanced training programs in traditional healing,(3) to introduce and train medical students to appreciate the work of traditional healing, (4) to encourage research work into traditional healing (5)to establish clinics in remote places and to educate traditional healers in the rural areas in order to improve upon their practices.

In Nigeria, 70% of the inhabitants live in rural areas and in such places traditional healers are generally the only available health care providers. Since the proficient healers could be rendering beneficial services to rural dwellers, it is common to encounter quacks among them who poison their patients and migrate further into the hinterland (Ebomoyi, 1982). Although traditional healers have not been accorded full official recognition, they render health care services to about 75% of Nigerians living in urban, suburban and medically-isolated villages (Ademuwagun, 1969). With regards to the current health manpower situation, conventionally accepted health indicators such as infant mortality rate, life expectancy and physician population ratio reveal an unsatisfactory picture. The data from The Nigerian federal ministry of health and the World Health Organization estimates (2008), and Time Almanac (2008) reveal: The health status of Nigerians is still relatively poor considering these indicators:

Infant Mortality Rate: 71.3 per 1000 live births

Crude death rate: 13.8 per 1000 live births

Crude birth rate: 38.80 per 1000 live births

Maternal death rate: 15.20 per 1000 live births

Life expectancy at birth 51.1 years for female
Life expectancy at birth 50.9 years for male
Adults (Ages 15-49) Living with HIV: 5.4%
Physicians 25,914 (1per 4,722 persons)
Hospital beds 54,872(1per 2,230 persons)

Objectives of the Study

The primary objective of this research was to explore the attitudes of primary Health care (PHC.) consumers towards the utilization of traditional healing services at the primary health care centre. A secondary objective was to compare the attitude of respondents in the urban, rural and medically-isolated villages about the utilization of traditional medical services. A third objective was to compare the attitudes and belief of medical and nonmedical undergraduates towards the utilization of traditional medicine services at the primary health care center. The underlying assumption is that Nigerian students enrolled in American universities and those enrolled in Nigerian medical school constitute an important source of future influence and leadership in Nigeria society. Given the findings from the survey, it should then be possible to evolve a suitable scientific strategy for the integration of traditional healers into primary health care delivery system in this country. The guiding theory for this approach comes from a body of research in communication known as diffusion of innovation discussed elsewhere (Ebomoyi, 1984).

The Study Area

The three communities where PHC services were studied are located in Kwara State, Nigeria. The urban area is situated in the heart of Ilorin township. This area is rectangular- bounded by the Emir's palace, the central mosque, the market and residential houses. Demographically, about 80% of the inhabitant are Islamic and an average income is less than 2,400 (two thousand four hundred naira). There is a district health centre which provides PHC services to a catchment area of 10,000 inhabitants who live in 660 houses. The rural community is Shao where there were 434 houses. Shao is a village of 3,756 females and 3,510 males in Kwara state. It is

about 16 kilometer north of Ilorin. Shao is a farming community in which most of the women are small scale traders. About 80% of the inhabitants are Yoruba's, there are Fulani's, Ibos, Hausas, and Agatus. In the community, about 48% of the inhabitants are Muslims, 50% Christians while about 2% of them are Animists (Ebomoyi, 1985).

The area studied in the Olowu district consists of 34 small farm hamlets (Fig. 1). Geographically, these remote villages are in the Guinea savanna belt of West Africa with a biome of evenly dispersed grasses and scattered trees. The temperature ranges from 22 ^{O}C to 34 ^{O}C with an annual rainfall between 40 to 45 inches. The Olowu district farm hamlets have a dejure census of 6,586 inhabitants living in 403 houses (Ebomoyi, 1987).

Figure 1- Map of Nigeria showing Kwara State
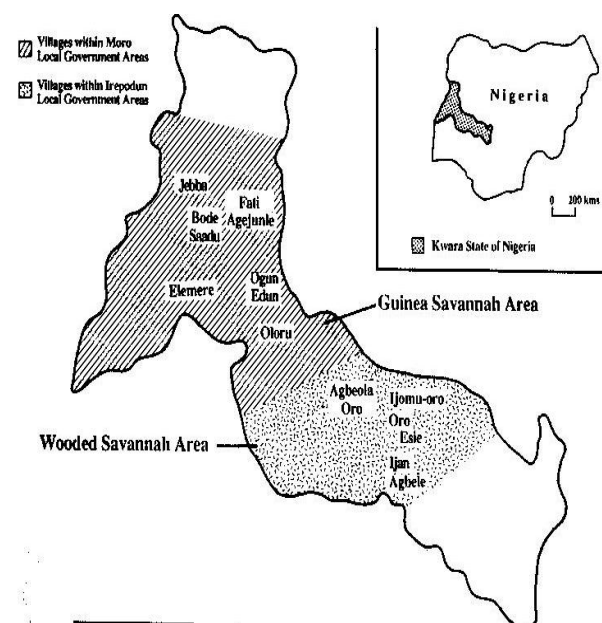
With regards to the two groups of Nigeria students; medical students who were enrolled in four medical schools and non-medical Nigeria students enrolled in six universities in the United States participated in this study. The universities involved were University of Ibadan, University of Benin, University of Ife, and University of Lagos. In the United States, the universities included: University of California, Los Angeles, University of Illinois, University Iowa, State University of New York, University Michigan Ann Arbor, and University of Austin Texas.

Material and Method

The field workers recruited for this study were given one month induction training on the general nature of the Nigeria Primary Health Care

(PHC) programs particularly its component of traditional medical services, mental health care, orthopedic, immunization, traditional birth attendance, oracular consultation, psychosomatic healing, dental services and the management of eye diseases. This study was conducted using cluster sampling method. At the urban, rural and isolated villages, 1000 respondents were interviewed in each community.

To assess the validity and reliability of the two instrument employed for this study, the Mermac Test Analysis was performed. For pilot field assessment, reliability coefficient of 0.951 for the Kuder-Richardson 20 formula and 0.921 for the Kuder-Richardson 21 formula were found for the community PHC questionnaires. The questionnaires designed for the student's group had coefficients of .881 for the Kuder-Richardson 20 formula and 0.899 for the Kuder-Richardson 21 formula. These results revealed that the questionnaires had a good degree of internal consistency and reliability. Every house was visited, and adults of child-bearing ages were interviewed.

Instruments

Eight questions requiring one mutually exclusive response, tapped attitude towards utilization of traditional healer at the PHC centers. Each respondent's position on a questionnaires item was reflected by his or her respond in one of five possible mutually exclusive responses. The continuums include 5 – strongly agree, 4 – agree, 3 – neither agree nor disagree, 2 – disagree, 1 – strongly disagree. The university students were asked whether federal Government should build hospitals to accommodate traditional healers at the local, state and Federal levels. Other questions on traditional healers were the extent of their acceptance by the people, efficacy, their role in identification of plants of therapeutic value and whether western-trained physician will co-operate with traditional healers.

With regards to the three communities studied, questions on the utilization of traditional healing were designed on a continuum of: 1 – I will never patronize, 2 – I may patronize, 3 – I will patronize, 4 – I will strongly patronize. Respondents were asked whether they will ever patronize traditional healers in specific medical services such as mental illness, psychosomatic disease, oracular consultation, gastroenteritis, immunization, family planning, dental services and eye care services. Questions on the socio-demographic characteristic of respondents were the closed-ended types and they were in numerical order.

Results

Observed in the data of PHC recipients from urban, rural and the hinterland is the preponderance of females. They made up over 50% of the respondents while the males were generally less than 40%. Among the respondents, 54.4% of the urban dwellers were illiterate, at the rural area, (Shao) 79.6% were illiterate, whereas in the isolated villages 98.8% were illiterate (Illiterate have not attained even 8th grade education).

Of the students groups, 369 were in medical field while 343 were in nonmedical profession. There were 532 males and 148 females. Among the nonmedical students, class rank was well distributed with 13.3% first-second year, 19.5% third-fourth year, 12.2% M.S. and M.A. degree candidates. The composition in class rank among medical students group was 13.9% first-second year, 17.8% third-fourth year, 16.9% fifth-sixth year. A striking observation among respondents by education pertained to the consistency of highest response rate by the third-fourth year class among both medical and nonmedical students. The mean age of respondents was 24.8% years with the range of 15 and 40. The highest percentage of respondents was found in the 20 to 24 category.

Shown in tables 1 – 3 are the attitudes of PHC recipients towards the utilization of traditional medical services. In the three district communities, over 60% of the respondents in each area stated they will never patronize traditional medical practitioners in oracular consultation. In each of the communities, well over 35% of the respondents stated that they will patronize traditional healer for either mental illness or orthopedic disease. Table 4 reflects the mean response values on the attitude-believe items based on eight variable of traditional medicine. The highest attitude score was that traditional healers are needed to identify our local plants which have healing properties. The least recorded attitude score was that traditional medical practices are more effective in the management of orthopedic disease than western-type medicine.

Since the healing of bone fractures is a physiological process by virtue of the respondents' education, they were probably quite aware of the fact this fact. Table 5 is chi-square comparison of medical and nonmedical student attitudes toward traditional medical practices. Although statistically significant relationships exist between professional background and attitudes toward utilization of traditional medicine; the fact that magical component of traditional medicine will constitute a barrier for the co-operation of western-type physician was highly significant ($X^2 = 101.5$; 4df, p< .01). Presented in Table 6 are the inter-correlation coefficient matrix of attitude-believe statement based on eight items of traditional medical practices. The correlations between the variables 1 and 4 (Federal Government of Nigeria should build hospitals to accommodate traditional medical practices at Local, State, and Federal levels; and respondents opinion about the integration of Western-type medicine into traditional medicine) were significantly correlated (.55 p< .01). Table 6 indicates all the significantly correlated variables at the p < .01 and p < .05) levels. Shown in Table 7 is the correlation between each independent variable and their discriminant functions. The table reveals that variable 1 is negatively correlated with variable 8. However, these negative correlations are associated with the discriminant scores by values of 23 percent each.

Table 1 – Attitude of PHC Recipients (at Ojaoba) Toward The Utilization Of Traditional Healers For Specific Clinical Problems

Traditional medical services	I will never patronize Trad. Healers	I may Patronize Trad. Healers	I will Patronize Trad. Healers	I will Strongly Patronize Trad. Healers
N = 1000	(%)	(%)	(%)	(%)
Mental Illness	60.3	-	4.7	35.0
Psychosomatic Disease	50.8	2.2	1.0	47
Oracular Consultation	90.8	1.2	-	8.0
Orthopaedic Consultation	60.4	1.6	2.0	36
Gynaecological Related Disease	68	-	12	20

Gastroenteritis & Related diseases	70	3.8	1.2	25
Immunization	88	1.2	5.8	5
Family Planning	92	-	3.4	4.6
Dental Services	80.8	6.2	10.5	2.5
Eye Care Services	84.4	-	4.4	11.2

Table 2 – Attitude of PHC Recipients (at Shao) Toward the Utilization of Traditional Healers for Specific Clinical Problems

Traditional medical services	I will never patronize Trad. Healers	I may Patronize Trad. Healers	I will Patronize Trad. Healers	I will Strongly Patronize Trad. Healers
N = 1000	(%)	(%)	(%)	(%)
Mental Illness	48.1	0.1	1.1	50.7
Psychosomatic Disease	81.9	-	0.1	18.0
Oracular Consultation	82.1	-	-	17.9
Orthopaedic Consultation	45.0	.43	2.9	51.7
Gynaecological Related Disease	81.9	-	0.1	18.0
Gastroenteritis & Related diseases	72.3	-	0.4	27.6
Immunization	99.6	-	0.1	0.3
Family Planning	82.8	0.1	16.7	0.3
Dental Services	99.4	0.1	0.1	0.4
Eye Care Services	99.4	0.1	-	0.5

Table 3 – Attitude Of PHC Recipients (at Remote Villages) Toward the Utilization of Traditional Healers for Specific Clinical Problems

Traditional medical services	I will never patronize Trad. Healers	I may Patronize Trad. Healers	I will Patronize Trad. Healers	I will Strongly Patronize Trad. Healers
N = 1000	(%)	(%)	(%)	(%)
Mental Illness	24.2	8.5	7.3	60.0
Psychosomatic Disease	40.7	6.10	6.1	47.1
Oracular Consultation	66.8	3.7	6.6	22.9
Orthopaedic Consultation	31.9	4.4	8.8	54.9
Gynaecological Related Disease	45.6	2.7	6.1	45.6
Gastroenteritis & Related diseases	71.2	5.1	6.6	17.1
Immunization	48.8	4.6	5.4	41.2
Family Planning	78.0	3.9	4.9	13.2
Dental Services	81.3	3.2	5.0	10.5
Eye Care Services	78.8	6.1	4.2	10.9

Table 4 – Item Pool for Traditional Medicine Attitude Scale

Traditional Variables	Statement	Means	Standard Deviation
1	Federal government should build hospitals to accommodate traditional medicine practitioner at local, state and federal level	4.14	1.16
2	The indigenous Nigerian people living in rural parts of the country prefer traditional medicine to western-type medical practices	3.58	1.16
3	Traditional medical practices are effective (produce results) in the treatment of mental illness	3.85	1.05
4	Traditional medical practices are effective (produce results) in the treatment of orthopedic (muscular skeletal) class than		

	western-type services.	3.55	1.29
5	If you have used the services of traditional medical practitioners before, you were satisfied.	4.04	0.90
6	In implementing the PHC the services of traditional healers are needed to identify our local plants which have healing properties.	4.43	0.69
7	What do you think of the integration of western-type medicine services into traditional medical practice in Nigeria?	4.22	1.1
8	Aspect of traditional medical practices which include magical thinking will make it very difficult for western-trained physician to cooperate with traditional services.	3.600	1.1

Table 5 – Chi-squared comparison of medical and nonmedical students' attitude toward traditional medicine

Traditional medicine variable	Medical students			Nonmedical students			Chi-square with	
	Percent DA	M	A	Percent DA	N	A	df= 4	Sign.
Federal government to build hospital accommodation for traditional healers	20	12.9	66	5.1	8.5	86.4	77.6●●	.01
Satisfied with traditional medical practice in Nigeria	15.1	21.1	63.8	4.9	10.8	84.4	39.0●●	.01
Traditional medicine is effective in mental illness	24.3	28	47.6	15.2	17.6	82.4	58.7●	.01
Traditional medicine is effective in orthopedic illness	44.1	21.5	34.4	17.6	19.6	62.7	76.5●●●	.001
We required traditional healers to identify local medicine plants	8.4	4.8	86.8	5.6	5.9	88.5	12.2●	.05
The magical component of traditional medicine will make it difficult for W.T. (western-trained) physicians to cooperate with T.M. (traditional medicine	8.4	8.6	83.0	26.6	24.8	48.7	101.5●	.01

practitioners								
Nigerians in rural areas prefer T.M. to W.T. medicine	35.9	16.5	47.6	28.8	21.2	57.4	53.0•	.01

●Results are significant at .05   DA = disagree
●●Results are significant at 0.1   N = neutral
●●●Results are significant at .001   A = agree

Table 6 – Pearson Correlation Co-Efficient Matrix of Attitude-Belief Components of the PHC Based on Eight Items
(Acceptance Of Traditional Medical Practice)

Attitude-Belief components	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Q1	1.0							
Q2	.33●●	1.0						
Q3	.46●●	.45●●	1.0					
Q4	.41●●	.31●●	.48●●	1.0				
Q5	.43●●	.29●●	.40●●	.44●●	1.0			
Q6	.45●●	.22●●	.33●●	.23●	.26●●	1.0		
Q7	.55●●	.31●●	.37●●	.29●●	.42●●	.35●●	1.0	
Q8	-.22●	-.18●	-.16	-.21	-.16	-.09	-.23	1.0

●Results are significant at 0.05
●●Results are significant at .01

Table 7 – Correlation between each independent variable and discriminant function (TMP)

VARIABLE (FACTOR)	CORRELATION (r)	Square multiple correlation r^2
1	.61	.46
2	.43	.25
3	.60	.40
4	.48	.33
5	.53	.32
6	.43	.23
7	.51	.37
8	-.27	.08

Discussion

In view of the current health workforce shortage in Nigeria, efforts should be harnessed to salvage pertinent technological resources from traditional healers. The results of the study suggest that overall, both medical and nonmedical students favor the integration of Western-type physicians with traditional healers. The accomplishment of such integration scheme was sufficiently supported by the Chinese political ideology (Horn, 1969).

Mahler (1969) has has cautioned that there is a need to integrate traditional healers into Western-type medicine. The most suitable strategy is to emphasize the just distribution of PHC resources and to utilize traditional medicine and its practitioner imaginatively. This will involve a collaborative research with international health experts to enable us have an objective assessment of the useful aspect of traditional medicine practice.

Viewed from the provider perspectives, both medical and nonmedical students favor the utilization of traditional medical services at the PHC centers. A statistically significant relationship exist between educational status of sttudents and the utilization of various traditional medical service (X^2 = 29, 12df, p < .01). The implications of these findings could be that the higher the education acquired, the more tendency to perceive the neccesity of integrating traditional medical practice into the official health care delivery system. Additionally current advocates of integration of both health care system such as Lambo (1956) and WHO (1978) experts committee on traditional medicine are highly enlighten health professionals. Igbinosa (1981) points out education as the most instrument by which individuals in rural areas can improve their well-being, understand and participate in health care services and develop the environment. Education definitely dispels human

ignorance and enables him or her to compare and constrast relationships between events.

In most urban areas of Nigeria, there is the proliferation of western-type health care services. It is not suprising that over 50% of the respondents in urban area stated that they will never patronize traditional healers. Only 35% of them agreed to utilize the services of traditional healers for mental illness. The effectiveness of traditional healers for treatment of mental illness has been confirmed by many investigators (Prince, 1960; Torrey, 1959). At Shao rural community, not only were PHC recipients willing to patronize traditional healers in mental health care but also 51% of them stated that they will strongly patronize traditional healers in clinical problems involving bone setting. At the isolated villages, over 40% of the respondents were willing to patronize traditional healer in mental health care, psychocomatic diseases, orthopaedic, gyneacology and imminization services. Paxima et al. (1979) has confirmed the supportive role which traditional healers can play in the health sector as traditional birth attendants, bone setters and native pyschiatrists.

In spite of the apparent benefit of integrating traditional healers with western-trained physicians, even the urban and rural PHC recipients have their reservations about such a scheme. Also, among university students, in spite of the fact that 81.9% of both medical and nonmedical students preffered the combination of traditional medicine and western-type medicine, the medical student groups were more conservative on this question. The clinical assessment of the effectiveness of traditional healing practice can be evaluated by western-trained researchers; therefore, the Federal Government has an important role to play by encouraging the medical students to express and identify their specific concerns about traditional medicine. In essence, being in favor of a combined approach is one thing, but designing the

PHC program is another. Pertinent questions which government and medicalofficers need to address are:

a) What are the specific essential plants drugs, or techniques employed in traditional medicine for use at grassroot levels or for primary health care?

b) What specific role can and should traditional medicine person play?

c) Is it possible to get their suggestions in order to develop the cooperative approach?

d) In order to be able to develop a cooperative approach between traditional medicine and western-type medicine, it seems axiomatic that a special effort be made to learn more about the beliefs and practices of the traditional leaders.

e) Are there areas of health care in which cooperation could be more easily established: for example, in areas where there is a lack of trained personnel, could the traditional healer be trained to take over certain services?

f) Who are the legitimate authorities in traditional medical practice?

g) In those areas of health care, where western trained physicians have the most serious concerns, such reservations, need to be recognised   before   undertaking   a cooperative approach.

h) Are there certain area of health problems in which traditional practitioners are more effective and therefore would be more accepted to the western trained physicians?

In addition to resolving the above questions, integration of both medical system should not be initiated until government researchers conduct preliminary pilot studies. Such projects can be carried out by: selecting pilot or experimental sites wherein the program would be initiated for a limited period of time. Based upon the experience gained from trying out new program approach, the attitude toward PHC can again be studied and the general effectiveness of the new procedure can be evaluated.

In some instances more formal experimental field trials may be conducted in order to have confidence in the results that are reported from these "tryout" experiences. Also the involvement of local residents and traditional medical practitioneers to secure their view, their most important health needs and to detremnine whether the PHC is helping them solve their health problems.

Program planners should visit herbal or traditional medicine stores in local areas and talk with consumers of traditional medicine in order to achieve a better understanding of their perceived needs. It would seem expedient to explore written materials on traditional medicine and to investigate theories on the source of care. For example, what type of people use the services of western-type medicine? What are the general attitudes of community members towards various western trained physicians and the dervices they offer?

A thorough understanding of these issues may enable planners to recognize factors likely to inhibit or promote implementation of the PHC. Although religious affliation appears to be an important factors in the type of healthcare required for the implementation of the PHC, the respondents studied were largely Muslims and Christians. A special study of the Nigeria animists can furnish more data about the relationship between various religions and the acceptance of health care practitioners for primary health care delivery.

In this study, efforts were made to assess the attitudes of PHC recipients toward the integration of traditional healers into the Nigerian PHC delivery system. The attitudes of the medical and nonmedical students were explored because they are potential physicians and health care administrators. Cognizance was taken of their not being completely comparable groups. However, their opinions, beliefs and concerns are quite pertinent in the development and implementation of primary health care in Nigeria.

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8/8/2009