

The Contribution of Traditional Herbal Medicine Practitioners to Kenyan Health Care Delivery

Results from Community Health-Seeking Behavior Vignettes and a Traditional Herbal Medicine Practitioner Survey

John Lambert, Kenneth Leonard with Geoffrey Mungai, Elizabeth Omindi-Ogaja, Gladys Gatheru, Tabitha Mirangi, Jennifer Owara, Christopher H. Herbst, GNV Ramana, Christophe Lemiere

September 2011



**THE CONTRIBUTION OF TRADITIONAL HERBAL
MEDICINE PRACTITIONERS TO KENYAN HEALTH CARE
DELIVERY**

*Results from Community Health-Seeking Behavior Vignettes
and a Traditional Herbal Medicine Practitioner Survey*

**John Lambert, Kenneth Leonard, with Geoffrey Mungai,
Elizabeth Ominde-Ogaja, Gladys Gatheru, Tabitha Mirangi,
Jennifer Owara, Christopher H. Herbst, GNV Ramana,
Christophe Lemiere**

September 2011

Health, Nutrition and Population (HNP) Discussion Paper

This series is produced by the Health, Nutrition, and Population (HNP) Family of the World Bank's Human Development Network (HDN). The papers in this series aim to provide a vehicle for publishing preliminary and unpolished results on HNP topics to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character.

For information regarding the HNP Discussion Paper Series, please contact Martin Lutalo at mlutalo@worldbank.org or go to www.worldbank.org/hnppublications.

Health, Nutrition and Population (HNP) Discussion Paper

The Contribution of Traditional Herbal Medicine Practitioners to Kenyan Health Care Delivery

Results from Community Health-Seeking Behavior Vignettes and a Traditional Herbal Medicine Practitioner Survey

John Lambert,^a Kenneth Leonard,^b Geoffrey Mungai,^c Elizabeth Ominde-Ogaja,^d Gladys GATHERU,^e Tabitha Mirangi,^f Jennifer Owara,^g Christopher. H. Herbst,^h GNV Ramana,ⁱ Christophe Lemiere^j

^a Senior Agricultural Economist, Consultant, Ottawa, Canada

^b Associate Professor, University of Maryland, USA

^c Botanist for Plant Identifications, Nairobi, Kenya

^d Ministry of Medical Services, Nairobi, Kenya

^e Director, Department of Culture, MOSNH&C, Nairobi, Kenya

^f Ministry of Public Health and Sanitation, Nairobi, Kenya

^g Kenya Medical Research Institute, Nairobi

^h Health Specialist on Human Resources for Health, World Bank, Washington DC, USA

ⁱ Senior Health Specialist, World Bank, Nairobi, Kenya

^j Senior Health Specialist, World Bank, Dakar, Senegal

This paper was prepared for the Kenyan Ministry of Public Health and Sanitation, the Ministry of Medical Services, and the Kenyan Department of Culture. The study was produced by the Africa Region Human Resources for Health Program of the World Bank, which is funded in part by the Government of Norway.

Abstract

This study examines the role that Traditional Herbal Medicine Practitioners (THMPs) play in Kenya in the context of its Human Resources for Health Crisis. Two surveys were carried out to obtain evidence. The first documented the choices and perceptions of households in 36 communities on seeking medical assistance for eight common illnesses. The second survey asked 258 THMPs in five provinces to identify their knowledge sources, training, common illnesses treated, forms of payment, challenges, and concerns.

Community-derived data show that households make reasonable decisions when faced with difficult circumstances: they prefer hospitals when these are affordable and seek care at clinics and health centers when hospitals are too far away. There is significant self-care and use of pharmacies, although THMPs are preferred for worms and lower respiratory problems. In general, THMPs provide an important though diminishing role in the provision of health care; they are not sought out in situations when inadequate care is dangerous, specifically infant diarrhoea and potential TB.

Based on the records of the 160 THMPs who maintain patient records (only 160 THMPs of the 258 surveyed maintained such records), it is estimated that each practitioner treats about 2,000 patients annually; this translates to nearly 80.4 million contacts per year for the total 40,000 THMPs estimated in Kenya. The common diseases treated are similar to those treated at government facilities. Major challenges include the diminishing availability of herbs to prepare medicines; lack of facilities for clinics and storage and of equipment to process medicines; nonpayment; low level of cooperation with government and officials; low levels of training or skills; and competition with quacks. THMPs also play a role in capacity building. Currently 74 percent of THMPs are training between one and three apprentices.

Whilst Human Resources for Health (HRH) policies are urgently required to strengthen the conventional health workforce and increase their accessibility for the poor, policies should not ignore the findings from this study: many of the rural poor currently receive services from a traditional health workforce not linked to, or regulated by, the national government. This paper argues that formal recognition of their role by the government and by the conventional medical associations, and a targeted strategy to strengthen and build on the positive qualities evident in many traditional medicine practices may be beneficial to safeguarding the well-being of the poor.

Keywords: Human Resources for Health (HRH), Informal Health Sector, Traditional Medical Practitioners, Health-Seeking Behavior, Kenya

Disclaimer: The findings, interpretations, and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

Correspondence Details: Christopher H. Herbst, the World Bank. Cherbst@worldbank.org

Table of Contents

ACRONYMS AND ABBREVIATIONS.....	6
PREFACE.....	7
ACKNOWLEDGMENTS	9
PART I – INTRODUCTION	10
NATURE AND METHODOLOGY OF THE STUDY	11
<i>Community Health- Seeking Behavior Vignettes.....</i>	<i>11</i>
<i>THMP Survey</i>	<i>13</i>
PART II – STUDY FINDINGS	14
COMMUNITY HEALTH-SEEKING BEHAVIOR	14
<i>Overall Choices for Each Illness Condition.....</i>	<i>17</i>
THE PRACTICES OF THMPs.....	18
<i>General Formal Education.....</i>	<i>19</i>
<i>THMP Specialization.....</i>	<i>20</i>
<i>Common Diseases Treated</i>	<i>21</i>
<i>Reproductive Health Care</i>	<i>22</i>
<i>Treatment Effectiveness</i>	<i>24</i>
<i>THMP Services Offered.....</i>	<i>24</i>
<i>Number of Patients per Day Treated.....</i>	<i>25</i>
<i>Communication between THMPs and Conventional Medical Practitioners</i>	<i>25</i>
<i>Self Reported Challenges Facing THMPs.....</i>	<i>26</i>
PART III – CONCLUDING REFLECTIONS	29
APPENDIX.....	33
<i>Medicinal Plants Used in Treatment</i>	<i>33</i>
<i>Herbal Drug Preparation.....</i>	<i>36</i>
REFERENCES.....	39

ACRONYMS AND ABBREVIATIONS

HIV/AIDS	Human immunodeficiency virus/acquired immunodeficiency syndrome
LRTI	Lower Respiratory Tract Infection
MOH	Ministry of Health
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health Services
MOSNH&C	Ministry of State for Natural Heritage and Culture
NHSSP II	Second National Health Sector Strategic Plan 2005–2010
STD	Sexually Transmitted Disease
TB	Tuberculosis
TBA	Tradition Birth Attendant
THMP	Traditional Herbal Medicine Practitioner

PREFACE

As in many countries in Sub-Saharan Africa, Kenya is experiencing a health worker shortage, particularly in rural areas. Health indicators including postnatal care and assisted deliveries fare worse in rural areas, which may in part be linked to the lower number of available, affordable, and acceptable health workers. A highly cited study suggests that to achieve an 80 percent rate of assisted deliveries, developing countries should have at least 2.23 qualified health workers (doctors, nurses, and midwives) per 1,000 people.

Anecdotal evidence suggests that globally, traditional medical practitioners (THMPs) are the only point of contact for many rural poor. The World Health Organization has suggested that traditional health care providers in developing countries provide primary health care needs for 80 percent of the rural populations.

In Kenya, very little quantitative evidence exists on the demand for traditional medical practitioners or on the role that they play in providing particular health services for the rural poor. As a result, THMPs currently lack formal government recognition and are often sidelined in Human Resources in Health (HRH) planning activities; further, their activities remain unregulated.

This study examines the role that Traditional Herbal Medicine Practitioners (THMPs) play in Kenya in the context of its Human Resources for Health Crisis. Two surveys were carried out to obtain evidence. The first documented the choices and perceptions of households in 36 communities on seeking medical assistance for eight common illnesses. The second survey asked 258 THMPs in five provinces to identify their knowledge sources, training, common illnesses treated, forms of payment, challenges, and concerns.

Community-derived data show that households make reasonable decisions when faced with difficult circumstances: they prefer hospitals when affordable and seek care at clinics and health centers when hospitals are too far away. There is significant self-care and use of pharmacies, although THMPs are preferred for worms and lower respiratory problems. In general, THMPs provide an important though diminishing role in the provision of health care; they are not sought out in situations when inadequate care is dangerous, specifically infant diarrhea and potential TB.

Based on the records of the 160 THMPs who maintain patient records (only 160 THMPs of the 258 surveyed maintained such records), it is estimated that each practitioner treats about 2,000 patients annually: this translates to nearly 80.4 million contacts per year for the total 40,000 THMPs estimated in Kenya. The common diseases treated are similar to those treated at government facilities. Major challenges include the diminishing availability of herbs to prepare medicines; lack of facilities for clinics and storage and of equipment to process medicines; nonpayment; low level of cooperation with government and officials; low levels of training or skills; and competition with quacks. THMPs also play a role in capacity building. Currently 74 percent of THMPs are training between one and three apprentices.

Whilst HRH policies are urgently required to strengthen the conventional health workforce and increase their accessibility for the poor, policies should not ignore the findings from this study: many of the rural poor currently receive specific services from a traditional health workforce not linked to, or regulated by, the national government. This paper argues that formal recognition of their role by the government and by the conventional medical associations, as well as a targeted strategy to strengthen and build on the positive qualities evident in traditional medicine practices may be beneficial in safeguarding the well-being of the poor.

ACKNOWLEDGMENTS

This work was produced by the HRH Team of the Africa Region Health Systems for Outcomes (HSO) Program of the World Bank and was made possible by the contributions of a large number of individuals and organizations.

The lead authors of this paper are John D. H. Lambert (Consultant, PhD) and Kenneth Leonard (Professor, University of Maryland).

Contributors and co-authors from Kenya include Mr. Geoffrey Mungai, Botanist for plant identifications; Dr. Elizabeth Ominde-Ogaja, MOMS; Dr. Gladys Gatheru, Director, Department of Culture, MOSNH&C; Dr. Tabitha Mirangi, MOPHS; Dr. Jennifer Owara, the Kenya Medical Research Institute (KEMRI); Ms. Lucy Misera, Mission Office.

Contributors and co-authors from the World Bank include Christopher H. Herbst (Health/HRH Specialist), G.N.V. Ramana (Senior Health Specialist, Task Team Leader for Kenya), and Christophe Lemiere (Senior Health/HRH Specialist).

Particularly, we thank all the THMPs, communities, and enumerators who participated in the surveys. Finally, we thank the Government of Norway who funded this study through the generous grant provided to the World Bank's Africa Region HRH Program.

The authors are grateful to the World Bank for publishing this report as an HNP Discussion Paper.

PART I – INTRODUCTION

As in many other countries in Sub-Saharan Africa, Kenya is experiencing a Human Resources in Health (HRH) crisis, which disproportionately impacts the poor. Nyanza province, for example, which has the lowest GDP by activity in the country, has the fewest professionals (1 health worker per 93,263 population); whereas areas with higher GDPs, namely Central Province, Nairobi, and the Coast, have many private medical facilities and a smaller population-to-health worker ratio (1:22,954; 1:51,298; and 1:19,827, respectively).¹ This is detrimental: evidence suggests that to achieve an 80 percent rate of assisted deliveries, developing countries should have at least 2.23 qualified health workers (doctors, nurses, and midwives) per 1,000 people.²

There is also evidence that even when health workers are present, the poor still have disproportionate access to their services. According to Kenyan health statistics, the prevalence and incidence of sickness for the country's 38 million people are similar for the poor and the nonpoor.¹ However, the response to sickness is markedly different across different socioeconomic groups. An estimated 23 percent of the sick do not seek conventional medical care. Further research is required to link such findings to a number of potential factors: the lack of available allopathic providers, discrimination in the provision of services, the inability of the poor to afford services, or the lack of trust that the poor place in conventional health workers.

Many rural populations rely on the presence and services of traditional medical practitioners, who form part of the informal sector. The World Health Organization has estimated that traditional health care providers in developing countries provide primary health care needs for 80 percent of the rural populations. The Ministry Of Health's Second National Health Sector Strategic Plan for Kenya (NHSSP II 2005–2011) thus estimates that 80 percent (30+ million) of the population relies on traditional herbal medicine, due to accessibility, affordability, sustainability, and cultural preference (Box A).

Box A: Frequently held views of why THMPs endure

One frequent explanation for the viability of traditional healers in Kenya as elsewhere is that for many communities, traditional medical practitioners are the only health providers available. The lack of adequately skilled and affordable health workers gives traditional healers a de facto monopoly over health services provision in many, particular rural, communities.

Another view is traditional healers flourish because they are charlatans who consistently dupe and take advantage of their clients. According to this view, traditional healers exhibit some or all of the following characteristics: They serve only the poor who cannot afford modern medicine; they serve the ignorant who do not know better; they cure patients who are not really sick or would have gotten better anyway; or they take advantage of a temporary placebo effect to collect payment before the patient feels ill again.

1. <http://www.equinet africa.org/bibl/docs/DIS62HRndetei.pdf>

2. Lincoln Chen and Alii et al, "Human Resources for Health: Overcoming the Crisis," *Lancet* 364 (2004): 1984–90.

A third view is that traditional healers continue to endure because of the way they provide health care services: that is, because of their practices as well as their medicines. According to this view, traditional healers have access to therapies that are reasonable substitutes but rarely superior to modern therapies. They are able to turn these therapies into effective medicine because they live in the communities they serve, know the people they care for, accept payment in kind, take payment for cures rather than medicines, and take a holistic view of the well-being of their patients.

This paper examines the role that traditional medical practitioners play in the provision of health services for the rural poor in Kenya, and discusses the need for regulating their practice and promoting the positive elements of such practice. The paper is organized as follows: The remainder of this chapter discusses the nature and methodology of the two surveys, which were carried out to inform this study. Part II discusses the findings related to the community demand for traditional medical practice; as well as the findings related to the services provided by THMPs, and some of the challenges they face. Part III discusses the implications of such findings and some of the conclusions that we can make from them.

NATURE AND METHODOLOGY OF THE STUDY

This paper reports on the results of a quantitative study undertaken by the World Bank during 2009–10, in a collaborative effort with the Ministry of Public Health and Sanitation (MOPHS) and the Ministry of Medical Services (MOMS) and builds upon data collected from rural communities and THMPs. The sample consisted of 36 communities in two provinces and 258 THMPs from five provinces and used two different instruments: (1) case study vignettes with households and (2) a questionnaire for THMPs.

Community Health- Seeking Behavior Vignettes

In order to understand how communities use THMPs and other types of health care facilities available to them, we presented eight vignettes to representative but separate groups of men and women in 28 communities. The 28 communities were selected from the same communities where the THMPs were sampled (see subsequent section), and the selection of men and women was in part dependent on the cooperation of these individuals. Each vignette was acted out by a male or female enumerator for the men's and women's groups, respectively. The enumerator mimicked a person trying to decide where to seek care. Thus, the vignettes presented symptoms, but not diagnoses or treatments. For example, in one vignette, the enumerator said: "I am a 50-year-old woman with painful swelling in my legs and feet. This has been happening to me for about a month now. I am coming to you for advice about my problem. I do not know if I should visit someone for help, and if I do visit someone, whom should I visit? Before you answer that question, however, do you have any questions for me? Is there something about me that you would need to know before you give me the answer?" If group members had questions, the enumerators were prepared with answers for most anticipated questions.

There were eight vignettes, designed to represent a variety of conditions, including those that would probably lead to a visit to a THMP and those that would not be reported to a THMP. Here

we briefly describe the conditions and what we thought participants would recommend. The recommendations were never presented to the participants.

1. Fifty-year-old woman with swelling in legs and feet; commonly treated by local medicines, including diuretics. We expected that participants would choose between THMPs and local modern providers when those were available. [Swelling]
2. Six-year-old boy with indigestion, bloated stomach, and general malaise. Usually worms, commonly treated with readily available medicine, potentially treatable by THMPs. [Worms]
3. Eight-year-old girl with cough and fever, which has lasted five days. Fever is not high, but the girl is very tired. Probably lower respiratory tract infection (LRTI), responsive to some medical care. [LRTI]
4. Thirty-year-old woman with pain in menstruation. She is certain that she is not pregnant. For conditions such as these, modern providers are often not trained to provide any long-term relief to women. Our experience suggests THMPs are more sympathetic and therefore might be more useful. [Pain in Menstruation]
5. Forty-year-old woman with fever, which is getting steadily worse, accompanied by chills. Some trembling and confusion. This is potentially severe and would benefit from a consultation with a competent provider. We suspect that most people would recognize the fever pattern was not consistent with malaria. [Fever]
6. Seven-year-old boy suffering from asthma. Frequent attacks at night. Our experience suggests that modern providers are not particularly sympathetic as diagnosis of the causes of the attacks takes time to establish. In West and Central Africa, patients suffering from asthma frequently choose THMPs. [Asthma]
7. Two-year-old boy suffering from diarrhea and vomiting. Immediate care is necessary, not necessarily medicine. [Diarrhea]
8. 50-year-old man with severe cough and blood in the sputum. This is a severe condition that might be tuberculosis. "Proper" care preferable at the tertiary level is essential. Either a clinic (primary or secondary care) or a THMP is not sufficient. [Possible TB]

After they had asked questions of the enumerator, the group members gave their recommendations for where each person in the eight vignettes should seek help. They were allowed to give multiple answers. We then asked a series of questions to judge the frequency with which a person in the village would visit a particular provider. The question was designed to elicit the number of people out of one hundred who would be likely to make a particular choice, with the numbers for all given choices adding to one hundred. In practice, this was interpreted in three different ways: (1) correctly; (2) the number of people present who might make that choice; and (3) the number of people present who agree that someone in the

community might make that choice. All three of these different systems were recoded to estimate the number of people out of twenty who would visit a particular provider.

THMP Survey

A total of 258 THMPs were interviewed in five provinces: Rift Valley, Nyanza, Western, Eastern Embu, and Eastern Meru. The five provinces were selected in collaboration with the Executive Committee of the National Advisory Council for Complementary and Alternative Medicine. More than one thousand THMPs have been registered in the five provinces. The THMPs interviewed were vouched for by a representative of the Executive Committee who also explained the nature of the survey and the importance of their participation.

Our survey included THMPs who practice as herbalists (generally specialists for particular illnesses or conditions), generalists (using herbs as well as other therapies), bone setters, dentists, traditional birth attendants. We did not interview practitioners who were exclusively faith healers.

Table 1. Sample of THMPs from Five Provinces

	East Embu	East Meru	Nyanza	Rift Valley	Western	Total
THMPs						
Male	9	10	38	33	22	112
Female	40	37	15	16	38	146
Total	49	47	53	49	60	258

A THMP survey questionnaire (appendix 1) was used to identify the common illnesses treated in the five provinces and the medicinal plants used to treat them, formal education, source of THMPs' knowledge and training, services offered, patients treated, payment for services, income generated, challenges or concerns for future practice. Five graduate student surveyors, one from each province and familiar with the local language, were accompanied by a member of the National Traditional Herbalist Association, each of whom was well known to local THMPs and able to explain the rationale behind the survey and the need for their collaboration.

Despite endorsement by the THMP association, not every THMP sampled was eager to answer all survey questions. A number of questionnaires had to be rejected because some herbalists did not wish to answer all questions. During the survey a number of THMPs offered examples of negative experiences with local and international researchers. A common complaint was that they had provided plant material for analysis and were never given any information in return. The responses as analyzed in this report are gratefully acknowledged and will be made available to all THMPs.

PART II – STUDY FINDINGS

COMMUNITY HEALTH-SEEKING BEHAVIOR

The overall pattern in the types of health care chosen for the eight vignettes is shown in Table . This table shows that, although the THMP is never the only choice in any of the vignettes presented, they are a common choice across the sample of villages. The groups we interviewed suggested that 20 percent of households who faced illnesses similar to the ones we described would visit THMPs, compared to 48 percent who would visit modern health care providers, 25 percent who would self-treat, and 7 percent who would seek care at a pharmacy. Although modern health care followed by self-treatment is the preferred answer for the majority of the sample, one in five individuals nevertheless visits THMPs.

To better understand the settings in which people are more likely to visit particular types of providers, we analyze the choices they make, controlling for the particular illness conditions and the geographical remoteness of the village. The community vignettes were analyzed in a multinomial logit regression with frequency weights assigned from the community responses. The weights vary between 0 and 20 and represent the number of people (out of 20) who would be expected to visit a particular type of provider for a particular condition. The responses were analyzed and recoded into six possible choices: (1) herbalists, (2) clinic or dispensary, (3) hospital, (4) health center, (5) self-care or no care, and (6) pharmacy. The groups of men refused to discuss the case of a woman with painful menstruation, and no data was collected on this vignette from the men's groups. The reduced number of observations for this vignette makes it difficult to analyze (28 observations with 6 choices), therefore the data is not examined directly.

We included three distance variables to describe the remoteness of each community: the distance in kilometers to the nearest clinic, health center, and hospital. There are dummy variables for each of the remaining seven illness conditions and interactions for each illness condition and the distance to the nearest modern facility (swelling is omitted for this interaction). The results are shown in Table 2, with marginal coefficients, standard errors, and significance levels reported. The symbol *** indicates significance at the 1 percent level; ** indicates significant at the 5 percent level, and * indicates significance at the 10 percent level.

Note that distances are recorded as kilometers; therefore, a positive coefficient means that patients are more likely to visit a particular location when the stated facility is farther away. Patients are more likely to choose a THMP for any condition if the nearest hospital is very far away. They are neither more nor less likely to choose THMP depending on the distance to clinics or health centers. Households are more likely to choose a clinic when the nearest clinic is close. They are more likely to visit a hospital when it is closer and when clinics and health centers are farther away. They are more likely to visit health centers when health centers are closer and when hospitals are farther away.³ They are more likely to seek self-care when hospitals are far away and when health centers are close. They are more likely to go to a pharmacy when both hospitals and health centers are close.

3. In terms of levels of care in Kenya, clinic or dispensary is level 2, health center is level 3, and hospitals start at level 4.

Table 2. Number of Projected Visits to Each Type of Provider among Twenty People Suffering from a Particular Illness Condition

	Herbalist (%)		Clinic/Disp (%)		Hospital (%)		Health center (%)		Self care (%)		Pharmacy (%)		Total
Swelling	299	28	169	16	218	21	109	10	167	16	89	8	1,051
Worms	240	23	78	7	164	16	61	6	416	40	88	8	1,047
LRTI	196	19	134	13	108	10	58	6	446	43	104	10	1,046
Mens.pain	198	37	9	2	258	48	50	9	22	4	0	0	537
Fever	205	19	239	23	129	12	104	10	276	26	102	10	1,055
Asthma	97	10	232	25	227	25	66	7	158	17	144	16	924
Infant diarr	141	14	223	22	111	11	60	6	418	42	43	4	996
Possible TB	166	15	249	23	534	49	106	10	33	3	4	0	1,092
Total	1,542	20	1,333	17	1,749	23	614	8	1,936	25	574	7	7,748

Note: Each group represented the choices of twenty households. There were two groups in each of 28 villages, except there was only one group in each village for the Menstrual Pain vignette. Thus there are a maximum of 1,120 possible individuals for each village. Numbers are less than 1,120 due to rounding down to the lowest whole integer in calculating numbers from proportions.

Table 3. Multinomial Logit Analysis of Health-Seeking Behavior from Community Vignettes

	Herbalist		Clinic/dispatch			Hospital			Health center			Self care		Pharmacy				
	coeff	Std err	Coeff	Std err		coeff	std err		coeff	Std err	Coeff	Std err	coeff	Std err				
Distance to nearest modern sector facility of particular type																		
Clinic	0.001	0.002	-	0.018 ***	0.002	0.023 ***	0.002	-	0.002	0.001	-	0.003	0.003	-	0.005	0.004		
Hospital	0.002	***	0.000	0.002	***	0.000	0.007	***	0.001	0.001	***	0.000	0.003	***	0.000	0.001	***	0.000
Health center	0.001	0.001	0.005	***	0.001	0.008	***	0.001	0.001	**	0.001	0.003	**	0.001	0.009	***	0.001	
Episode conditions																		
Swelling	0.002	0.012	-	0.081 ***	0.013	0.063 ***	0.010	-	0.087 ***	0.009	0.065	***	0.016	0.038	***	0.011		
Worms	0.069	***	0.018	0.250	***	0.024	0.228	***	0.019	0.171	***	0.015	0.158	***	0.017	0.034	**	0.012
LRTI	0.124	***	0.017	0.091	***	0.020	0.118	***	0.020	0.165	***	0.014	0.173	***	0.017	0.089	***	0.013
Fever	0.066	***	0.016	0.086	***	0.014	0.041	*	0.019	0.116	***	0.011	0.165	***	0.019	0.062	***	0.013
Asthma	0.143	***	0.020	0.021		0.015	0.194	***	0.018	0.122	***	0.013	0.074	***	0.019	0.018	*	0.008
Infant diarr	0.106	***	0.021	0.094	***	0.018	0.103	***	0.021	0.130	***	0.017	0.338	***	0.019	0.112	***	0.021
Possible TB	0.048	**	0.018	0.016		0.016	0.333	***	0.020	0.081	***	0.012	0.189	***	0.036	0.001		0.042
Distance to the closest modern facility interacted with episode conditions																		
Worms	0.013	***	0.004	0.018	***	0.004	0.089	***	0.009	0.011	***	0.002	0.042	***	0.005	0.032	***	0.005
LRTI	0.018	***	0.003	0.002		0.005	0.057	***	0.009	0.009	***	0.002	0.048	***	0.006	0.019	**	0.007
Fever	0.002		0.003	0.016	***	0.003	0.019	*	0.007	0.005	**	0.001	0.005		0.006	0.009		0.007
Asthma	0.000		0.003	0.012	***	0.003	0.048	***	0.007	0.003	*	0.001	0.010	*	0.005	0.024	***	0.004
Infant diarr	0.000		0.004	0.020	***	0.004	0.047	***	0.008	0.001		0.003	0.013	*	0.006	0.039	***	0.007
Possible TB	0.007		0.006	0.015	**	0.005	0.023		0.021	0.004		0.003	0.052	*	0.024	0.101		0.058

*** indicates significance at the 1 percent level; ** indicates significant at the 5 percent level, and * indicates significance at the 10 percent level.

Overall Choices for Each Illness Condition

Swelling: Households are not more likely to visit THMPs for swelling; they are more likely to visit hospitals and pharmacies and seek self-care; they are less likely to visit clinics and health centers.

Worms: Households are more likely to go to THMPs and hospitals or to seek self-care when they suspect worms and are less likely to visit clinics, health centers, or pharmacies.

LRTI: Households are less likely to visit THMPs, clinics, and health centers and more likely to seek self-care or a pharmacy.

Fever: Households are slightly more likely to visit a hospital, but significantly more likely to self-care or use a pharmacy. They are less likely to visit a THMP or a clinic.

Asthma: Households are less likely to visit THMPs or health centers and more likely to seek self-care and hospitals. They are slightly more likely to go to a pharmacy.

Infant diarrhea: Households are more likely to go to the hospital and much more likely to self-treat. They are less likely to go to a THMP, clinic, health center, or pharmacy.

Possible tuberculosis: Households are significantly more likely to visit a hospital and less likely to visit a THMP, health center, or to self-treat.

Note that households are more likely to visit hospitals for all of the conditions listed. This is because the regression has already controlled for distance to the hospital, so it is as if we are asking households that live next to hospitals, clinics, and health centers, “Which facility would you choose?” Naturally they choose hospitals over clinics and health centers. However, they also choose self-treatment for everything except possible TB and the pharmacy for everything except TB, infant diarrhea, and worms. This is most likely because the wealthier members of the community prefer the hospital, whereas the poorer members prefer self-treatment or pharmacies.

It is a strong signal of rationality that households always choose the hospital when the symptoms indicate possible tuberculosis. Note that when households have a choice of facilities nearby, the only illness for which they prefer THMPs is worms, and they do not avoid THMPs for swelling.

The next set of coefficients allows us to examine the differences between villages that are far from modern health facilities and villages that are close to modern health facilities. A positive coefficient means that, for that illness condition, households are more likely to choose a particular health care provider when all modern facilities are far away; a negative coefficient means that, for that illness condition, households in villages that are

farther away from modern facilities are more likely to visit that particular facility in that column.

Note that hospitals are much less likely to be visited for all conditions except possible TB when all modern facilities are farther away. Households are more likely to visit THMPs for lower respiratory tract infections when modern facilities are farther away, but less likely to seek the help of THMPs for worms. In general, households are more likely to visit clinics and health centers, probably because, when all facilities are farther away, these are more likely to be the closest modern facilities. But households are also more likely to seek self-care and pharmacies.

THE PRACTICES OF THMPs

A total of 258 THMPs (112 women, 146 men,) were interviewed in five provinces: Rift Valley, Nyanza, Western, Eastern Embu, and Eastern Meru. Each of the THMPs interviewed had been registered by the local THMP association, according to their own criteria. One hundred and seventy-one individuals (66 percent) identified themselves first and foremost as THMPs while 83 (32 percent) designated themselves as farmers first. The remainder were a combination of THMPs, small business persons, and pensioners (Table 4).

Table 4. THMP Primary Income Sources by Province (percent)

Source	Eastern, Embu	Eastern, Meru	Nyanza	Rift	Western
THMP/TBA	20	79	96	78	57
Farmer	78	19	4	20	38
Salaried	2	na	na		3
Business	na	2	na	2	2

By all those surveyed, nonherbalist activities, primarily farming, were viewed as a necessary means of supplementing their incomes. Levels of income generated from all activities was very difficult to obtain as THMPs were reluctant to answer this question directly. The majority (64 percent) of THMPs viewed their income at below the average for their region, and close to half (46 percent) considered their income to be equal to or less than the average income of their patients.

Of the 203 THMPs who indicated apprenticeship to be a source of their traditional herbal medicine knowledge, 96 received it from grandparents and 78 from parents. The remainder received it from other relatives, herbal practitioners, spirits, or dreams. The period of apprenticeship varied significantly from several months to several years. All herbalists acknowledged their understanding was a God-given gift, and therefore felt responsible to treat all who came to them. This situation was understood and fully accepted by the communities in which they lived.⁴

4. D. Helwig, "Traditional African Medicine," *Gale Encyclopedia of Alternative Medicine* (2005).

THMPs go through a somewhat prolonged period of apprenticeship before they become accepted healers in their communities; this is evident in that 71 percent of the surveyed THMPs were between the ages of 45 and 65 years (mean 51.0, SD 14.9).

General Formal Education

In the past, the general education of rural residents, especially THMPs, was not considered to be high.⁵ This has changed in recent years. In our survey, of the 254 THMPs who provided information on their level of education, 21 percent had received no formal education while 45 percent had attended primary school only; 33 percent attended secondary school; and only 1 percent obtained higher than secondary education. Among THMPs lacking formal education, a high proportion were women (90 percent) and older THMPs (mean age of 59 years).

When asked to compare their clientele with an average person in their community, THMPs considered that 39 percent of their patients had less education than the average, and 76 percent of their patients had less than average incomes, suggesting that THMPs cater to the needs of the poorer sections.

Thirty-two percent had received some training in other vocations as well. Such training included carpentry, building, mechanics, forest guard, government, theology, and numerous other fields. Of those with some level of formal education, 173 (85 percent) were able to write a letter, and 171 could carry out basic calculations.

While exact figures are not available, discussions with THMPs indicate that a growing number use laptops and communicate by e-mail and cell phone. This has important implications for potential communication between THMPs and the Ministry of Health.

The common practice of learning traditional medicine through apprenticeship to a relative or to a community herbalist is still very much alive. Fifty-seven percent of THMPs had between one and three apprentices—this accounted for 74 percent of all apprentices. The ratio of male to female or the ratio between particular ages was not identified. No figures were collected on the number of apprentices working with traditional birth attendants (TBAs).

5. D. Woolman, "Educational Reconstruction and Post-colonial Curriculum Development," *International Education Journal* 2, no. 5 (2001).

THMP Specialization

As with modern medical practitioners, THMPs can be defined by a simple level of specialization. While the majority of THMPs treat specific problems, there are generalists as well as spiritualists and diviners (Table 5).

Table 5. Specializations in Traditional Medical Practice

	Number of people	Proportion of all (%)
Herbalist	258	98
Generalist	72	28
Dentist	70	27
Traditionalbirth Attendant	67	26
Bone setter	38	15
Spiritual/faith healer	22	8

Note: Percentages do not need to sum up to 100 percent. Sixty-four percent of practitioners chose more than one category of specialization.

The following information is based on interviewees' self-descriptions.

- Herbalists prepare medicines that contain parts of plants and other materials as active ingredients. Herbalists are generally known for the treatment of specific complaints (respiratory, digestive, STDs, urinary, intestinal parasites, among others).
- Generalists utilize plant materials but are not considered specialists for any specific illness.
- Bone-setting practices and their success are probably the easiest of traditional medicine practices to document and substantiate.⁶ People visit bone setters because they are readily available, result in faster healing than do practitioners of orthodox measures, and are cheaper than hospitals.
- Dentists can relieve toothaches with specific plant products and extract decayed and broken teeth.
- TBAs are invariably middle-aged or older women who, in their youth, would have sought knowledge from older women (relatives or neighbors) and strengthened that knowledge through years of practice. Of the TBAs—67 total, 52 are female, 15 male. Overall mean age is 53.7 years. The survey showed that the mean age for female TBAs is 54.0 years. The mean age for male TBAs is 52.7 years.
- Spiritual or faith healers are viewed by many Kenyans as an important source of relief for stress, depression, or mental problems. The survey excluded such healers; however, some THMPs considered prayer important in treatment.

6. This has been supported in conversations with rural medical practitioners.

Common Diseases Treated

A THMP's definition or naming of a common disease may not be consistent with that of a medical practitioner or the MOH. Because of a lack of medical training, a THMP's diagnosis may differ from a medical practitioner's.

Table 6 identifies the 15 most common diseases treated by THMPs. Malaria was the most common (treated by 144 of the THMPs). THMPs' description of certain symptoms of illnesses in the survey has probably caused error in the correct identification of some illnesses treated.

The source of many of these diseases can be related to the lack of (1) inadequate housing; (2) properly maintained sanitation facilities (functional toilets); and (3) improperly maintained water sources such as washing and drinking venues. Young children playing on the ground, where unhygienic conditions prevail, are exposed to a multitude of parasitic infections that can cause diarrhea, stomachache or bloating and even asthma. Standing water, whether in ponds or in discarded tires, is an ideal habitat for mosquito larvae to hatch and spread malaria.

Table 6. Number of THMPs Treating the Most Common Diseases in the Five Provinces

Disease	All Provinces	Western province	Rift valley	Nyanza	Eastern Meru	Eastern Embu
Malaria	144	23	25	16	38	42
Gynecological	94	25	20	47	1	1
Typhoid	93	17	30	12	16	18
Worms	75	-	7	15	31	22
Cold/pneumonia	74	3	3	4	34	30
Arthritis	59	16	8	5	13	17
Sexually-transmitted diseases (STD)	58	20	20	7	3	8
Asthma	52	19	16	2	5	10
Stomach ache	45	6	11	14	5	9
Diarrhea	36	5	4	20	3	4
Allergy	28	9	9	4	2	4
Tooth ache	27	3	5	2	10	7
Ulcers	23	5	8	1	8	1
Tuberculosis (TB)	22	10	4	2	4	2
Diabetes	22	9	2	1	4	6

We previously mentioned the reluctance of THMPs to answer certain questions. One such question was how much they charged for treatments of the most common diseases. Responses were either so difficult to obtain or so irregular that it was impossible to get a clear picture. In such cases, a national THMP association could help develop a cost table

to identify treatment costs. We had a similar situation when trying to obtain costs for the same diseases treated by government clinics and health posts. Figures were promised, but never materialized.

Box B. The Plants of Traditional Herbal Medicine Practitioners

Medicinal plants are the basis for Kenya’s traditional medicine delivery and so recognized by the ministry.⁷ For general information, a section on their identification, use, and value is included in the appendix. A total of 264 plant species used by THMPs in the five provinces were verified by a botanical consultant to the National Museum of Kenya. Verification was based on local names provided by the herbalists. The appendix lists the major plants used by at least twenty of the healers in the survey as well as the common symptoms for which they are used. Each of these plants is widely known to have important chemical and medicinal properties. The properties of these plants, their common uses, and preparations are listed in the appendix.

Most Commonly Used Plant Species, Complaints Treated, and Number of THMPs Using Them

Plant Name	Number of Occurrences in top 5 list	Complaint/Illness
Azadirachta Indica	50	Malaria
Prunus Africana (Muiri kikuju)	45	Urinary Prostate;STD; Worms; Malaria; Cold
Warburgia Ugandensis	42	Cold/Pneumonia ;Asthma/Chest Pains; Malaria; Tooth Ache
Cariisa Spinarum	30	Stomach Ache, Ulcers ;Headache; General Weakness
Aloe Secundiflora	27	Malaria
Erythrina Abyssininca	26	Tomach Ache/Tooth Ache
Tylosema Fassoglenis	23	Stomach Ache;Urinary
Toddalia Asiatica	22	Cold/Pneumonia; Stomach Ache
Harrissonia Abyssinica	20	Stomach Ache;Malaria

Reproductive Health Care

The Kenya Demographic and Health Survey (KDHS) 2008 report acknowledges that traditional birth attendants play a vital role in delivery, assisting with 28 percent of births. Relatives and neighbors assist in 21 percent of births. Health professionals supervise 48 percent of births. The same report suggests that 92 percent of women in Kenya receive antenatal care from professionals. These figures seem very high considering that many rural communities either lack health posts or require transportation to reach a health post and money to pay for the service. These deficiencies are reflected in the fact that infant and maternal mortality rates remain high (KDHS 2008).

Most TBAs cannot identify or deal with postpartum hemorrhage (severe loss of blood during or after labor), sepsis (bacterial infection in the blood), eclampsia (hypertension

7. Ministry of Health, *The National Policy on Traditional Medicine and Medicinal Plants* (2005).

during pregnancy), or a ruptured uterus. Many rural women rely on TBAs because they are accessible and their skills and knowledge are well known in their communities. Remember, from vignette 4, that the men would not (or could not) discuss menstrual pain.

While the illnesses treated were no surprise, the high number of gynecological problems in three of the provinces (Nyanza, Rift Valley, and Western) was unexpected (table 6). Problems ranged from menstrual pains to antenatal issues to menopause concerns (Table 7). It is generally accepted that most women in developing countries are not willing to discuss “female” problems with any medical practitioner, traditional or Western-trained.⁸ Besides, there are few public or private female doctors in rural areas with whom women could discuss their problems.

In 2001, the MOH’s Division of Reproductive Health revised its 1991 National Curriculum for Traditional Birth Attendants. Today, training for TBAs does no longer seem to be provided. Indeed, in our survey, 64 percent of TBAs interviewed had not received any training or were not aware of such training still being available. For those who had received training, skills included knowledge regarding better hygiene, mother and infant care, and improved delivery. However, such training was not followed up by opportunities to provide feedback or to upgrade knowledge.

Table 7. Reproductive Health Services

Total number of THMP	258
Number of Female THMP	112
Number of Female THMP who provide Gynecological Problems	
<i>By Complaint Name (1)</i>	53
<i>By Specialization (2)</i>	52
<i>By Health Service Offered</i>	78

Notes:

[1] Complaint names included birth-related gynaecological problems, and other gynaecological problems.

[2] Specialization included "traditional birth attendant".

[3] Health service categories included "reproductive", and "pre-natal".

8. WHO, “Ten Facts about Women’s Health” (March 2011).

Treatment Effectiveness

The THMPs were asked how they knew their treatments were effective. Their answers are reported in table 8. Whereas the majority determined treatment effectiveness based on their own experiences, they also cited the importance of their teachers in that process. As expected, a high number of THMPs acknowledged the experience of others, especially those who had taught them, as important in determining effectiveness.

Table 8. THMP Method of Determining Effectiveness of Plant Drugs

Method	Eastern Embu	Eastern Meru	Nyanza	Rift Valley	Western	Total
Own experience	47	34	50	49	57	237
Experience of others (teacher)	8	34	17	42	27	128
Trial and error	1	7	1	1	1	11

Success of a drug is purely subjective as the THMP cannot categorically determine the pathway that has led to the cure—that is, the correct dosage. Nevertheless, many people’s complaints are “successfully” treated. Generally, it is only when a THMP is deemed successful that full payment is made.

THMP Services Offered

Since the majority of THMPs lack a special room for inpatients, most visitations were conducted as outpatient consultations (Table 9). However, the survey did not obtain a satisfactory response to where patients were received (that is, home, special room, hut in home, office in town, patient’s home, anyplace, or other). We have assumed the majority of the outpatients were received in the THMPs’ homes since the majority (92 percent) of their medicines were dispensed during outpatient visits. Minor surgeries were seldom, if ever, performed by THMPs. The difference in responses between provinces for dental and reproductive health care cannot be determined. While the majority of THMPs did not profess knowledge concerning the treatment of HIV/AIDS, they were eager to know how to prevent the disease.

Table 9. THMP Responses to Number of Services Offered Patients

	Eastern Embu	Eastern Meru	Nyanza	Rift Valley	Western	Total
Place of Service						
Outpatient	48	38	51	48	54	239
Inpatient	1	2	3	15	4	25
Type of Service						
Herbal medicine	48	42	33	47	49	219
Preventive health	25	22	29	43	25	144
Dental care	38	1	0	36	45	120
Reproductive health	37	33	5	26	11	112
Minor surgery	1	0	0	2	5	8

Number of Patients per Day Treated

An important feature of the survey was to document how many THMPs kept patient and treatment records. A total of 106 THMPs kept records (42 percent of all THMPs). However, very few records were seen by the data collectors. Most records were deemed sparse and variable in content. Name, date, illness, and treatment were the most common components of the data. All the THMPs were asked the number of patients (men, women, and children) they treated per day, week, and month. Only the numbers identified by THMPs who kept records were tabulated.

The records reveal that the average number of patients seen per day is 6.7 for all patients, 3.6 for female, and 2.9 for male patients (table 10). The total aggregate for the 87 THMPs who provided information on patient visits was 584 patients per day. Female patients had the most visits (287/day), males (229/day) and children (161/day). If we assume 106 THMPs accept visits during 300 days of the year, the total number of patients treated could be 175,200. Although this may seem like an exaggerated number, it is not: When calculated at a countrywide rate, the daily figure for visits would be considerable; on an annual basis, it would be in the millions.

Table 10. Number of Patients per Day for THMPs Who Kept Records (for all 87 who kept records)

	Number of Physicians Provided Data	Number of Patient Visits per Day		
		Mean	Standard Deviation	Total Number of Patients
All patients	87	6.7	4.6	584
Male patients	79	2.9	2.6	229
Female patients	80	3.6	2.5	287
Child patients	69	2.3	2.4	161

Communication between THMPs and Conventional Medical Practitioners

The majority of communities (83 percent) where THMPs were surveyed had access to a government/public sector health center or dispensary (that is, access defined loosely as “could get to easily if needed”). At the same time, 42 percent said government or public health workers never visited their communities.

Communication between THMPs did not appear to guarantee positive interaction. However, THMPs did refer patients to each other when they felt their own treatments were not effective, or when a particular THMP was well known for treating a problem. Communication with medical practitioners seldom occurred. THMPs did recognize that in the case of certain diseases (malaria, TB, HIV/AIDS, and cancers), MDs and hospitals were better able to respond to patient needs. Dialogue and interaction with medical practitioners is a THMP future goal.

As expected, the majority of THMPs had no first-hand knowledge of Western medicine or practices. The majority felt confident that they could diagnose malaria, respiratory infections, and water borne diseases. Their primary training need was for health education, especially relating to HIV/AIDS. An overwhelming majority (99 percent) opted to participate in conventional or modern medical programs to improve their skills, quality of care, and overall safety of practices.

Challenges cited included low levels of cooperation with public and private sector medical practitioners. There are examples in rural areas of sound collaboration as well as instances where it is nonexistent. This discrepancy invariably depends on the views conventional medical practitioners have of traditional herbal medicine and birth attendants. According to WHO,⁹ despite widespread recognition of the high demand by the poor and vulnerable for traditional treatments, THMPs are given little if any validity because their efficacy has not been scientifically demonstrated. However, the lack of collaboration also results from THMP mistrust that their intellectual property rights will be ignored. Many THMPs gave examples of such poor collaboration.

There is recognition by many THMPs that they lack knowledge of even the basic elements of formal medical practices. The majority (>90 percent) of THMPs were anxious to improve their skills and would respond positively to any initiative by MOH to upgrade their knowledge-base. Such knowledge would improve the quality and safety of their services.

Self Reported Challenges Facing THMPs

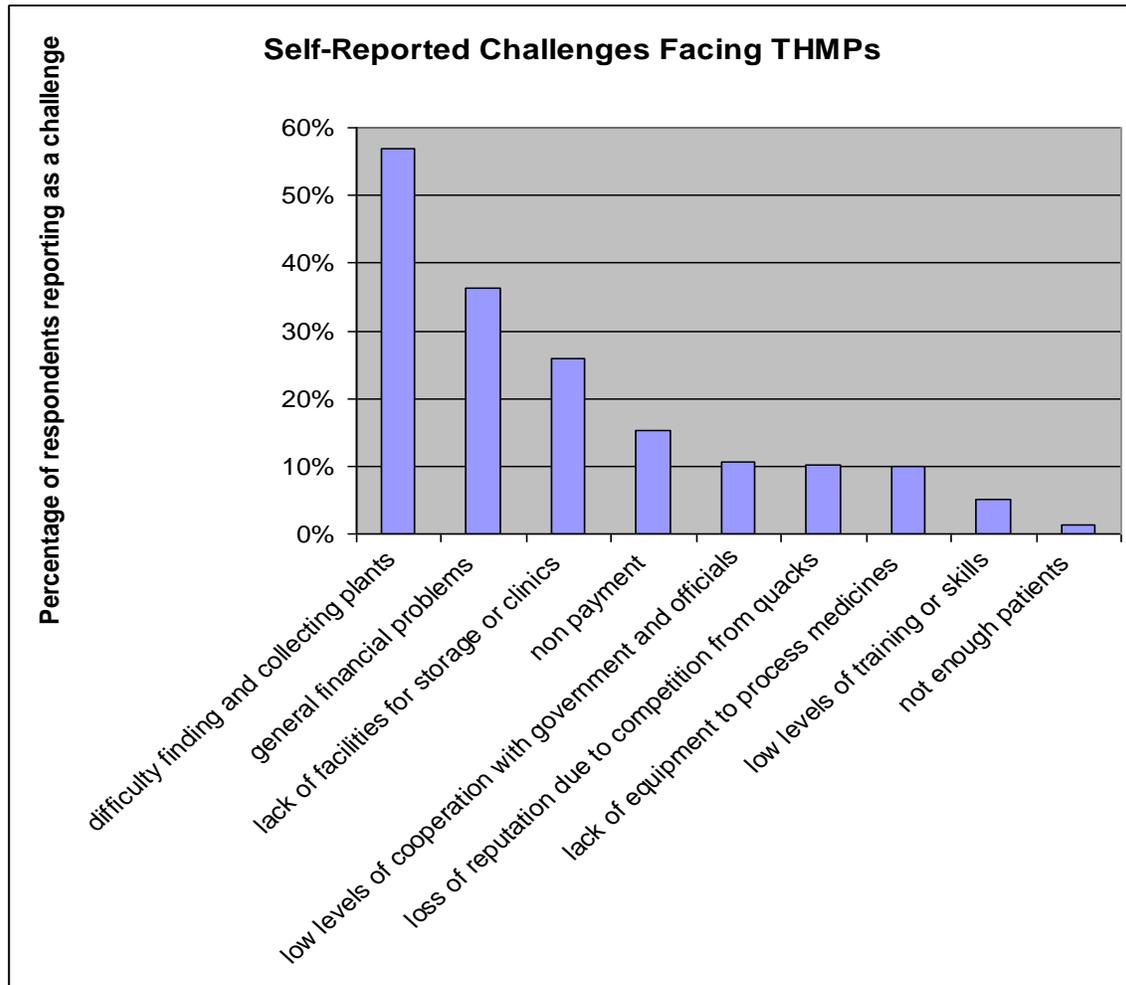
Figure 1 shows the proportion of THMPs who cite particular problems facing their practices. Important challenges identified by the THMPs were (1) increasing scarcity of plants; (2) lack of storage facilities; (3) insufficient/unsatisfactory equipment to process medicines; (4) nonpayment, limited cooperation with medical facilities; and (5) need for a national association to facilitate better communication with MOH.

Of all the self-reported challenges faced by the THMPs, the scarcity of medicinal plants is paramount, and for 57 percent of respondents, it is the most problematic. The reasons are many and include (1) depletion of forest resources; (2) restrictions to harvesting in forests; (3) expanding agricultural lands; (4) fire; and (5) poor harvesting practices. Linked to these challenges are three more: (6) increasing distances to travel to collect; (7) cost of travel; and (8) refusal of landowners to allow collection of plants.

Poor harvesting practices are a common problem in developing countries, where many herbalists are only now realizing that the source of their livelihood is threatened. Poor practices include failing to replace ground cover after harvesting roots, removing all bark from young trees, which guarantees their death; not replanting when a plant is removed; and failure to protect natural sites from grazing.

9. WHO, "Collaboration between Traditional Health Practitioners and Conventional Health Practitioners," Special Issue 14, African Traditional Medicine Day (August 31, 2010).

Figure 1. Self-Reported Challenges Facing Healers



We asked respondents how this scarcity should be addressed. Surprisingly, the majority of THMPs considered the problem the responsibility of communities or government and not their own. The concern about scarcity has been recognized, and actions to mitigate plant losses and establish a combined THMP and community action plan with government support are underway.

General financial security is a problem for 35 percent of THMPs. This is especially so for THMPs whose sole source of income is treating patients. Many THMPs also see farming as an important source of income and survival. The cost of maintaining a practice, collecting plant materials, market purchases, preparing drugs, and visits to patients' homes all place a burden on the finances of rural THMPs.

Because of the lack of funds, THMPs have difficulty in upgrading their storage facilities and clinics. This is a problem for 25 percent of THMPs. During the development of a Japan Social Development Fund project, the lack of adequate storage facilities and rooms

to meet with patients were identified as major impediments to closer collaboration between THMPs and the MOH and private medical practitioners.

Since THMPs are, for the most part, treating people with very limited incomes nonpayment is a problem. For many THMPs payment can be in the form of work or food; sometimes there is simply no charge. In many cases patients might pay the initial or supplemental treatment fee but ignore the final fee, assuming the treatment has been successful and no return visit is required. The THMP's answer to this situation was that "payment is in the hands of God."

The lack of equipment to process herbal drugs is a major concern. THMPs are looking for simple grinding machines, good quality metal or glass containers and packaging as well as training in storage practices. In fact, 35 percent reported these as challenges facing THMPs.

Insufficient patient numbers is hardly a problem, although THMPs do recognize that competition with Western-trained doctors is increasing. This has been the driving force behind the THMPs' wish to improve their medical knowledge and relationship with the MOH.

PART III – CONCLUDING REFLECTIONS

Traditional Medicine Practitioners in Kenya far outnumber conventional or allopathic providers. MOH data¹⁰ show that there are 35,642 conventional health workers (1,203 doctors, 2,186 clinical officers, 4,259 public health officers, 3,482 registered nurses, 12,664 enrolled nurses and others). Assuming a population of 38 million Kenyans, there is a doctor-patient ratio of 1 to 33,000 and a nurse-patient ratio of 1 to 2,600. Given the estimated 40,000 THMPs, there is a THMP-patient ratio of 1 to 950.¹¹ Part of the health-delivery problem is that many of the government health staff do not want to live and work in rural areas; whereas the majority of bona fide THMPs do live in rural areas.

This study provides some evidence that households in Kenya are making reasonable decisions when faced with very difficult circumstances: they prefer hospitals when they can afford them, and seek care at clinics and health centers when hospitals are too far away. The data suggest that along with self-treatment, a large number of the rural poor, in particular, turn to traditional medical practitioners for certain conditions, when access to allopathic health workers is restricted.

Rural populations are not naïve about the abilities of THMPs. They are more likely to use them when there is no choice, and for certain illnesses for which we expect natural medicines to be effective. They do not use THMPs for dangerous illnesses like TB and pneumonia, but significant numbers do visit THMPs for worms and LRTI and to a lesser degree, swelling: these numbers do not suggest misuse of THMPs. The lack of significant coefficients for THMPs does not mean that people are not using them; rather, that they are using them for a wide variety of conditions in a multiplicity of settings, but that the only significant differences in these patterns are for worms and LRTI.

That these healers do not treat dangerous conditions should come as no surprise to those who understand the economics of their situation: healers who live in the same community as their patients would not survive in business if they failed to “cure” patients. The impact would be far more serious if patients were likely to die because a practitioner failed to cure them. Thus, it is not surprising that healers do not specialize in illnesses in which we do not expect them to have any particular skill.

Worryingly, THMPs are losing business to pharmacies and self-treatment.¹² The data indicated a trend of self-treatment or seeking care at pharmacies, where households are more likely to self-treat for certain, sometimes dangerous, conditions. Both of these sources of care are relatively inexpensive and, in particular, are less expensive than the services provided by a THMP.

10. Africa Health Workforce Observatory, “Human Resources for Health Country Profile Kenya” (AHO, March 2009).

11. This figure was provided by the National Council of Association for Alternative, Complementary Medicine and Research, Nairobi.

12. This conclusion must be read with some caution as the authors acknowledge that the study is a one-time cross sectional and lacks time series data.

On the whole, the survey on health-seeking behavior has shown that there is significant trust, particularly by the rural poor, in THMPs to provide quality care. It has shown that even when modern health care is available, THMPs may be able to provide alternative low-cost, reasonable care for some illnesses; and when modern health care is more difficult to access, THMPs may be a better option than vendors or other forms of unaccredited health care providers. Either way, according to the rural poor in Kenya, THMPs have a role to play in health service provision.

Unlike most accredited health care providers, THMPs are not trained in centralized schools; most of them are not even full-time health care providers. Their interaction with patients and collection of fees is different from any other health care provider in the world. These features of their practices allow them to survive in remote regions of the country and provide services that few other health care providers would be willing or able to provide. They also have a fundamental interest in preserving the natural medical resources available to them. On the other hand, their remoteness means that they are less likely to interact with other healers or with the public sector, making it difficult for them to collectively address their own professional crises and potential weaknesses.

Interaction of THMPs with allopathic health workers should also be advantageous in a wider context. THMPs most frequently use plants known to have beneficial chemical and medical properties. However, they use them in a wide variety of applications with little consistency across practices. This suggests an important opportunity for experimental and empirical learning in the practices of THMPs. Although they may learn most of their practice through apprenticeships, they do not appear to be learning significantly from other providers. This mirrors the early stages of modern medical practices: competent doctors were renowned for privately held medicines and techniques rather than for the expert application of publically held knowledge. A national association could help THMPs move beyond fragmented knowledge bases and toward more effective professional collaboration.

A targeted strategy to strengthen and build on the positive qualities of traditional medicine practices may contribute positively toward the well-being of the rural poor.

One such strategy may involve THMPs as an effective link between the community and conventional medicine providers. Some THMPs such as TBAs could be used as a link with skilled providers. Initiatives could be developed, to provide incentives to TBAs for bringing women in for skilled deliveries, for example. Such a strategy is supported by the 2007 National Reproductive Health Policy, which in part focuses on community midwifery and TBAs as advocates of safe motherhood. Countries such as Malaysia have shown that TBAs can be used to effectively link clients to the health system.

Other such strategies could include providing basic training to THMPs to enable them to offer very basic but valuable conventional health care services in rural areas where present access to health workers is problematic. Consideration may also be given to developing a basic or conventional biomedical training program for THMPs who exhibit

good use of medical record training and a reputation for successful treatment of common illnesses in their communities. Present day THMPs are better educated than those they were apprenticed to; many of the younger herbalists are better educated than their elders. They demonstrate computer literacy and have a desire for further education. The survey showed that the majority of THMPs wanted to improve their skills and quality of service. The Chinese Barefoot Doctor approach has much to offer in this regard. Other examples of such training are available from India, Thailand, and the Philippines.

A national THMP association would be useful in identifying quacks and better regulating THMPs. Indeed, the problem of quacks is recognized by MOH. The solution partly resides in a truly national THMP association that speaks for all practitioners and helps to expose fraud. At present, since there are several associations, the government has difficulty knowing whom these represent. Advice might be sought from China, Thailand, India, or the Philippines about the establishment of a national THMP association. These countries have well-established indigenous associations, and their advice could help minimize problems likely to be encountered in establishing a truly national Kenyan THMP association.

The role of the private sector in processing some of the products that are in demand by traditional medical practitioners should also be further explored. In several other countries the private sector plays a prominent role in promoting herbal medicines. While we have no specific data for Kenya, there are a number of pharmaceutical companies in Nairobi that import herbal medicines and also produce generics. Informal discussions with them indicate that many would be interested in working with THMPs once they are officially recognized by the government.

Thus, on the whole, formal recognition and support of the practice of traditional herbal medicine in Kenya is important. There has been no legal framework within the Ministry of Health for the recognition, registration, and regulation of THMPs or other traditional medicine practitioners. This can best be achieved by passing the Traditional Medicine Bill, which would provide the impetus for actions by THMPs to establish a national association and initiate collaboration with the ministry.¹³ Moreover, the role played by THMPs in rural areas should be recognized and addressed in a national HRH strategy. Appropriate strategies and adequate funding would help to ensure a sound system for registering THMPs and improving the safety, quality, and efficacy of commonly prescribed herbal medicines; particularly, they would improve the efficiency and efficacy of service delivery as defined under NHSSP II 2005–2010.

Additional research of the role that THMPs play in health service delivery in Kenya is desirable. The present survey only scratches the surface of that role in Kenya's evolving health care–delivery strategy and economic development. Similar data are required on the

13. In late 2005, a final draft of the National Policy on Traditional Medicine and Medicinal Plants was submitted to Parliament by an interministerial committee and subcommittee, which addresses issues related to (1) safety, efficacy, and quality control; (2) commercial development and marketing; (3) production and domestication; and (4) conservation and management of medicinal plant resources.

outlying rural areas where there are no government clinics or hospitals and where THMPs are invariably the only source of health care. Similarly, data are needed on the role THMPs play in the urban and peri-urban areas in Kenya. These are areas where there is increasing concern about the safety and efficacy of dispensed herbal drugs.

APPENDIX

Medicinal Plants Used in Treatment

While they are not a panacea, medicinal plants and knowledge of their use are a small but important element in the delivery of health services in Kenya. The fact that many herbal remedies have been tried, tested, and retained may be testimony to their safety and efficacy. Inexpensive, effective herbal treatments may exist for bacterial, fungal, and viral infections, as well as for skin ailments, minor pain, infections, anemia, other nutritional disorders, and many other complaints that are mundane rather than life-threatening. The majority of THMPs, at this stage, prefer not to divulge their methods of drug preparation. However, this attitude is changing, and it is hoped that this survey will help speed up the process.

A total of 264 plant species used by THMPs in the five provinces were verified by a botanical consultant to the National Museum of Kenya. Verification was based on local names provided by the herbalists

At the same time, we recognize that no studies have been carried out in Kenya to determine the actual efficacy of the extracted products or comparisons made as to effectiveness. Nevertheless, the literature provides considerable information regarding the chemical constituents of all the major plant families, so the chemical composition of a traditional herbal drug preparation can be identified from its particular components. This is an activity that the NHSSP II identifies as a necessary course of action if integration of medical practices is to be achieved.

The diversity of plants used to treat the most common diseases is clearly indicated in the “pie” figures. Figures 2 and 3 show that while neem was the plant most commonly used by THMPs to treat malaria, another 53 plants were also used and have been identified. A similar situation is evident for other commonly used plants. For colds, there were 55 plants, stomachache 76, worms 46, typhoid 36, STDs 34, diarrhea 33, arthritis 33, ulcers 26, and asthma 18.

The low frequency of use of many plants by a significant number of herbalists is not easily explained. The lower numbers may result from herbalists’ misapprehensions about revealing plants used and treatment preparations for specific illnesses. The exception is *Azadirachta indica* (the neem tree), which is used to treat malaria and is known by virtually everyone exposed to the disease. See figures 2 and 3 for the different diseases treated by these nine most commonly used plants.

The neem tree is native to India where it is known as the village pharmacy. It was probably introduced to Africa centuries ago. It is well known throughout Asia and Africa for its antiseptic, antibiotic, and insecticidal properties. It can also reduce fever, which is one of the symptoms of malaria.

The main feature of the active principles of neem is that most of them are chemically similar and biogenetically derivable from tetracycliterpenes. These are also called liminoids (for example, azadirachtin, melianol, salanin) bitter principles. On the practical side, these compounds also exhibit a wide variety of biological activity, for example, pesticidal, antifeedant, and cytotoxic properties.

While questions still remain about the dosage required in human beings, neem clearly has great potential in preventing malaria, which kills more than a million people per year. Another important consideration is that malaria and AIDS both occur throughout Kenya, and treating AIDS patients who have malaria is a significant challenge. One report, funded partially by the US government, indicates that neem inhibits both malaria and the HIV virus in vitro, plus dramatically improves key parameters in volunteers who have HIV/AIDS, including major improvements in their CD4 counts.¹

Prunus africana (African plum tree) is found throughout Africa and has been known to European travelers since the 1700s when it was learned that its properties soothed bladder discomfort and “old man’s disease.”¹ Bark extract has been used in Europe since the mid-1960s to treat men suffering from benign prostatic hyperplasia (BPH).¹ However, since recent European interest in the plant, countries such as Kenya and Cameroon have been trying to implement a sustainable harvesting program to sustain the international trade. This has proven difficult since the active ingredients are found in the bark and harvesters kill the trees by stripping off the bark.¹

The active constituents of *P. africana* extract include phytosterols (for example, beta-sitosterol), which produce anti-inflammatory effects by inhibiting production of pro-inflammatory prostaglandins in the prostate. The bark also contains pentacyclic triterpenes (ursolic and oleanic acids), which have anti-edema properties, and ferulic acid esters (n-docosanol and tetracosanol), which reduce prolactin levels and block the accumulation of cholesterol in the prostate. Bark preparations are used to treat intercostal pains, and elsewhere in Africa, as a purgative and as a remedy for stomach pains. *P. africana* is also used by THMPs to treat STDs, worms, and malaria.

Warburgia ugandensis, native to East Africa, has a number of medicinal attributes and is highly prized by THMPs. In South Africa it is a protected species, while in Kenya its distribution has been greatly restricted in recent years. *W. ugandensis* has important antimicrobial and painkiller properties. The dried bark is commonly chewed and the juice swallowed as a remedy for stomachache, constipation, toothache, cough, fever, muscle pains, malaria, weak joints, and general body pain. It is also effective in powder form for treating the same diseases. Fresh roots are boiled and mixed with soup for the prevention of diarrhea. The inner bark is used to treat colds and in its powder form to clear sinuses.

Carissa spinarum roots are traditionally used for their purgative properties. In the skin diseases survey, THMPs identified *C. spinarum* use in the treatment of stomachache, ulcers, headache, joint and muscle pain, and body weakness.¹

In East Africa, there are nearly two hundred taxa of *Aloe*, many of which are naturally rare and confined to specific habitats. The sap of certain *Aloes* has medicinal or cosmetic applications and has been traded internationally for millennia. *Aloe vera*, the wild origin of which is uncertain, is cultivated as a commercial crop in many countries, including Kenya, for use in the pharmaceutical and cosmetic industries. It is illegal to export from Kenya.

Aloe secundiflora is used primarily in the treatment of malaria in Kenya. However, it has other uses including treatment of eye diseases and conjunctivitis, injuries, cuts, gastritis, constipation, and as a laxative and purgative and a cathartic.¹

Erythrina abyssinica is well known in Kenya for its medicinal properties. The bark is most commonly used to treat stomachache and toothache as well as snakebites, malaria, STDs such as syphilis and gonorrhoea, amoebiasis, cough, liver inflammation, stomachache, colic, and measles. Roasted and powdered bark is applied to burns, ulcers, and swellings.

The liquid from crushed bark of green stems is used to cure conjunctivitis caused by *Chlamydia trachomatis* (trachoma), whereas bark sap is also drunk as an anthelmintic. The bark is also applied against vomiting. Pounded flowers serve to treat dysentery. A maceration of the flower is drunk as an abortifacient, and applied externally to treat earache. Roots are taken to treat peptic ulcers, epilepsy, malaria, blennorrhagia, and schistosomiasis. Leaves are used to treat peptic ulcers; they are also used for treatment of diarrhea. A leaf decoction serves as an emetic. Leaves are applied externally to wounds and painful joints; they are also applied to treat skin diseases in cattle.¹

Root decoctions of *Tylosema fassoglensis* are taken to treat gastrointestinal and urinary problems. They are also used against anemia, fever, and pneumonia, and to heal the uterus after childbirth. The pulverized tuber is taken for the treatment of venereal diseases. The leaf sap is applied to treat inflammations of the middle ear. Infusions of powdered flowers are drunk in the treatment against jaundice and hypertension.¹

Toddalia asiatica is prepared mostly as decoctions or concoctions and administered orally. It is used for the management of a number of disease conditions in Kenya. The most frequently cited diseases include stomach problems followed by malaria. Cough, chest pain, and sore throat were also mentioned among other disease conditions treated.¹

Harrisonia abyssinica has a multitude of uses, for example, to treat stomach problems, including diarrhea and dysentery, and as an antiemetic as well as a febrifuge for malaria patients. It also has value in treating hemorrhoids, edema, and venereal diseases.¹

Analysis of plant parts used in drug preparation (table 10) reveal that the roots are most commonly used (38 percent), followed by leaf (28 percent), and bark (22 percent). The frequency of combinations of plant parts was low: leaf or root (3 percent), bark or leaf (2 percent), and bark or root (2 percent).

Table A1. Plant Parts as Source of Medicinal Drugs

Plant part	Frequency	Percent
Root	688	38
Leaf	511	28
Bark	414	22
Seed	31	2
Fruit	14	na
Stem	23	na
Leaf/root	49	3
Bark/leaf	33	2
Bark/root	30	2
Whole plant	28	na

While secondary metabolites may be present throughout a plant, the roots are an important location for storage of such medicinal products. They are easier to extract and utilize since their availability is direct (field collection), and they can be propagated. Many roots have low moisture content, a hard texture, and a shelf life of at least several years—ideal for storage in a dry location.

Herbal Drug Preparation

The use of plant materials offers THMPs the choice of fresh or dried materials from which to prepare medicines. The survey showed that the majority of THMPs used a combination of both fresh and dried materials, not always simultaneously.

The majority of plant products were stored in polyethylene bags (34 percent) in the home in a dry environment. Other types of containers included glass jars, tins, sacks, or banana leaf wraps. All THMPs stressed that Protection and safety of materials was of primary importance in ensuring drug efficacy.

Table A2. THMP Methods of Drug Preparation

Preparation Method	Eastern Embu	Eastern Meru	Nyanza	Rift Valley	Western	Total
Dried	10	25	4	4	29	72
Dried and Fresh	32	19	47	45	29	172
Fresh	8	4	2	0	2	16

Figure A1. Diseases Treated by Herbal Medicines

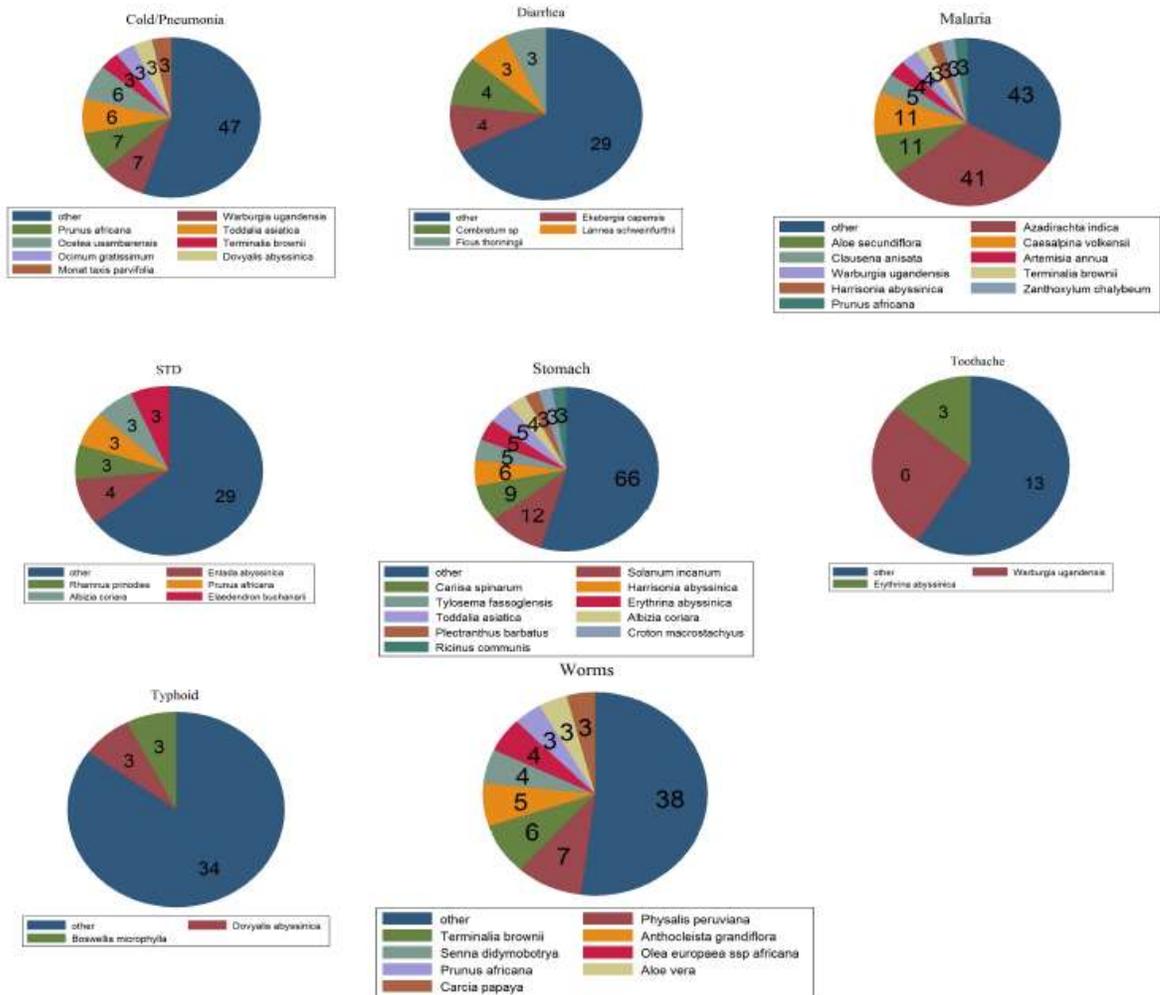
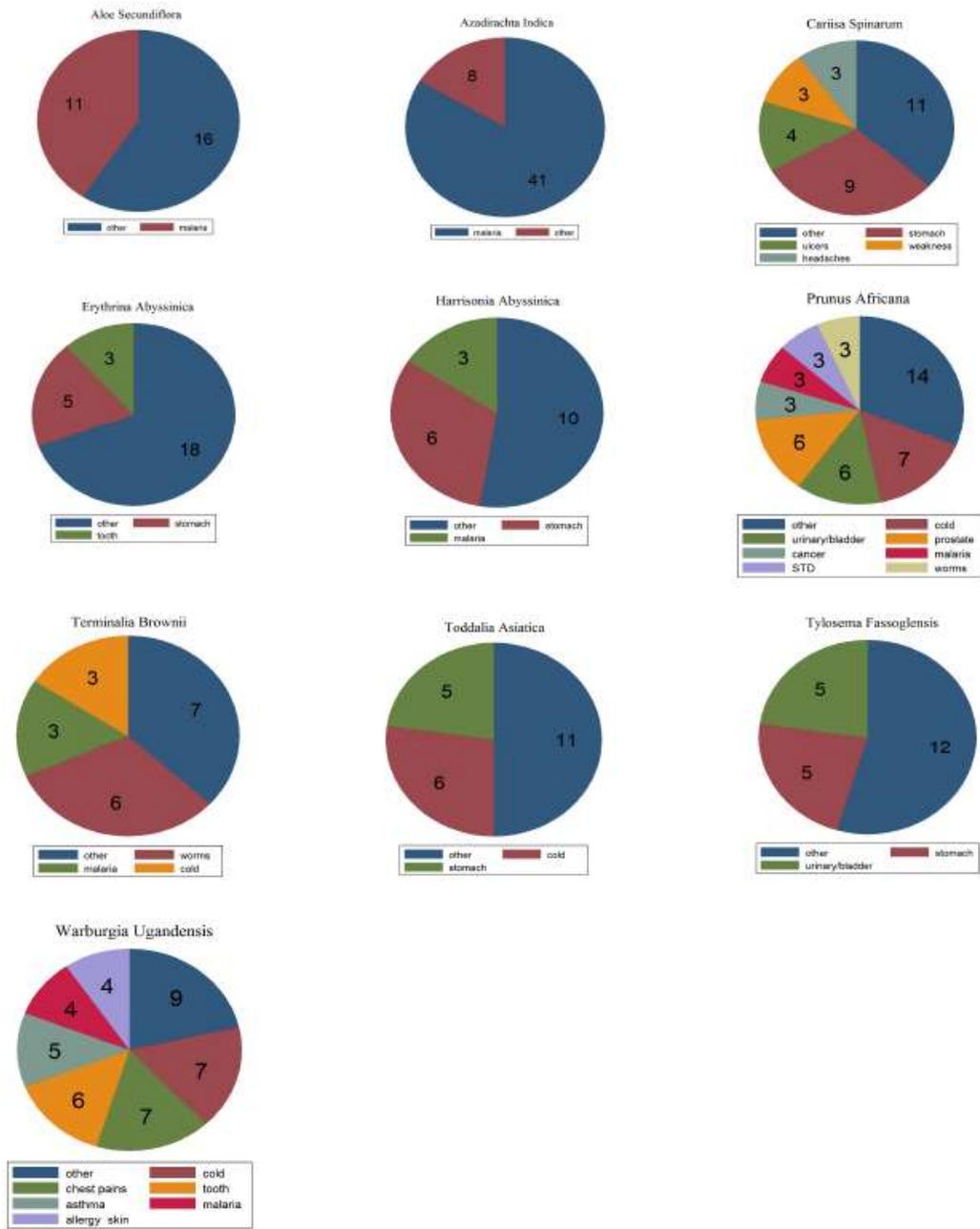
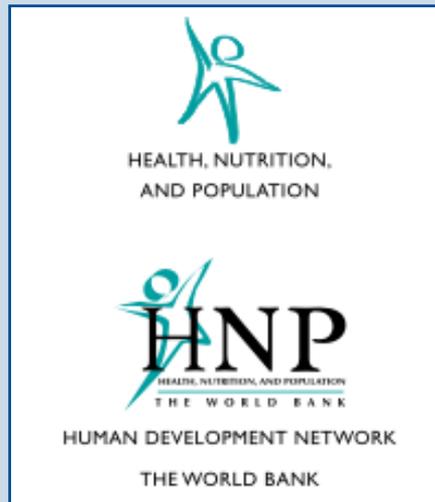


Figure A2. Plants Used to Treat Diseases



REFERENCES

- Baerts, M. and J. Lehmann. 1989. "Guérisseurs et plantes médicinales de la région des crêtes Zaïre-Nil au Burundi." *Annales Science Economiques* 18 Musée Royal de l'Afrique Centrale, Tervuren, Belgium.
- Conco, W. Z. 1972. "The African Bantu Practice of Medicine: Some Preliminary Observations." *Social Science and Medicine* 6 (3): 283–322.
- Edwards, S. D. 1983. "Indigenous African Healers and Western Trained Psychologists: A Comparative Study of Interview Methods." Publication Series of University of Zululand, Series B, 38, Kwa Dlangezwa, South Africa..
- Gelfand, M. et al. 1985. *The Traditional Medical Practitioner in Zimbabwe: His Principles of Practice and Pharmacopoeia*. Harare: Mambo Press.
- Lasker, Judith N. 1981. "Choosing among Therapies: Illness Behavior in the Ivory Coast." *Social Science and Medicine* 15A (2): 157–68.
- Leonard, Kenneth L. 2003. "African Traditional Healers and Outcome-Contingent Contracts in Health Care." *Journal of Development Economics* 71 (1): 1–22.
- Mwabu, Germano M. 1986. "Health Care Decisions at the Household Level: Results of a Rural Health Survey in Kenya." *Social Science and Medicine* 22 (3): 315–19.
- Normann, Hans. 1990. *A Selected Bibliography of References on Indigenous Theory and Practice and Related Literature*. Cape Town: University of Cape Town, Indigenous Theory and Practice Project.
- Oyenyé, O. Y. and I. O. Orubuloye. 1985. *Some Aspects of Traditional Medicine in Bendel State of Nigeria: An Exploratory Study*. N.I.S.E.R. Monograph Series 14. Ibadan: Nigerian Institute of Social and Economics Research.
- Stauguard, Frants. 1985. *Traditional Medicine in Botswana*. Vol. 1. Gaborone, Botswana: Ipelegeng Publishers.



About this series...

This series is produced by the Health, Nutrition, and Population Family (HNP) of the World Bank's Human Development Network. The papers in this series aim to provide a vehicle for publishing preliminary and unpolished results on HNP topics to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character. For free copies of papers in this series please contact the individual authors whose name appears on the paper.

Enquiries about the series and submissions should be made directly to the Editor Martin Lutalo (mlutalo@worldbank.org) or HNP Advisory Service (healthpop@worldbank.org, tel 202 473-2256, fax 202 522-3234). For more information, see also www.worldbank.org/hnppublications.



THE WORLD BANK

1818 H Street, NW
Washington, DC USA 20433
Telephone: 202 473 1000
Facsimile: 202 477 6391
Internet: www.worldbank.org
E-mail: feedback@worldbank.org