ADAPTATION TO MODERN MEDICINE IN LOWLAND MACHAKOS, KENYA: A CONTROLLED COMPARISON OF TWO KAMBA COMMUNITIES

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DOCTOR OF PHILOSOPHY

By

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I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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ABSTRACT

This dissertation explores the behavioral and cognitive adaptations of rural Kamba communities in Kenya to the introduction of modern medicine. Hypotheses related to differential medical adaptations in communities with varied exposure to modern medical services are tested, and a cost-benefit explanation of therapy behavior among rural Kamba is formulated.

Two market communities in lowland Machakos were selected for a controlled comparison. One community with a health center had government clinic services for seventeen years, whereas the other community had acquired a government dispensary only a year prior to the beginning of this study in November, 1968. The physical environment, social organization, agricultural economy, and system of traditional religion are very similar in the two communities.

A type of cost-benefit analysis of social change and continuity developed by the Norwegian social anthropologist, Fredrick Barth, is applied to the comparative data on curing illness. In analysing how rural Kamba people cope with illnesses, a general cost-benefit principle was

abstracted to account for a fairly large share of the behavioral choices among therapies. This principle is stated in terms of two related variables: 1) folk assessment of the relative seriousness of occurring and prevailing illnesses;and 2) folk assessment of the relative powerfulness of available modern and traditional treatment alternatives.

Therefore it is hypothesized that members of rural Kamba communities are likely to prefer and seek more powerful therapy alternatives for illnesses which they perceive as more serious. Kamba are expected to choose illness specialists rather than dispensers of ordinary medicines for the treatment of those illnesses which are perceived as difficult to cure and painful. A corollary which is confirmed by reported and observational data collected over a period of ten months is that the populations in the health center community (with seventeen years of clinic service) and the dispensary community (with one year of clinic service) perceived modern alternatives (i.e. shop medicines and government therapy) as adequate for the treatment of the less serious illnesses.

A second corollary also confirmed is that the longer presence of government clinic facilities in the health center community and the demonstrated effectiveness of the anti-biotic drugs have the effect of increasing the

perceived power of the government-therapy alternative for the people who live in that community. This, in turn, increases their reliance on modern medicine for the treatment of the more serious illnesses.

A major intercommunity difference in folk assessment of the costs and benefits of government-therapy is that more persons in the health center community (than persons in the dispensary community) appear to perceive the government clinicians as illness specialists (e.g. specialists capable of eradicating such a very painful and difficult to cure disease as gonorrhea) in addition to perceiving them as dispensers of ordinary medicine for the treatment of symptoms (e.g. dispensers of aspirin compounds for a moderately painful and short term headache episode). The behavioral data collected from the random samples of homesteads on a biweekly basis for a period of six months also support the expectation that the local health center clinicians tend to be added to the surrounding population's repertory of acute and persistent illness specialists.

An additional confirmation of the general hypothesis is that there is a tendency for sick persons in both communities (though it is much more pronounced in the less medically acculturated dispensary community) to decrease their reliance on shop medicines and to increase their reliance on traditional specialists when illnesses become particularly painful and difficult to cure.

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CHAPTER I

INTRODUCTION

I. OBJECTIVES

The general objective of this dissertation is to explore the adaptation of the inhabitants of two rural Kamba communities in Kenya to the introduction of modern medicine. Specific goals which underlie this general objective are: (1) to analyze a contemporary but traditional Kenyan medical system; (2) to compare the attitudes and behavior regarding illness in two Kamba communities which have had varied exposure to government medical services; and (3) to test cost-benefit hypotheses regarding cognitive and behavioral adaptation to modern medicine.

II. RESEARCH DESIGN

Two market communities in Lowland Machakos were selected for a comprehensive study of adaptation to modern medicine. The method of controlled comparison was used in this study of social-medical change and continuity (Eggan, 1954; Goldschmidt, 1965). In this research, medicine has been defined as including therapy, illness prevention, obstetrics, and surgery.

The two communities were chosen because of their similar ecological, social and cultural features but varied exposure to modern medicine. One community has a health center, and the other has a dispensary. The health center community had had government clinic services for seventeen years prior to the beginning of our study, whereas the dispensary community had had government clinic services for only one year.

A cost-benefit model of behavior was used in our analysis of patterns of coping with illness (Barth, 1967). This approach views behavior as allocation of time and resources for valued ends, and institutions are interpreted as patterns of distribution of behavior. For example, the Kamba divining ceremony is an institution in that it represents a pattern of distribution of behavior in the communities under investigation. Participants in the divining ceremony, including the diviner, his assistants, and the helpseekers, allocate time and resources in playing their respective roles. Change or persistence of an institution such as the divining ceremony are dependent upon change or stability of behavioral frequencies of potential participants (i.e. the population) which in turn are influenced by an aggregate of cognitive and ecological factors (e.g. the intervention of modern ideas of causality and modern alternatives of diagnosis). Therefore, the central concern of cost-benefit analysis is with measuring behavioral frequencies and determining how these frequencies are channeled by the actors' cognition and the available alternatives.

In a cost-benefit model, a basic behavioral axiom is assumed: people tend to maximize what they perceive as benefits and minimize what they perceive as costs providing that there are alternative courses of action available in each decision making contingency. Since most alternatives entail some costs as well as benefits, the decision making process cannot be analyzed simply as the continuance or acceptance of alternatives which are perceived as rewarding and/or the discontinuance or rejection of alternatives which are perceived as costly. Rather, each alternative must be analyzed in terms of expected net gratifications for continuance or acceptance and in terms of expected net deprivations for discontinuance or rejection.

Acceptance of new alternatives of modern medicine depends upon a portion of the population's perceiving the potential utilization of these new medical-social alternatives as leading to a net gratification and/or upon their perceiving the potential rejection of the new alternatives as leading to a net deprivation. For example, it may be predicted that if the perceived benefits of acceptance of a medical change or changes are of small magnitude but the process of acceptance involves significant life-way changes which are perceived as costly, then the probability of acceptance is very low. That is, if the perceived reward is slight in the eyes of the community, avoidance of costs will usually over-ride the attraction of the reward.

The presentation of data on medical resources has primarily involved careful specification of the traditional and modern alternatives, which are presented in Chapters Two and Three. Among the Kamba of Lowland Machakos there are numerous traditional and modern medicine alternatives for curing illness, preventing illness, obtaining assistance in child birth, and receiving minor surgery. These alternatives constitute the field over which the distribution of medical behavior may be plotted.

Data collection in the area of medical cognition has primarily involved illness categories and the array of beliefs which are related to these categories such as illness etiologies and therapy preferences. Some of the testing of hypotheses and the analysis of the comparative cognitive and behavioral data have proceeded on the premise that cognition is a mazeway (Wallace, 1961) superimposed on the field of alternatives through which behavior is channeled. Therefore using this scheme of dividing social-medical phenomena into medical resources (alternatives), cognition (beliefs), and behavior (allocations of time and resources) behavioral change is expected to depend upon introduction of new alternatives and on the cognitive process of reinterpretation in which the beliefs and valuations that people hold regarding the traditional and modern alternatives are adaptively modified.

The principle hypotheses of the research design are:

A. HYPOTHESIS OF PROXIMITY TO MODERN CLINIC SERVICES:

Rural Kamba populations who have had government clinic services nearer and for longer periods of time are expected to exhibit higher frequencies of utilizing government therapy and to express more understanding of and greater preference for government clinics.

Longer exposure to new alternatives of curing illness, the lower perceived costs in allocating time and resources to modern therapeutic care, and the expected benefits of consulting government treatment specialists are hypothesized as the major independent variables.

B. HYPOTHESIS OF PERCEIVED SERIOUSNESS OF ILLNESSES:

Members of rural Kamba communities are likely to prefer and seek more powerful therapy alternatives for illnesses which they perceive as more serious. That is: rural Kamba people will tend to choose specialists whom they regard as having more ability in diagnosing and healing those illnesses which are perceived as difficult to cure (chronic), painful, and discomforting.

Two corollaries of this general hypothesis are:

1. Both the health center and the dispensary communities will tend to similarly perceive the modern medicine alternatives (i.e. shop medicines and government therapy) as adequate for the treatment of the less serious illnesses (i.e. for the less difficult to cure and less painful illnesses).

2. However, the longer presence of government medical facilities in the health center community can be expected

to have the effect of increasing the perceived power of the government therapy alternative for the people who live in that community. It can therefore be expected that the data will reveal a greater tendency in the health center community as compared to the dispensary community for people to prefer the government facility for the treatment of illnesses they perceive as being serious, whereas the people in the dispensary community can be expected to express greater preference than those in the health center community for the traditional specialists for illnesses they perceive as being serious.

These corollaries allow us to predict that when an illness does not yield to treatment received in the initial stages, the health center community people will increase their reliance on the health center clinicians, and the dispensary community people will increase their reliance on traditional specialists. It is anticipated that when confronted with chronic illness both populations will decrease their reliance on shop medicines. (See Chapter Four for the results of testing these hypotheses.)

III. METHODOLOGY

A form of random sampling was used in the controlled comparison of the two study communities. The following random sampling options were considered: simple sampling of persons or sampling of clusters. The first method

would have yielded the most representative data on the health and illness behavior of the two populations. However, there were insufficient time, finances, and personnel to carry out a total census of the communities from which random samples of persons could be drawn. Instead, a particular method of sampling clusters was experimented with in this study.

The clusters sampled were Kamba homesteads, called misyi, which in both communities consist of patrilineally extended families. The head of the homestead is usually the eldest male, and the average membership size is about fourteen members. Fortunately, the Kamba homestead meets the basic sampling requirement that the sampling units be independent of each other. That is: members do not belong to more than one homestead. This provided an important research advantage over sampling households of father, mother, and children because when polygyny is present the household cannot meet the criteria of independence. (See Clyde Mitchell, 1967:30-35, for an excell discussion of the problems of sampling in social anthropology.)

Sampling homesteads also provided very practical fi work advantages involving the establishment of co-operativ and stable relationships with the people in the study. In sampling homesteads we found that after consent had been gained from the homestead head, we were able to cou on a great deal of co-operation from all members of the

homestead. All of the fifty-two homestead heads with the exception of one in each sample gave their consent to our observing homestead activities and to using members of their homesteads as informants in the study. These agreements with the homestead heads were especially important in maintaining a high degree of participation and a long term involvement by homestead members. For a period of six months we regularly visited each homestead once every two weeks so as to collect sequential records of illness episodes. In addition, a direct research relationship with the homesteads was parsimonious for the research project because any adult member of a sampled homestead could qualify as an informant for some of the interview schedules.

The collections of homesteads from which the samples were taken are typical of a contemporary pattern of loosely organized market communities prevalent throughout Kamba country. Market centers tend to be located at intervals of six to eight miles from each other. Because of the Kamba pattern of dispersed homesteads, as contrasted with village concentrations, there are no clearly demarcated boundaries between market communities. Rather there are transitional zones which fall between three and four miles of the market centers where homesteads tend to alternately utilize two and sometimes three market centers. For this study the area within a circle having a three mile radius from each market center was used so as to include only those families who regularly use each market center for

shopping, trading, settling minor legal disputes, and for the governmental medical services.

Topographic maps (Kenya Survey, 1967 and 1968) of 1:50,000 scale based on recent aerial photography were used for drawing the random samples (see Maps 5 and 6). Homesteads were identified on the maps as black dots in locations where the aerial photographs showed clusters of houses. Numbered pins were used to label each homestead within the twenty-eight square mile area surrounding the market. Five hundred and one homesteads were identified in the health center community from which thirty (six percent) were randomly selected.[1] Three hundred and thirty-one homesteads were identified in the dispensary community from which twenty-three (seven percent) were randomly chosen.

The major limitation that we found in using topographic maps for sampling was the occasional incongruity between what was designated on the map as the homestead and what the inhabitants defined as the homestead. For example, there was one case wherein two random sampled black dots on the map were found to be socially defined as one large homestead (homesteads 21 and 22 in the dispensary community).

And there were two minor problems in using maps and aerial photos for sampling. The first problem involved inaccuracies in the cartographer's transfer of data from

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[1]One homestead withdrew in the initial stages of the study.

the aerial photographs to the topographic maps. For example, in the course of the sampling we discovered an incorrectly positioned dam on the map which was an important landmark in locating one of the homesteads in the sample. In this case we were able to correct this error by consulting the aerial photographs and making the appropriate revisions on the map.

Another problem was the risk of error in the preliminary process of locating the sampled homesteads in the field. In most instances there were sufficient landmarks to be assured of correct locational judgments, but in a few cases, the lack of landmarks made locating homesteads a difficult and uncertain process. However, we assumed that this problem would not endanger the random nature of the samples because geographic errors in locating the homesteads would probably not correlate with any of the social variables studied.

The fairly stable relationship associated with concentrating on homesteads allowed us to collect data from multi-stage and quota samples throughout the ten month research period. For example, we interviewed all the mothers in the sample for data on infant mortality and divorce. For purposes of collecting information on prenatal, maternity, and post-natal care, we conducted comprehensive interviews of most women who had had children during the previous year. In beginning interviews with new persons in the samples, we were able to avoid the

social disruption which would have resulted had we re-sampled for each category of persons. Time lost in explaining what the research was about was minimized because the members of the consenting homesteads were already aware of the type of study we were doing, and they were expecting to be interviewed at least every two weeks for the duration of the research project.

IV. RESEARCH SETTING

The primary focus of this section on the research setting is the presentation of data on the two study communities which will enable the reader to assess the validity of the controlled comparison and to judge the extent to which ecological and social variations between the two study areas may affect illness and health behavior of the respective populations. The data on physical environment, location, and communication are drawn from observation at the research sites and from published materials on the geography of the Machakos District. The data on demography are drawn primarily from the initial survey of the two random samples of homesteads (see Question Set No. 3 in Appendix V). The clinical and dietary data on level of health are taken from D. M. Blankhart's nutritional survey of the two communities (1969b). The data on environmental sanitation are supplied by the initial survey of the two random samples of homesteads

(see Question Set No. 3 in Appendix V). For additional information on Kamba society, language, and culture the following studies may be consulted: Heyer (1966), Lindblom (1920), Ndeti (1967), Nottingham (1959), Oliver (1965), Penwill (1950), and Whiteley and Muli (1962). For an excellent ethnographic summary and a comprehensive annotated bibliography John Middleton's The Kikuyu and Kamba of Kenya (1965) should also be consulted.

The Kamba rural economy depends primarily upon raising crops for home consumption and market sales, and to a lesser extent on raising livestock for food and cash. Coffee in upland Machakos and cotton in lowland Machakos (the ecological zone of the study communities) are grown exclusively as cash crops. Most of the agricultural, market, and ceremonial activities in Kamba culture are synchronized with the expected regularities in a tropical climate. In lowland Machakos, crops such as maize, beans, and peas are planted during the short or the long rains, and are harvested and marketed during the dry seasons. Ceremonies such as nzaiko (circumcision) and kuthemba (sacrifice) are planned each year to be held during the warm dry season prior to the short rains in November and December.

However, in lowland Machakos the vagaries of rainfall and dessication often require adjustments in daily and yearly patterns of existence. A moderate drought will require only minor adjustments such as additional

kuthemba (sacrifice) activity to bring about the needed rainfall, greater dependency on eating small game which are hunted by Kamba men with bow and arrow, and an increased frequency of practices to generate additional non-agricultural income for the homesteads in the drought stricken community, e.g. the migration of more young men to work in the cities and more treks by older women to distant markets to sell such items as homemade sisal ropes and baskets.

In contrast, a prolonged drought may require a radical adjustment such as massive migration out of the dessicated area. However in the past four or five decades migration as a response to severe drought has become unnecessary because of governmental assistance in the form of food subsidies (see Heyer, 1966 and 1967).

In recent times the increased population density in areas such as the health center community of Masii has rendered the terrain less capable of providing for all its inhabitants even in years of average rainfall (see Heyer, 1966 and 1967). Consequently some families are moving to the Makueni location in the south-easten part of the Machakos district so as to homestead larger parcels of land which have been provided by the national government.

Physical Environment, Location, and Communication

Both of the communities in this study are in the

similar physical environments of lowland Machakos. Lowland Machakos may be defined as Machakos District valleys which are situated at altitudes ranging between 4,000 and 5,000 feet. (See Map 4 for elevations.)

The principal difference between lowland and upland Machakos is not altitude *per se*, but the main variation is orographic (see Map 4). Whereas lowland Machakos consists of relatively flat country, upland Machakos is distinguished by steep sloped hillsides. These physical features result in sparse rainfall in lowland Machakos-yearly average of 20-30 inches--and relatively abundant rainfall in upland Machakos--yearly average of 40-50 inches (see Heyer, 1966 and Porter, 1965). There are, of course concomitant crop variations between lowland and upland Machakos, e.g. an emphasis on peas, beans, cotton, and maize in lowland Machakos and a contrasting emphasis on English potatoes, coffee, and bananas in upland Machakos. (See Heyer, 1966 and Porter, 1965.)

Both the health center and dispensary communities are in the *acacia cobretum* ecological zone (Kenya Government, 1963). There are two yearly rainy seasons in the Machakos district, and most of the rain in lowland Machakos occurs during these seasons. The rainy seasons usually prevail between the latter part of October and the beginning of January and between March and the end of May (see Lindblom, 1920: 24). Most of the soils in the two communities are variations of sandy clay loams (Kenya Government, 1963).

A difference in the physical environment between the two communities is the abundance of man made ponds in the health center community (see Heyer, 1967, for a historical sketch of the water development projects in Machakos District during the 1950's). There are twenty of these small dams in the twenty-eight miles surrounding the Masii Health Center (see Map 5) compared with only four dams in a comparable area surrounding the Mbiuni Dispensary (see Map 6). (Refer to the last part of research setting on level of health for a discussion of these dams as health hazards.)

The health center community market of Masii is located eighteen miles from Machakos Town (the district center) on the Machakos-Kitui road (see Maps 4, 5). The dispensary community market of Mbiuni is located thirty-nine miles from the district center via the shortest route which is through the health center community (see Maps 4, 6).

In the dispensary community people have poorer road communication with the district center (Machakos Town) due to the greater remoteness and the numerous rivers which cross the roads connecting the dispensary community with the district center and with other major centers in the nation. The health center community has a fairly good dirt road between its market and the district center. Several busses travel daily on this route, and the trip takes about an hour from the local market to the district center.

In comparison, there is only one bus which goes from the dispensary community market center to the district center. It originates at the dispensary community market center in the morning and returns there from the district center in the evening. The one way trip during the dry seasons usually takes two and one half hours. This Mbiuni-Machakos bus provides regular service for the dispensary community people during the dry seasons, but parts of the route are occasionally closed during the rainy seasons. In the writer's opinion, the poorer road communication between the dispensary community and the district center do not influence the results of this study, mainly because very few persons from both communities use the services of the district hospital.

Population Density and Socio-Economic Characteristics

The estimated average population density of the health center community is considerably higher than the density of the comparable twenty-eight square mile area inhabited by the people of the dispensary community. The health center community has an estimated population density of two hundred and fifty-eight persons per square mile, whereas the dispensary community has an estimated population density of one hundred and forty-eight persons per square mile. However, this difference in density is due largely to a very low population density in the northern third of the dispensary community. The remaining two thirds of the

selected research area adjacent to the community's dispensary exhibit a homestead and population distribution similar to the health center community.

Whereas specific measures of wealth vary between the two communities, the overall comparison of property in the two communities does not indicate that one of the communities is prominently more wealthy than the other (see Tables I-1, 2). For example, a higher percentage of homesteads in the dispensary community sample possess mechanical forms of transport, but this slightly greater wealth in the form of bicycles and scooters is counterbalanced by a greater percentage of homesteads owning cows in the health center community (see Table 1-2).

TABLE I-1

Number of cattle

	Health Center community	Dispensary community
Cows per 100 persons	65	58
Goats-sheep per 100 persons	76	81

The educational level of the two communities appears to be very similar. There are no prominent intercommunity differences in length of school experience for males or females. However within each community married males have

had more schooling than married females. (See Table I-3).

TABLE I-2

Measure of economic level by property

	Health Center community N=30	Dispensary community N=22
Homesteads with houses with concrete floors	7 23%	4 18%
Homesteads with a plough	21 70%	19 86%
Homesteads with a bicycle	7 23%	9 41%
Homesteads with a motor scooter or motor bike	0 0%	2 9%
Homesteads with an automobile	0 0%	1 4%
Homesteads with a maize grinding machine	3 10%	2 9%
Homesteads with a radio	3 10%	3 14%
Homesteads with cows	25 83%	16 73%

In the health center community there is a considerably greater number of married persons in the sample who profess to be non-Christians, referring to themselves as having "no religion," "the Kamba religion," or believing

TABLE I-3

Years of school of married persons

	Health Center community		Dispensary community	
	MALES	FEMALES	MALES	FEMALES
Zero years of school	26 52%	48 74%	23 49%	42 74%
1-4 years of school	13 26%	12 18%	11 23%	11 19%
5-8 years of school	8 16%	4 6%	9 19%	4 7%
9 or more years of school	3 6%	1 1%	4 8%	0 0%
	50 100%	65 99%	47 99%	57 100%

in the "old gods." Fifty-nine out of a total of 115 married persons surveyed in the health center community profess to be of a Protestant sect, whereas the majority of Christians in the dispensary community profess Catholicism. However only twelve percent of the married persons in the dispensary community reported having had a Christian marriage, and a similarly low percentage (10%) of married persons in the health center community reported having had a Christian marriage. All other married persons in both communities reported having had a traditional Kamba

marriage ceremony only. In the writer's opinion, variations between the two study communities in religious affiliation do not prominently influence the health and illness behavior of the two populations (see section on family planning in Chapter III for assessment of the influence of Catholic Church affiliation on attitudes toward birth control).

Level of Health

The level of health of children under three years old and their mothers has been assessed in the two communities by Dr. D. M. Blankhart of the Institute of Tropical Hygiene in Amsterdam (1969b). Two hundred and five mothers and two hundred and forty eight children (all of the mothers' children under three years of age) were selected by means of random cluster sampling (see Maps 7, 8) and were examined for physical signs of malnutrition. Two of the specific signs of malnutrition which were investigated were low weight (for age and height) and anemia.

There is a prominently higher percentage of underweight mothers in the dispensary community, whereas there is only a slightly higher percentage of anemic mothers in the dispensary community (see Table I-4). There is also a prominently higher percentage of underweight children in the dispensary community, but anemia is slightly more frequent among children examined in the health center community. Dr. Blankhart pointed out in his report

(1969b:11) that anemia was highly frequent in mothers and children in both communities. The measurement standards were taken from the World Health Organization Technical Report Series, Number 182 on Iron Deficiency Anemia (1959).

TABLE I-4

Signs of malnutrition in children under three years of age and their mothers in the Machakos district in Kenya, June 1969 (from Blankhart, 1969b:11)

	Health Center community (Masii)	Dispensary community (Mbiuni)
Number of children examined	130	118
Less than 80% of the standard weight	16%	30%
Less than 80% of the standard arm circumference	20%	17%
Less than 10.8g% Haemoglobine	43%	37%
Number of mothers examined	106	99
Less than 90% of the standard weight	17%	29%
Less than 12.0g% Haemoglobine	34%	38%

The foods reportedly fed to children under three years of age show very little variation between the two populations. Weaning appears to occur earlier in the health

center community, and fresh milk is correspondingly fed slightly more frequently to children under the age of three years in the health center community. These two factors may partially account for less underweight children and mothers in the health center community. Earlier weaning as well as earlier consumption of foods other than breast milk would probably be a factor explaining the relatively greater weight of the health center community children. The mothers' earlier weaning would be a factor in the health center community mothers regaining weight lost during lactation.

The dietary data collected by Dr. Blankhart show very little reported consumption of beans or green vegtables in the sampled populations of under three year olds in both communities. This absence of sources of iron is an important consideration in explaining the fairly high prevalence of anemia. Other potential causes of iron deficiency anemia are malarial and hook worm infestation. The laboratory assessments of malarial infestation in the two communities are not presently available, but there are available laboratory analyses which indicate that hook worm infestation is at a low level in the under three year olds. Worm eggs were found in only one stool sample out of sixteen collected in the dispensary community, and in only three out of thirty six samples collected in the health center community (see Table I-7).

Table I-5

Infant diet in health center community (Masii)
(From Blankhart, 1969b:13)

Average number of times specified types of food taken per day per child at following age groups (and number of children studied in brackets).

Age groups (months)	0-5 months	6-11 months	12-17 months	18-23 months	24-29 months	30-35 months
Number of children	(27)	(23)	(23)	(21)	(20)	(17)
Type of food						
Breast fed	5	4.4	2.6	1.4	0.0	0.1
Maize	0.0	0.5	1.3	1.8	2.2	2.2
Millet and Sorghum	0.1	1.0	0.5	0.5	0.2	0.1
Sweet Potatoes	-	-	0.1	0.1	0.2	0.2
Wheat	-	0.1	0.02	-	0.1	-
Beans and Peas	-	0.02	0.2	0.2	0.6	0.5
Vegetables: green	-	-	0.0	0.1	0.3	0.1
root- & fruit-	-	0.0	0.4	0.3	0.3	0.5
Fruits: citrus	-	0.0	0.1	-	0.1	0.1
banana	-	0.1	0.2	-	0.2	-
pawpaw	-	-	-	-	0.1	-
Meat	-	-	-	-	-	0.1
Egg	0.0	0.1	0.0	-	-	-
Fresh Milk	1.1	2.1	1.5	1.6	1.4	1.5
Tinned Milk	-	-	-	-	-	-
Oil	-	0.0	-	-	-	0.1
Sugar	0.1	0.1	0.1	0.1	0.2	0.4
Bread and Biscuit	-	-	0.0	0.0	-	0.2
Tea	-	-	0.0	0.1	0.2	0.5
Others	0.1 (boiled water)	-	-	-	-	-

Table I-6

Infant diet in dispensary community (Mbiuni)
(from Blankhart, 1969b:12)

Average number of times specified types of food taken per child at following age groups (and number of children studied in brackets).

Age groups (months)	0-5 months	6-11 months	12-17 months	18-23 months	24-29 months	30-35 months
Number of children	(22)	(30)	(19)	(19)	(16)	(11)
Type of food						
Breast fed	4.8	4.5	3.5	1.0	0.4	0.7
Maize	0.1	0.8	1.2	1.8	2.1	2.2
Millet and Sorghum	0.1	0.6	1.0	0.6	0.3	0.2
Sweet Potato	-	0.1	0.1	0.1	0.3	0.2
Wheat	-	0.2	-	-	-	-
Beans and Peas	-	-	0.1	0.5	0.3	0.5
Vegetables: green	-	0.0	-	0.2	0.1	0.2
root- & fruit-	-	0.1	0.3	0.3	0.5	0.6
Fruits: citrus	0.1	0.0	0.1	0.1	0.1	-
banana	-	0.2	0.3	0.2	-	-
pawpaw	-	0.0	0.1	-	-	-
Meat	-	-	-	-	0.1	-
Egg	-	0.1	0.1	0.1	-	-
Fresh Milk	0.5	1.4	1.8	1.1	1.5	0.8
Tinned Milk	0.1	0.0	-	0.1	-	-
Oil	-	0.0	-	-	-	-
Sugar	0.1	-	-	0.2	0.1	0.2
Bread and Biscuit	-	-	-	0.1	-	-
Tea	-	-	-	0.2	0.1	0.2
Others	0.1 (boiled water)	-	-	-	-	-

TABLE I-7

Preliminary results of stool examinations
(from Blankhart, 1969b:11)

	Health Center community (Masii)	Dispensary community (Mbiuni)
Number of children 1-3 years old	36	16
Worm eggs	3 (8%)	1 (6%)
Protozoacysten	14 (39%)	4 (25%)

Access to pure water and sanitary disposal of human waste matter are two of the major public health problems in the two communities. There were an equally low number of homestead wells or bore holes in both communities -- only one in each sample. And there were fairly low percentages of homesteads having pit latrines in both communities -- four of the twenty two homesteads in the dispensary community (18%) and seven of the thirty homesteads in the health center community sample (23%).

Water resources in terms of natural topography and in terms of development show variations between the two communities. Eight of the twenty two sampled homesteads in the dispensary community are located on the lower

slopes of the Kanzalo mountain range (see Map 6), and consequently these homesteads are able to secure their drinking water from springs and streams during most of the year. In the very driest parts of the year wells are dug in the stream beds. The remaining fourteen homesteads in the flatlands of the dispensary community have also reported that they get their drinking water from streams and wells dug in stream beds.

In contrast there are no springs located in the health center community even in the wetter parts of the year. However there are many streams which are sources of water during both the rainy and dry seasons.

In the 1950's the colonial government implemented a program to build small dams in the Machakos District (see Heyer, 1966:18). Twenty dams were built in the area of the health center community. Twelve of the thirty sampled homesteads in the health center community reported using these dams as sources of drinking water (40%), and eleven homesteads reported washing clothes at the dams (37%).

In contrast there are only four dams in the area of the dispensary community. None of the sampled homesteads reported using these dams as sources of drinking water, and only four of the homesteads reported washing their clothes at the dams (19%).

The available data indicating greater parasite infestation in the health center community (see Table I-7) and the evidently greater exposure to and use of potentially

contaminated water in this same community point to a need for further public health research on the relationships between rural water development and parasitic disease in the Machakos District of Kenya. (See Hughes, 1970, for an excellent survey of the role of water development in fostering disease in Africa.)

The larger percentage of signs of protozoa infestation in the health center community children (Table I-7) raises the question as to whether there are prominently greater illness risks in the environment of the health center community which may affect the validity of the results of the comparison. The greater exposure to and use of potentially contaminated water in the health center community does indicate greater risk of protozoa disease (e.g. amoebic dysentary) in the health center community, but the risk does not appear to be so great as to offset the influence of the health center vis a vis the recently established dispensary on illness and health behavior. In the writer's opinion the two selected communities are sufficiently similar with respect to their physical environments and their institutions (other than modern medical services) to warrant a controlled comparison for testing the effects of modern medicine on rural Kamba people.

CHAPTER TWO

THE TRADITIONAL MEDICAL RESOURCES

There are three types of traditional medical specialists identifiable in Kamba culture and society, and most of the traditional medicine alternatives are provided by them. They are the mundue mue (religious-medical specialist; pl. awe), the mukimi wa miti (herbalist; pl. akimi ma miti), and the mwisikya (midwife; pl. isikya). Selection of home preventive and curative medicine alternatives, other than use of shop medicines, in which a specialist is not consulted, plays a very minor part in the medical behavior of both populations. This general absence of consciously employed home medicine alternatives may be partially explained by the abundance of traditional specialists (see Table II-3) and by the widespread belief that use of herbs requires highly specialized knowledge of administration.

Whereas religious-medical specialists do dispense herbs and some do deliver babies, the characteristic which differentiates the religious-medical specialist from the other specialists is his use of ue (supernatural power) for solving problems of sickness or other misfortune. In

contrast, the role of the herbalist is more narrowly limited to that of a traditional pharmacist who administers individual herbs and mixtures of herbs for specific illnesses such as stomach ache or rheumatism. In the process of diagnosis and treatment, he does not claim to utilize supernatural power. For example, unlike the religious-medical specialist, the herbalist does not usually transform miti (herbs) into ng'ondu (magical substance) for treatment. Rather, his expertise is considered to be the administration of herbs as herbs, i.e. in their natural state. The definitive task associated with the role of the midwife is the delivery of babies. However, in the cases of renowned midwives, the assuagement of perinatal problems is included in the midwife role, and the administration of relevant herbs may attend this expanded role.

I. METHODS OF SAMPLING AND COLLECTING DATA

We collected multi-stage data on the traditional medical resources by interviewing all of the religious-medical specialists and herbalists living in the random samples of homesteads (see Table II-1). Interview schedules were used to get information on qualifications of the practitioners and on illness prevention, diagnosis and treatment. During the biweekly visits to the sampled homesteads to record illness developments, various kinds of information were gained on the types of problems which

were brought to these resident traditional specialists. Recorded observations were made whenever activities to maintain health or cure illness occurred in the sampled homesteads.

TABLE II-1

Homesteads reporting traditional practitioners living in homestead

	Health Center community sample of 29 homesteads[1]	Dispensary community sample of 22 homesteads
Reports religious-medical specialist(s) living in homestead	N= 2 7%	N= 0 0%
Reports herbalist(s) living in homestead	N= 2 7%	N= 2 9%
Reports midwives(s)	N= 4 15%	N= 0 0%

[1]The one non-cooperating homestead in the random sample did not supply information for these categories.

The foregoing method of gathering multi-stage data from within the random samples was not sufficient for gaining knowledge and experience of the full range of traditional medical activities. Therefore, in the initial survey of the sample populations, members of the homesteads were asked to cite the names of all of the local traditional

practitioners they knew. In this way we collected a total list of sixty-seven religious-medical specialists, seventy-two herbalists and ninety-seven traditional midwives (see Table II-3).

TABLE II-2

Homesteads reporting traditional practitioners near homestead

	Health Center community sample of 30 homesteads	Dispensary community sample of 22 homesteads
Reports religious-medical specialists near homestead	N=28 93%	N=20 91%
Reports herbalists near homestead	N=28 93%	N=20 91%
Reports midwives near homestead	N=28 93%	N=20 91%

This greatly expanded collection of traditional medical practitioners provided the following advantages:

1. An inter-community comparative measure of the knowledge of traditional practitioners in each sample of homesteads.
2. Additional estimates of the number of each type of traditional practitioners per person in each community.

3. Opportunity for seeking a wider scope and a greater depth of reported and observational data on traditional activities which are related to maintaining health and curing illness than would have been available had only traditional practitioners in the original sample been studied.

TABLE II-3

Total numbers of traditional practitioners reported by the random samples. (The number of specialists selected for intensive study are shown in parentheses).

	Health Center community 30 homesteads reporting	Dispensary community 22 homesteads reporting	
awe (religious-medical specialists)	43 (8)	24 (5)	67 (13)
akimi ma miti (herbalists)	38 (6)	34 (2)	72 (8)
isikya (midwives)	55 (4)	42 (4)	97 (8)
	136 (18)	100 (11)	236 (29)

Since two hundred and thirty-six traditional practitioners were too large a number to interview and observe, we used a form of quota sampling to select approximately ten per cent of these practitioners (see Table II-3). The quota samples were drawn from each of the three total

groups of practitioners cited by the two sample populations. These three groups are the religious-medical specialists, the herbalists, and the traditional midwives in each community. The quota samples constitute the most well known practitioners, i.e. we selected the practitioners who were reported more frequently by the random sample populations. A total of twenty-nine practitioners were selected for interviews and observations. In most domains, the data obtained from the samples of traditional medical specialists in both communities were so similar that the researcher felt safe in concluding that the same traditional medicine system was operating in both communities. Except where salient intercommunity differences in the practices of the Kamba traditional specialists are relevant to explaining variations in the health and illness behavior of the two sample populations, a unified analysis of the structure of traditional medicine in both communities is presented.

In presenting various aspects of the traditional medical system in the following parts of this chapter, illustrative case accounts based on our observation of medical and neomedical activities of traditional specialists are selected from both communities wherever possible. Table II-3 on page 32 indicates the representation of religious-medical specialists, herbalists, and midwives from both communities.

II. THE NATURE AND AVAILABILITY OF ALTERNATIVES PROVIDED BY THE RELIGIOUS-MEDICAL SPECIALISTS

In analyzing medical behavior as frequency distributions of time and resource allocations to various alternatives (Barth, 1967), specification of the nature and availability of the medical alternatives is of primary importance. In examining the alternatives provided by each of the traditional medicine specialists, the following factors are of particular potential significance: the relative esteem of the specialist's role which to a certain extent is measurable in terms of the qualifications required for the role; the factor of relative accessibility including geographic proximity; the nature of the problems treated by the specialist and the means utilized by the specialist to diagnose, treat, and/or prevent such problems.

Qualifications of the Religious-Medical Specialist

The qualifications of a religious-medical specialist center around the effective and legitimate utilization of supernatural power. It is generally believed that this ability cannot be gained through learning or copying techniques from an established religious-medical specialist, but power must come from the ancestor spirits. Congruent with this belief is the absence in Kamba society of formal apprenticeship for becoming a religious-medical specialist.

For a man or woman to become a religious-medical specialist there must initially be signs which are interpreted by an established religious-medical specialist in the community or by a famous specialist from another community. These signs are often special objects called masvawa reportedly found in the candidate's afterbirth when he was born. Additional indicative phenomena are the candidate's affliction by chronic illness or other misfortune which are interpreted by an established religious-medical specialist as having been brought by the ancestor spirits. Interpretation of signs by a religious-medical specialist is the first step in the community legitimization process. This is followed by recognition of religious-specialist authority by the atumia (council of elders).

It is generally believed that a religious-medical specialist's abilities expand as the ancestor spirits bestow more power on him. A minimum demonstration of power is the ability to perform at least one type of ng'ondu (magical substance) ceremony, e.g. treatment of a sick person who has transgressed an incest tabu. When the power of kuausya (divining) is bestowed on a religious-medical specialist, then he is able to directly communicate with his supernatural benefactors, the ancestor spirits, for purposes of solving peoples' problems such as chronic illness or other misfortune. When this qualification of divining is recognized by the community, the religious-

medical specialist may attain a very high position of prestige. The religious-medical specialist sometimes performs midwife and circumcision services, but his principal activities and sources of high prestige are divining, performing anti-sorcery ceremonies, and leading ancestor appeasement rituals.

Geographic Proximity

We found that patients seldom seek help from a religious-medical specialist whose homestead is close to theirs geographically; i.e., there is an apparent desire to seek a diviner from another hamlet (group of homesteads). Divining sessions normally occur within the homestead of the religious-medical specialists, and those usually present are the helpseekers, besides the religious-medical specialist and his assistants. A religious-medical specialist from another hamlet may be consciously sought by the helpseeker to protect himself from embarrassing gossip about the nature and cause of his problem. Since approximately half of the cases treated by religious-medical specialists involve inter-personal relations and sorcery, confidentiality can be of great importance regarding what the patient is doing to remove the sorcery spell and/or to prevent sorcery being used against him.

The religious-medical specialist also expresses a preference for dealing with helpseekers from distant hamlets. He usually objects to divining for people who

are living in his homestead, in neighboring homesteads, or who are closely related clan members. The following are probably factors which he takes into consideration in avoiding divining for closely related people and neighbors. First, close relatives and neighbors would not generally tend to be so impressed by his usual preliminary divining of facts in their personal backgrounds, and as a result it would probably be more difficult for him to establish the aura of authority necessary in the dyadic relationship of the divining session. Without the initial establishment of his authority, the religious-medical specialist could have difficulty convincing the patient of the veracity of his diagnosis and the effectiveness of his therapy. Also there is the possibility of personal danger to the religious-medical specialist in stirring up enmity among his family and neighbors. For example, if a religious-medical specialist were to treat a close relation who is suffering from mental illness, he would be forced to divine an accusation against another close relation, as this would be the only etiological option available within the Kamba belief system; i.e., sorcery is the only acceptable explanation for mental illness, and sorcerers are always close relations.

Because of the more sensitive nature of the problems with which religious-medical specialists normally deal and because of the greater potential role conflict which could occur were a religious specialist to treat persons living

nearby, helpseekers often travel relatively long distances when the services of a religious-medical specialist are sought.

The Divining Process

Individual methods used by religious-medical specialists for divining the nature, cause, and solution of a patient's problem vary considerably (e.g. laying on of hands, use of opaque stones, of mirrors, etc.); however the most conventional method of divination is kuausya (casting and counting lots) using a kititi (gourd) containing mbu (divining objects). Eleven of the thirteen religious-medical specialists studied in the two communities provide this alternative of casting lots. The remaining two specialists offer other supernatural methods of determining cause and treatment, and if they decide that casting lots is necessary in a particular case they refer their patients to a recognized practitioner of casting lots.

When kuausya (casting and counting lots) is used to determine the nature, cause, and solution of a patient's problem, the outcomes in each stage of the divining session conform to certain culturally predictable patterns. The following observational accounts of kuausya (casting and counting lots) exemplify the dynamics of this common type of divining session for diagnosing and determining the appropriate treatments in illness situations.

The first selected case is that of a young mother with a sick baby in the health center community. She took her baby to a very famous religious-medical specialist from another location who had set up a divining clinic at one of the homesteads in the health center community sample. He divined the cause as ritual error. The young mother's baby was thin, weak, and suffered from diarrhea. Clinical assessment of this child's health by a physician within one week following the divining session determined that the child was extremely undernourished and suffering from severe protein deficiency.

> First the religious-medical specialist played his bow and adjusted the opaque stone on the divining skin. While he did these things, he told the woman certain facts about her family such as their names and some of their peculiarities which, of course, impressed her because the religious-medical specialist had come from another location. After establishing his authority by means of his comments about her family and after he had created a solemn atmosphere by means of playing the instrument and adjusting the special stone, the religious-medical specialist cast the divining objects from the gourd into two separate piles. He addressed the question of the presence of sorcery to one pile of divining objects and the question of the presence of ritual error to the other pile of divining objects. The assistants counted the divining objects in the respective piles and found that sorcery was negative but that ritual error was positive. After the counting had been completed and the results communicated to the people present, the religious-medical specialist made the pronouncement: "The baby was born destined to become a religious-medical specialist and consequently supernatural power is giving him trouble in the form of sickness."
>
> The solution, or treatment alternative, which the specialist divined was a ceremony to restore the child's proper relationship with supernatural power and with the ancestral spirits. He told the mother and the father to go where the baby's afterbirth had been buried and to collect sand from that place, then to procure two particular herbs, slaughter a goat, and

make a mixture of the sand, herbs, and blood using the large intestine as a container. Then they were to put the intestine bag on the child's navel and say these words: "We are returning the masyawa" (ritual objects believed to be found in the afterbirth of children who are destined to become religious-medical specialists). The mother and father were further advised to spill the contents of the large intestine on the baby.

A case account from the dispensary community is illustrative of diagnosis and treatment when the cause of illness is divined to be sorcery. The seeker of help was a teen-age boy who visited the specialist accompanied by his older brother.

> The religious medical specialist looked at the patient and then picked up his bow and played a tune; he chanted in harmony with the tune. After a while he stopped and looked in his small mirror and called the patient by his name.
>
> The religious-medical specialist asked the patient if a man called Michael is his brother, and the patient replied, "Yes." Then the religious-medical specialist told the patient the names of several other relatives and neighbors and told him that the mother of his brother's wife is no longer living. He also told the boy of incidents which had happened in his home before the boy was born. For example, the religious-medical specialist told the boy that two of his father's cows were eaten by a lion on two consecutive nights. The boy acknowledged these occurrences, and then the religious-medical specialist finished this set of questions by asking, "Why do you think I know these things about you?" The boy replied, "I can't tell." Then the religious-medical specialist said, "Okay, put two bob (about thirty American cents) under the skin and I will tell you all your troubles."
>
> After the boy had followed his instructions, the religious-medical specialist played another tune on his bow, but this time he sang the following words which were addressed to the ancestral spirts who are purported to give him information through the mirror and the divining gourd: "I know you are faithful to me. You tell me things more than a friend would. You hide nothing from me when I ask. I know you are so good a source of information to me that nothing would be better than you. Now tell us everything today."

The religious-medical specialist looked attentively at his mirror and then directed his attention to the patient and said, "I am told that you and Mwania went down to catch fish at the Athi River on that day?" The boy replied, "Which day?" The religious-medical specialist answered him saying, "The day before the night you got a serious stomach ache after eating your fish." The patient agreed. Then the religious-medical specialist said, "Didn't you catch eight fish and Mwania caught thirteen good ones?" Patient: "Yes." Religious-medical specialist: "And on the way home you told Mwania that because the bait and hook he used were yours, you wanted him to give you half of his thirteen fish. And using your cleverness, you were able to get half of his fish. Is that true?" Patient: "That is true, but we had agreed on this." Religious-medical specialist: "If you had agreed on this, why did Mwania go home crying?" Patient: "I don't know. I tried to be as fair as I could."

Then the religious-medical specialist said, "Okay, let me ask the gourd what is good for you." At this juncture he picked up his divining gourd and shook it several times saying, "I know you do not lie to me. Tell us everything today." Then the religious-medical specialist poured out some of the divining objects into his hand and without counting them he said, "Nine; a woman." Then he counted them before the patient and other members of the audience, and there were nine. He shook his gourd again and again and made appearances to pour the divining objects out of the gourd randomly. He did this more than ten times, and each time there were nine divining objects.

He then turned to the patient and told him, "Look here; I see a woman and a boy. The boy is crying. The woman, who is related to the boy, is upset by the boy's crying. And you have a stomach ache. What pains you inside are fish bones put there by whoever got upset by the boy's crying, I am also told of a religious-medical specialist called M_____ who is a relative of yours. With his power of sucking and skill in using muthea (ritually prepared black powder) these bones can be out of you in no time. Now you can go home in peace."

This particular specialist who referred his patient to another religious-medical specialist is the most famous diviner in the dispensary community. He isknown to use a system of referral especially for sorcery caused problems.

This referral system is reciprocative in that curers whom he recommends to his patients for treatment of sorcery-caused illness in turn refer some of their patients to this well known diviner for diagnosis.

These examples are representative of the basic process of divining used by all of the religious-medical specialists who were interviewed and observed in both communities. Apart from variations in the details of the mechanical aspects of the divination process, the process always includes supernatural illumination of the problem itself, of the cause, and of the solution.

The Nature of the Problems. A total of fifteen divination sessions were observed in both communities. In eight of these, the problem was identified as human sickness. However, the other problems with which the religious-medical specialists dealt were loss of property through theft (three cases), misbehavior such as stealing by son or daughter (two cases), death in the family (one case), and loss of livestock due to illness (one case).

When the unresolved problem of the helpseeker is one of personal sickness, it is usually some form of chronic illness, i.e., a sickness which has not been self curing nor amenable to various forms of treatment such as shop medicines, herbs given by a herbalist, or drugs given by various types of modern practitioners. Chronicity is important not only because the other medicine alternatives

tend to be eliminated by the helpseeker after he has found them to be ineffective in alleviating his condition, but illness chronicity is widely interpreted in Kamba culture as an indication that there is an underlying supernatural problem (i.e. sorcery or ritual impurity) and that only a religious-medical specialist can determine the nature of this problem and can prescribe a course of action which will remove the "real cause."

Problem Etiologies. Etiologies assigned by religious-medical specialists relate to one of two categories: (1) interpersonal relations, or (2) relations with the supernatural.

Most divined etiologies which refer to interpersonal relations are sorcery accusations, i.e. malevolent actions from persons in the patient's social network; and most divined etiologies which refer to relations with the supernatural are deemed to have occurred because of ritual error or omissions on the part of a patient or members of his family.

Of the eight observed divination cases in which the nature of the problem was identified as human sickness, ritual error or omission and consequential imbalance with the supernatural was divined to be the underlying cause in six cases.

However, sorcery is practically always cited to account for mental illness, and sorcery is also sometimes cited to account for other forms of deviant behavior such as chronic

thievery and chronic adultery on the part of one's kin. Also, referring to interpersonal relationships, thievery, unlike sorcery, is not usually regarded as requiring supernatural skills, but the identification of the culprit and his apprehension are often sought through supernatural means. In identifying sorcerers and thieves, the religious-medical specialists generally make the kinds of accusations which tend to be personally and culturally acceptable to the helpseeker. For example, affines often have very stressful relationships in Kamba society, and so certain kinds of affines are often divined as sorcerers.

Divined etiologies regarding relations with the supernatural are usually malevolent actions taken by angry ancestral spirits because of ritual errors or omissions on the part of the helpseeker. The errors or omissions cited are usually generally applicable to any helpseeker, i.e. the diviner does not need to accuse a particular person as in a sorcery case nor does he need to cite a particular incident which brought about interpersonal strife and enmity. Rather, the rituals involved have relevance throughout Kamba society, and the religious-medical specialist has a large number of culturally acceptable alternative explanations from which he can draw.

Solutions for the Problems. The various solutions which religious-medical specialists divine are usually directed toward eliminating the cause of the illness and

generally fall within categories which parallel the etiological categories. In the cases of illness caused by sorcery, ceremonies are divined for reducing the power used against the patient and for protecting the patient against further sorcery. In the cases of illness caused by ritual error, ceremonies are divined which rectify ritual omissions or correct improperly performed ceremonies. All of these kinds of ceremonies deal with control of supernatural power in that the ue (supernatural power) of the religious-medical specialist is ceremonially used to placate the aimu (ancestor spirits) when ritual error or omission has occurred or to ritually neutralize uoi (sorcery power) when sorcery is found to be the cause of illness.

Ceremonies Performed by Religious-Medical Specialists for the Treatment of Illness

Thre are several kinds of ceremonies involving ng'ondu (herbs which have been transformed into substance with magical power). One group of ng'ondu ceremonies are the kuusya (neutralization) ceremonies which involve reduction or neutralization of power that has been causing illness or causing other misfortune in a person or in a homestead family. Kuusya is used in reducing supernatural power which has caused persons trouble due to transgressions such as incest, omission of necessary rituals, or telling lies under the power of the kithitu (fetish) oath. Kuusya is also used for combating the ill effects of

sorcery; i.e. it is used for neutralizing the sorcerer's power.

All of the thirteen religious-medical specialists in the study report that they do kuusya (neutralization) ceremonies. Of these, ten do the group ceremony kuusya musyi which involves neutralizing power which has been causing misfortune to a musyi (homestead). A renowned expert in performing kuusya musyi in the health center community has provided the following description of how he gives this type of treatment to a homestead family:

> I use ng'ondu (magical substance) which consists of the following: the root tubers of kionsoa, waithu, mulinditi, the roots of musonzoia; corms of kiindiiu; and the bark of muvu. I mix all of these herbs with water. Then I circle the compound where the spell is present, sprinkling this ng'ondu mixture with a mutaa frond. Then I wash the bodies of all children who have been affected by the power. I wash only the hands and feet of grownups who have been affected. The remaining ng'ondu mixture and container is thrown outside the homestead so that the sun may carry away the evil spell, and the homestead will no longer suffer from misfortune.

Prior to doing the kuusya musyi (neutralization of power causing misfortune in the homestead) ceremony, the specialist in the foregoing account always conducts a divining session to determine whether kuusya is the appropriate treatment. He charges two shillings (about twenty-eight American cents) for the divining, and if kuusya musyi is divined as the proper treatment, his usual charge for this ceremony is twenty-five shillings (about three and one half American dollars). Diviners usually charge either one or two shillings per case for the diagnosis. Fees for

treatment or prevention are high and vary considerably. The mode is difficult to estimate but the range is from about twenty-five shillings to as much as one hundred and twenty-five shillings (about seventeen and one half American dollars) depending on the fame of the religious-medical specialist and on the ability to pay of the help-seekers.

Ten of the thirteen religious-medical specialists in the study have reported that they treat mental illness. The procedure for determining the cause is the same as divining the cause of chronic somatic illnesses. However, sorcery is almost always cited as the etiology rather than ritual error or omission. A mentally ill person is usually taken to a diviner by a member of his family who already strongly suspects that the patient has been sorcerized. Under these circumstances, the major problem for the diviner in mental illness cases is to determine the identity of the sorcerer, who in Kamba society would usually be an affinal relation and member of another clan from the sick person. After the sorcerer has been identified, the religious-medical specialist usually suggests a kuusya (neutralization) ceremony. One of the kuusya ceremonies used for removing the spell of sorcery from a particular person such as in an insane person is called kuvingwa (opening). This treatment consists of making cuts in various parts of the body and applying ritually prepared black powder to draw the uoi (sorcery power) out of the person.

Religious-medical specialists often claim expert ability in solving particular problems (e.g. identification of a thief) and special power in treating particular illnesses. Most of the religious-medical specialists in both communities have reported that the treatment of nduuka (insanity) is one of their special areas of competence.

A few of these traditional specialists have reported the treatment of nyunyi ("chronic headache") as one of their specialities. The literal meaning of the term nyunyi is "bird" or "bird in the head." This is one of the few Kamba illnesses which is labeled in terms of the causal agent. Most Kamba illnesses are described in terms of the suffering part of the body (e.g. kuiwa ni mutwe - "pain in the head") or in terms of symptomatic experience (e.g. ndetema - "fever").

Nyunyi is a fairly well known illness category throughout the Machakos District, but this illness and others which are specifically labeled in terms of the casual agents occur infrequently. When kuiwa ni mutwe (headache) becomes chronic or periodic, i.e. when it does not disappear or when it repeatedly reappears and when it does not yield to shop medicines such as aspirin, there is a likelihood that Kamba people will redefine their persistent headaches as being nyunyi or at least they will suspect that they may be suffering from nyunyi. These redefinitions and/or suspicions motivate the sufferers to seek new kinds of treatment. The selected alternatives are nyunyi specialists or specialists who are famous in divining and

neutralizing the ultimate cause of the illness problem.

The suspected causal agent of this chronic headache illness is the "bird" which gets inside the head of the sufferer. According to our informants, the bird may be placed there by a sorcerer or by an angry ancestor spirit, i.e. the ultimate cause (sorcerers or ancestor spirits) as contrasted with the causal agent (the "bird") may vary in this illness, as with most illnesses. However many Kamba appear to believe that it is not necessary in the event of illnesses like nyunyi to divine the ultimate cause. Many believe that healing may be gained by consulting a religious-medical specialist who is able to recognize an illness like nyunyi and who has the power to magically eradicate the causal agent. When nyunyi is found present by the religious-medical specialist, a ceremony is performed for drawing the nyunyi sickness out of the head of the afflicted person.

The following case account of this kind of treatment of nyunyi (chronic headache) was observed at the homestead of one of the religious-medical specialists in the dispensary community:

> A boy visited this traditional specialist for treatment of nyunyi. He had been examined on a previous visit, and the specialist diagnosed his problem as nyunyi. At that time she instructed the boy to bring a male chicken for use in the ceremony. The curer told us that male chickens are used for treatment of male persons and female chickens are used in the treatment of female sufferers of nyunyi.
>
> Prior to performing the curing ceremony, the curer described the nyunyi illness for us. She said that nyunyi is an illness which can attack both

children and adults. She said that nyunyi comes after a person has had a headache for a period of time, i.e. no person can suffer from nyunyi unless he also suffers from a headache. The curer emphasized that when a person has nyunyi, he or she finds that the headache never gets cured. She said that it comes; goes and comes again and keeps returning until the sufferer gets the proper treatment from a mundu mue ("religious-medical specialist") who is effective in curing nyunyi.

The curer commented that nyunyi commonly concentrates on top part of the head, but there are cases in which nyunyi stays at the back of the head, in the chest, and sometimes along any part of the spine.

In response to the question: "What are the symptoms of nyunyi?", the curer replied that repeated headache is the principal symptom in adults. In children the lolotya (fontanel or soft part at the top of the head) is depressed when nyunyi is present, and one may observe the membrane moving occasionally.

The curer reported that for her to recognize the presence of nyunyi in patients, she places her hand on the sufferer's head, chest and back, and in that way she uses her ue (supernatural power and knowledge) to know who has nyunyi and who does not.

Prior to beginning the curing ceremony the curer sent an assistant to gather two herbs: matu ma kiatine (leaves of the tree which produces the pods for beer making) and matu ma mung'ata (leaves from a common hard wood tree). The curer burned these herbs into the traditional black magical powder called muthea.

The patient was asked to lie on the ground in front of the curer's house. Samples of ashes were picked from the three sides of the curer's fireplace. These ashes were used to make a U figure around the patient's head and body. The feet were at the open end of the U.

One of the chicken's claws was removed. Since the patient was a male, a claw was taken from the right foot. This claw was strapped around the neck of the patient using uli wa muluambia (twine from the muluambia plant).

One feather was removed from the right wing of the chicken and was used to insert a small amount of the muthea (black powder) in the patient's right ear. This was repeated for the left ear with a feather from the left wing.

The chicken was forced to swallow some of the muthea (black powder). Some of the powder was also applied to parts of the patient's body as follows: a line from the sternum up the middle of the chest, over the mouth and nose, over the head and down along the spine to the buttocks. Then one line was made

around the right hand, and two lines circled the lower arm, and one line around the upper arm.

Then the curer held the chicken in front of the patient's chest, and she withdrew the chicken and returned it to a position in front of the patient's chest seven times. This same procedure was repeated at the patient's back.

Then the chicken was perched on the patient's head and withdrawn six times; on the seventh perch it was withdrawn and made to fly over the patient's head to the ground. The curer said that this chicken flies away with the sickness. The curer said words to herself moving her lips. These words were reported to be requests for the healing powers to start acting and cure the illness.

Then the curer applied some of the remains of the muthea (ritually prepared black powder) on her palm and clasped hands with the patient, and she raised the patient up from the inverted U ash enclosure saying the following words out loud: "I raise you from your lying place a healed person."

The religious-medical specialist then picked up the feathers which she had used in the ceremony together with the remains of the muthea (black powder) and took them to an out of the way place. She said that if people who are passing through come in contact with these things, they could pick up the sickness.

After disposing of the ceremonial materials, the curer approached the patient and told him that he must make sure that the claw strapped around his neck stays there for two days. She told him that on the morning of the third day he should remove the claw and hide it in the same manner that she had hidden the muthea and feathers.

As forms of payment, the curer retained the chicken and received a fee of two shillings (about thirty American cents).

The treatment strategies of Kamba religious-medical specialists are designed for two levels of application: the level of eradicating the causal agent (e.g. for the treatment of nyunyi) and the level of neutralizing the power of the ultimate cause (ue - power from the ancestor spirits; or uoi power from a sorcerer). The corresponding treatment strategies are directed at manipulating supernatural

phenomena by means of homeopathic ceremonies to eradicate the causal agent such as the ceremonies for the eradication of nyunyi ("bird in the head") and neutralization ceremonies designed to reduce the power of the ultimate cause such as the ceremonies for curing nduuka (insanity).

Ceremonies Performed by Religious-Medical Specialists for the Prevention of Illness

Strategies for the prevention of illness are primarily based on the traditional Kamba belief that many serious illnesses and other misfortunes are caused by sorcerers or malevolent ancestor spirits. The religious-medical specialist provides ceremonies and techniques for preventing the effects of sorcery on individuals and on family homesteads. However, the traditional ceremonies to prevent illness and other misfortune caused by ancestor spirits, especially misfortune which threatens the whole community such as epidemics or drought, are usually conducted for the utui (hamlet) by the atumia (elders). The religious-medical specialist may be called on to divine a propitious time for such kuthemba (sacrificing) ceremonies, but he is not usually a leader in the ceremony.

For the prevention of sorcery in a family homestead, the religious-medical specialist commonly performs kuvinga musyi (closing the homestead) which is a ceremony for sealing off the compound from the influence of sorcery and for personally protecting those persons living within the

compound. The following case account is of a very comprehensive kuvinga musyi ceremony observed in the dispensary community. This closing ceremony was performed by a famous Kamba religious-medical specialist from the adjoining district of Kitui. He performed the ceremony in two stages. The first stage was what the religious-medical specialist called kumithya mwii ("making the body dry") which was designed for immunizing the members of the homestead against sorcery. He accomplished this immunization by first using his own power against the members of the compound and thereafter by purifying them. Since this religious-medical specialist considers his own power to be more effective than anybody else's, he claims that no witch or wizard will be able to have a malevolent effect on any member of the compound. The second stage of the closing ceremony was kuthyuluka musyi (circling the homestead) for the purpose of preventing sorcerers or thieves from secretly entering the compound and bringing misfortune to its members.

> In the beginning the first stage of kuvinga musyi, the religious-medical specialist asked for the cocking pot and ordered the wife of the homestead head to wash it. He then asked for a handful of maize flour. He put this into the pot, added a little water, sprinkled in three kinds of muthea (ritually prepared black powder), and a piece of kyongeo kva munyambu (ball of hair which a dying lion coughs up). The pot and its contents were put over a fire on the hearth. The specialist used a frond of mutaa tied to a wooden ladle to stir the contents.
>
> Meanwhile the homestead-head was told to sit with his legs straight on a burlap sack spread on the ground. The specialist took some muthea (ritually prepared black powder) out of one of his gourds and blew the

powder into the man's ears and nostrils. He also blew the powder over the man's head and in his face.

The pot was taken off the fire to cool, and a thin piece of iron with a handle was put on the embers. As the pot cooled, the specialist stirred the mixture and did a chant. Then he filled a cup with the mixture which he was making and asked the homestead-head to take off his shirt. The religious-medical specialist took a sip of the mixture, and then spat the mixture on the man's chest. He also took out the mutaa frond and splashed some of the contents of the pot on the man's stomach and randomly over all parts of the body. The remains of the contents in the cup were given to the man to take one mouthful and swallow.

Then a small kithitu (a powerful fetish) was passed twice around the legs, twice under the arms, twice around the neck and twice around the trunk. Two more kithitu were placed on the ground, and the homestead-head was told by the religious-medical specialist to walk over them. He was then told to sit down again. Some muthea (ritually prepared black powder) was taken and applied to both heels. The bar of iron was red hot from lying in the embers. The religious-medical specialist extracted the bar from the fire, held it up and made some inarticulate sounds. Then he used the hot iron to make a design of three verticle lines and two intersecting horizontal lines on the man's heels. The heels appeared to burn and smoke but the man showed no signs of being hurt. The homestead-head acted very calm and, in response to being asked, he said that he felt nothing. This concluded the first part of the immunizing stage. The religious-medical specialist said that the man would not survive the effects of this ritual unless he was purified immediately afterwards.

The religious-medical specialist used some ia (ritually prepared white powder) to make circles around the man's ankles, elbows, knees, neck and abdomen. He also rubbed some ia on the top of the man's head. Then he took out of his kit-bag a small kithitu (a powerful fetish) made from an antelope horn. This was tied at the end of a string which was blackened with muthea (ritually prepared black powder). He orbited this kithitu around the head of the man several times in the opposite direction than he had circled the kithitu in the initial stage of "infecting" the person. As he did this he uttered some words. The religious-medical specialist then took two other different kithitu and made alternate marks of white powder and red ochre on them, completing seven marks with each material. Again he moved these kithitu in the opposite direction than he had moved the kithitu

in the infecting stage.

The homestead-head was then told to get up and to walk backwards over the kithitu of the infecting stage. After doing this, the man was told to sit on the ground again. He was given some more of the content from the pot and was told to spit all of it out on both sides of him and not to swallow any. Some water was then put in a cup, and a new kithitu of small size was dipped in the water. Then the man was given this water to drink, and as he drank it the religious-medical specialist placed one end of the kithitu against the man's adam's apple.

The final part of the purification was kuvingwa (opening) which involved the common Kamba practice of making incisions on the body. The religious-medical specialist made four razor cuts on the top of the foot, on the outside edge of the palm, on the knee, at the base of the front of the neck, and on the abdomen. Some muthea (ritually prepared black powder) was applied to the cuts after which the homestead-head was asked to stand up. He was then told that he is now protected against all sorcery attacks.

The same procedures were followed for the wife and their four children living in the homestead. There were no changes in the ritual except that the pot of special substances was re-heated for each person. The bar of iron was also re-heated in the embers.

The religious-medical specialist began preparing for stage two, the protection of the homestead, by sending one of the children to get sand from the river. He extracted samples of muthea (ritually prepared black powder) from five of his gourd containers. He kneeded the muthea in his hand with ghee, making a thick paste. A portion of the paste was buried in the gourd containing the sand, and the remainder of the paste was kept on a small leaf. Special white powder and red ochre were added to the sand. The religious-medical specialist implanted all of the kithitu (fetishes) in the sand for a few minutes. Then he took each kithitu out of the sand one by one while saying certain ritual words.

The religious-medical specialist took the calabash of sand and began walking around the compound. He took handfuls of sand and threw them on the roofs of the two houses and on the granaries. Then he went outside the compound and walked around the garden and farm-yard area sprinkling sand at the periphery. His next step was to walk along the hedge which surrounded the compound throwing handfuls of sand as he circled the compound. The religious-medical specialist began his walking at the compound entrance,

> and when he had completed the circle he called everybody out of the compound. The religious-medical specialist then went back inside the hedge enclosure to get his leaf of muthea (ritually prepared black powder) and ghee paste. Upon return he made a line with the remainder of the sand across the entrance and told the people to walk into the compound over the line. As each member walked over the line, the specialist applied some of the paste to the person's head.
>
> Finally the specialist instructed the people in the compound to keep the fence strong so that no member of the homestead would be tempted to pass over any other place except the main gateway. If members of the compound used other ways of entering, then they would be subject to misfortune. The specialist explained that the homestead was protected against all kinds of sorcery. He told them that they were also guarded against thieves, because if someone tried to steal any of their property, he or she would go mad or suffer from some other misfortune. The thief could only recover from madness or sickness if he returned the things which he had stolen.

The immunizing stage described in the foregoing account is unusual. It is more common to find kuvinga musyi (closing the homestead) ceremonies preceded by a kuusya (neutralization) ceremony in which a member or members of a homestead are cured by the religious-medical specialist from a sorcerer's attack. However, the foregoing traditional immunization ritual demonstrates clearly the Kamba belief that a great religious-medical specialist can perform very extraordinary manipulations of supernatural power for the advantage of his clients.

The religious-medical specialist's use of the hot iron to manipulate the supernatural was an unusual technique, but the use of magical substances such as muthea (ritually prepared black powder), of fetishes such as the kithitu, and of processes such as the cutting of the body and

insertion of special ritually prepared powders commonly occurred in both of the communities studied.

The second stage of the religious-medical specialist's preventive operation is typical of the kuvinga musyi ceremony as it is performed in both communities. In the survey it was found that ten of the thirteen religious-medical specialists who were extensively interviewed reported performing kuvinga musyi. The ceremony normally includes circling the homestead while distributing special protective substances, ritually entering the homestead, and applying the preventive substance ng'ondu to all the homestead members' bodies. These rituals usually include protection against thievery as well as against sorcery which gives added justification for the very high fees charged for these closing ceremonies.

The specialist in the foregoing case charged the homestead a fee of one hundred and twenty shillings (about seventeen American dollars), and an extra five shillings (about seventy American cents) went into the ngusu (kit-bag of paraphernalia) as a kind of pharmaceutical payments for replacing the substances used.

III. THE NATURE AND AVAILABILITY OF ALTERNATIVES PROVIDED BY HERBALISTS

Qualifications of the Herbalist

Empirical knowledge of herbs is the most basic

qualification of the Kamba herbalist. This knowledge is usually gained through informal apprenticeship to established herbalists and/or through personal experience. Another important and closely related qualification is the direct use of herbs and herbal mixtures. Direct utilization means that the herbalist is expected to dispense specific herbs and mixtures for the treatment of particular illnesses. That is, the herbalist is regarded as a practitioner who treats the illness itself and not an underlying supernatural cause. In accordance with this expectation the Kamba herbalist does not usually transform herbs or other substances such as lime or carbon into ng'ondu (magical substance). The herbalist limits his skills to treating somatic illnesses. The herbalist avoids treating insanity because it is generally believed that insanity is caused by a sorcerer's power and can only be treated by religious-medical specialists.

Techniques of diagnosis are also empirically acquired, i.e. through apprenticeship or experience. The major technique of diagnosis is questioning the patient regarding his illness. The questioning primarily involves the location of the illness and the nature of the pain. Another technique which sometimes follows questioning of the patient is palpation of the part of the body which the patient has reported as painful.

Empirical methods of treatment and diagnosis are qualifications shared by most herbalists. This empiricism of the herbalist in Kamba society is largely responsible

for his tendency to adapt his system of diagnosis and treatment to modern medical practices. One of the most common adaptations is the practice of storing liquid herbal mixtures in large plastic containers. Some herbalists will tell their patients to take a cup of the prescribed herbal liquid three times per day, and some others will tell the helpseekers to drink their herbal medicine in the morning and in the evening. Both of these prescriptions appear to reflect modern medical acculturation.

The herbalist is to a large extent operating on the same level as the government clinics--the empirical level--and so it is a plausible hypothesis that the Kamba herbalist in a medically acculturative situation will perceive benefits in competing with and adapting to procedures of modern medicine. Another adaptation is the use of a modern type of building as a consulting room for patients who come for herbal treatment. There are some indications that these adaptations are becoming more generally accepted qualifications of herbalists in the health center community.

Geographic Proximity

Regarding the utilization of alternatives provided by herbalists, the factor of geographic proximity is relatively uncomplicated. That is, propinquity is a plus factor with certain exceptions. There are numerous herbalists in both communities. The sampled homesteads in the health center

community reported thirty-eight herbalists, and the dispensary community cited thirty-four. Like midwives, practically every homestead has easy access to a herbalist.

However, a herbalist will usually prefer not to treat his own immediate family, i.e. his wives and children. Other than this avoidance of treating immediate family members, the herbalist is available and willing to treat nearby helpseekers. From the point of view of potential embarassment, a sufferer of gonorrhea or other venereal disease will prefer to visit a herbalist who is outside his social network. Another exception to geographic proximity being a plus factor is the charismatic attraction of a distant therapist, who has gained widespread renown.

The Diagnosis and Treatment Process

The herbalist's major method of diagnosis is asking the patient questions regarding specific symptoms of the illness and symptoms which may be related to the illness. The usual treatment is the dispensing of herbs in liquid and/or powder form.

The following case account of a patient who visited one of the herbalists in our sample for treatment of stomach disorder is illustrative of the diagnosis and treatment process:

> The herbalist asked the patient what he was suffering from. The patient said that he had stomach trouble. The herbalist asked the patient

if he felt his stomach making sounds. The patient replied: "Yes". The herbalist asked: "When eating maize, do you have difficulty swallowing?" The patient agreed.

Then the herbalist asked, "Do you dream during the night?" The patient replied affirmatively and commented that his sleep is often interrupted because of these dreams.

Herbalist: "Do you have difficulty breathing when you climb a steep hill?" The patient replied affirmatively. Finally the herbalist asked the patient if he had pains in the joints of the arms and legs and the patient said that this was true.

At this point the herbalist indicated that he understood the patient's main problem and associated symptoms. Before prescribing herbs, the herbalist decided that the man's major trouble was in the small intestine.

The herbalist asked the patient what previous treatment he had had, if any. The patient replied that he had attended the health center and hospital, but their treatments did not make him well.

The herbalist mixed a special powder in a cup half full of liquid herbal mixture, and he gave this to the patient to drink. The powder contained four herbs which had been dried and crushed. The liquid contained twelve herbs which had been minced and cooked into liquid form. The liquid medicine also contained Kamba beer which was regarded by the herbalist as an agent for carrying the medicinal properties to the sick parts of the patient's body.

At the end of the consultation the herbalist gave the patient two quart bottles of liquid and a small packet of powder. The patient was told to drink a half cup of liquid with one teaspoon of powder twice per day--once in the morning and once in the evening. The patient was charged five shillings.

The fees reportedly charged by herbalists range from three shillings (about forty-five American cents) to thirty-five shillings (about five American dollars) with the mode at about five shillings (about seventy-five cents). The variations usually depend on the amount of herbal mixture which is dispensed and on travel expenses of the herbalist, as well as depending to some extent on the fame and experience of the herbalist.

Stomach and chest disorders and pain in the bones and joints are the most common problems which are brought to Kamba herbalists. However they also treat such illnesses as diarrhea, tape worm, constipation, fever, heart trouble, and gonorrhea.

A pattern which may be developing in the health center community is the one of the Christianized or otherwise acculturated patient who is suffering from a chronic illness such as tuberculosis, and who has attended the health center several times but has become dissatisfied with his lack of improvement. Because of his Christian self-identity and/or personal skepticism regarding traditional religion, this type of person is unwilling to consult a diviner about his misfortune. Therefore he selects the herbalist as the more attractive alternative to the health center or to the religious-medical specialist.

Some of the herbalists in the health center community especially the minority of popular ones who are allocating a major portion of their time to making a business out of gathering herbs, processing the herbs, and dispensing the finished product, are providing attractive alternatives to these persons who have rejected Kamba supernaturalism and are dissatisfied with the government medical services. Some of these popular herbalists are Christian and/or acculturated by periods of urban employment. Consequently, acculturated sick persons in the health center community are able to identify with these practitioners and feel

comfortable visiting their homesteads for treatment.

IV. THE NATURE AND AVAILABILITY OF ALTERNATIVES PROVIDED BY TRADITIONAL MIDWIVES

The data utilized in the following section were obtained in part from extensive interviews with eight traditional midwives--four from each community who were cited frequently in the initial social survey (see Table II-3). Some of the data on alternatives provided by traditional midwives was acquired from extensive interviews with seventeen mothers in both communities. All of these mothers were members of sampled homesteads and had given birth to a baby during the year prior to the time the surveys were conducted.

Qualifications of the Traditional Midwife

Although male religious-medical specialists sometimes provide midwifery services, all of the persons who were cited in the social surveys as specifically isikya (midwives) are women. Generally they are older women who have passed child-bearing age and, with the exception of one full-time professional midwife in each community, they do not depend upon midwifery as their main source of income.

Several other women who were cited as isikya (midwives) were more commonly cited as awe (religious-medical specialists) which was found to be their predominate role. With the exception of those few who qualify as religious-

medical specialists, midwives do not claim supernatural sanction for their role. Rather, those interviewed explain that they learned the art of midwifery from informal observation and experience. No formal apprenticeship or training in midwifery occurs. Several reported that they first began learning their skills as small curious children who watched relatives and neighbors giving birth. Later, these adult women bore children and began assisting relatives when they gave birth. If such a woman acquires a reputation for being able to handle complications successfully her clientele expands to include persons outside of her immediate homestead and hamlet. The two full-time traditional midwives interviewed in the health center community and the dispensary community have also received patients who were referred to them by the modern health facilties when the services of a modern midwife were not available.

Geographic Proximity

In every hamlet, a number of women are socially defined as being isikya (midwives). In general, the midwife whose services are sought lives well within a half hour walk from the helpseeker's homestead. Only four of the sixteen women interviewed obtained prenatal attention from a traditional midwife before labor commenced, in which case they went to the homestead of the midwife whose services they sought. When labor begins, however, the midwife is

normally contacted and it is she who comes to the homestead of the woman in labor, and she assists the delivery there.

From the data collected there appears to be only one traditional midwife in the health center community who departs from this practice. This particular midwife is so well known and has such a large clientele that there is a daily stream of pregnant women visiting her compound from near and far. To handle this large clientele the midwife appears to have innovated a procedure, similar to that of modern health facilities, by which she assists the delivery of babies in a hut reserved for this purpose within her own compound. She reportedly never goes to the compound of her clients to assist them there. This famous midwife's compound is located about two and one half miles from the Health Center, and she reports that she has a cooperative relationship with the Health Center. When a complication arises which she cannot handle with her limited facilities, she seeks aid from the Health Center.

The Process of Assisting Delivery

Although there is some variation in the procedures for delivering babies reported by the midwives and mothers interviewed, the following description of a normal delivery is the most common procedure utilized.

When a pregnant woman determines that she is going into labor, she usually notifies an older woman residing

in her homestead compound. This woman would normally be her husband's mother or, if she is not present, one of the husband's brother's wives. Someone from the homestead, usually a child, is sent to notify the midwife that her services are needed. The midwife usually arrives about two hours before the baby is born. She gives the woman who is in labor verbal encouragement, and some midwives massage the woman's abdominal area.

When the final explusion stage of the labor begins, the woman in labor normally kneels on the floor with her weight on her knees and her legs spread apart. Sometimes a rope is hung from the roof beams for the woman to hang onto during the course of delivery. This seems to be the method preferred by the midwives, but more frequently a bed frame,a vertical pole, or some other type of support is substituted. The midwives interviewed said that they prefer to deliver the baby without the presence and assistance of other women such as the husband's mother; however, in the majority of cases in which a midwife was called, another woman assisted in the delivery often by positioning herself behind the woman giving birth and providing physical support. The midwife sits directly in front of the woman giving birth, and she instructs the woman when to push. The midwife has a cloth ready and as the baby emerges, she supports the baby in the cloth. Once born, the baby is wrapped in the cloth and shifted to one arm so that the midwife can use her free hand to push

against the woman's abdomen and aid the expulsion of the placenta.

The umbilical cord is immediately tied with twine in two places, the first being about one inch from the baby and the second two inches further. All the midwives interviewed reportedly use a new razor blade to cut the umbilical cord between the two places where it has been tied. One midwife volunteered that she powders the end of the cord with sorghum flour to help stop the bleeding.[1] The placenta is then taken outdoors by the midwife and buried.

In some cases the woman who gave birth bathes herself with water provided, or in others she is washed by the midwife or another woman who assisted the delivery. The woman's abdominal area is then bound tightly with a long strap made of sisal. The reasons given for this practice are that it helps reduce the bleeding and pain and that it helps the loose abdominal skin to contract. This girth is permanently removed anywhere from four days to one month after delivery depending upon the preference of the woman wearing it.

The midwife sees to it that something nourishing is prepared for the new mother; this might be tea with milk and sugar, porridge, a soft drink such as Coca Cola, traditional beer made with sugar cane, or commercial beer.

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[1] Frank (1969) found in his survey of Kamba obstetrical practices that whereas most midwives apply no substances to the cord, a few midwives reported using harmless substances such as baby powder and hair oil.

The latter two are particularly recommended if the woman appears to be suffering from extraordinary pain.

Midwives differ as to how soon after birth they wash the baby. Most seem to wait at least one hour, and one midwife reports that she waits at least three hours so as not to needlessly frighten the baby. After having been washed, the baby is given to the mother to nurse.

The midwife normally stays at least three hours after the delivery, but if the new mother is young and inexperienced or if there are post-partum complications she may stay overnight or longer.

The fees reportedly charged by midwives for a normal delivery range from two shillings (about thirty American cents) to thirty shillings (about four and one half American dollars) with the mode being between five and seven shillings (between seventy American cents and one dollar). The variations appear to depend largely upon the relative experience and fame of the midwife. Ten of the sixteen women interviewed obtained the professional services of someone socially recognized as a midwife. Half of these, however, were charged no fee for the services because the midwife was a relative.

Of the remaining six women interviewed who did not obtain the professional services of a traditional midwife, three, who had already had a number of children, delivered their own babies unassisted. One unmarried woman had only the assistance of her mother, and two of the women

interviewed gave birth in modern hospitals located in towns outside their communities.

Special birth problems reported by the midwives are breach birth, cephalic-pelvic disproportion, retained placenta, retention of dead fetus, delayed breathing of the baby, premature birth, and excessive post-natal bleeding by the mother. Most of the midwife informants from both communities reported that in cases of breach birth they insert their hands into the birth canal so as to facilitate birth of the child. This same technique is commonly used for cases of cephalic-pelvic disproportion.

In cases of internal fetal death and retained placenta, most of the midwives reported inserting their hands into the uterus and pulling the fetus or placenta out manually. Two midwives volunteered the information that they cut their nails and anoint their hands with oil prior to this activity.

In the contingencies of delayed breathing of the new born infants, most of the midwives reported that they blow air into the baby's nose, mouth and ears. One midwife reported that she makes sounds with a tamborine to awaken the baby, and another reported that she uses a feather to clean out the baby's nose and ears. Two of the midwives reported that they expectorate water in the baby's face to awaken him; this spitting of water is a traditional Kamba blessing.

All of the midwives who had had experience with

premature births pointed out that they wrap the baby in blankets and keep it near the fire. They added that when a premature baby survives, it is often given the name Muinde ("to tuck down") on the day after the birth. One midwife reported that she feeds a premature baby breast milk from a spoon when it is unable to suck.

Most of the midwives reported that they gave special herbal mixtures to women to drink who have suffered from excess bleeding. The very famous midwife in the dispensary community reported that she ties a cloth tightly around the abdomen of women who bleed excessively after giving birth.

Treatment and Prevention of Perinatal Problems

The professional practice of most traditional midwives is generally limited to providing aid at uncomplicated births. However, a minority of midwives offer specialized services to expectant mothers who are suffering from such pre-natal problems as wrong position of the fetus, abdominal pain, vomiting, and constipation. These midwife specialists are also called by ordinary midwives when serious complications develop at the time of birth.

→ The following cases are fairly typical of how a traditional midwife specialist alleviates the problems of expectant mothers. These cases are based on observations

of a midwife specialist at work in Masii. The first case is of an expectant mother who has some serious medical problems not caused by pregnancy but aggravated by pregnancy.

> The patient reported to the midwife specialist that she was one month pregnant. Her complaints included heart trouble, dizziness, weakness of the eyes and lids, breathing difficulties in her throat and chest, pain in the glands of her neck, pain in her upper abdominal area, stomach ache, swelling of her whole body, and inability to move quickly because her legs felt weak. When the specialist suggested that some of these things might be caused by her pregnancy, the patient said that she had felt them before she became pregnant, but that she was now seeking help because she was especially worried about them in relationship to her pregnancy. She said that she had gone to the hospital four years ago, and they had told her that she had a shortage of blood. They gave her an injection for this but it did not cure her.
>
> The specialist used a great deal of oil which she heated on the fire after covering her hands with it, and she massaged it into the pregnant woman's abdominal area. The midwife asked us to feel where the baby was positioned, and, after we had done so, she worked the lump upwards explaining that when the baby's position is low it causes the woman to suffer from difficulties having bowel movements and urinating. Also the midwife specialist pointed out that a low position of the baby may cause the mother difficulty in walking. She said that the blood carried by the vessels on both sides of the lower abdomen near the pelvic bones stops flowing if the baby is too low. She instructed us to feel how much pressure was put on these vessels. She said that this was particularly bad because these vessels should take blood to the place where the baby is located, but cannot if the baby's position is too low.
>
> Then the midwife specialist instructed the patient to sit up, and she continued to massage the abdominal area but pushed the skin up under the rib cage. She explained that pushing the ribs out keeps the ribs from pushing in on the lungs and causing difficulty in breathing.
>
> For the pain in the upper abdominal area, the midwife specialist gave the woman herbs. This was a mixture of nine herbs which were cocked in a large pot. During preparation of

> the mixture, the midwife specialist circled the pot seven times with a knife and a wooden handled needle and then inserted these implements into the mixture.

The second case is of an expectant mother who had no serious medical problems but exhibited high anxiety about the pregnancy itself and sought reassurance from the same midwife specialist.

> This patient was six months pregnant, and she had already given birth to three children. When the patient first entered the midwife specialist's house, the midwife and others present lightly chided her for coming so often, saying, "Does she think she is starting labor so soon?" The patient answered that she came in order to prepare for her delivery. While massaging this woman's abdomen, the midwife specialist told the woman that she could feel the baby's head and that the baby was in a good position. She reassured the patient that there was nothing to worry about and that the patient was in such good condition that she could give birth unassisted and without difficulty.

It was found from the interviews and observations that it is somewhat unusual for expectant mothers to visit traditional midwives for checkups and reassurance. The midwife specialist in the foregoing cases exhibited a very warm beside manner and consequently attracted somatically normal expectant mothers who were suffering from high anxiety. Some of these mothers who visited this midwife specialist for a "checkup" had learned this concept from the Health Center's pre-natal clinic. The concept of a "checkup" is not traditional but represents acculturation of modern beliefs relating to pregnancy. Seeking a traditional midwife for a checkup is a good example of how traditional

alternatives are sometimes utilized to satisfy a modern medical belief.

One focus of this research on traditional midwifery was to determine the importance of religious ritual in pre-natal and delivery procedures. It was found that the most famous midwife specialist in the health center community and her counterpart in the dispensary community do not utilize Kamba religious ritual but tend instead to explain their practices for dealing with the various problems of pregnancy and delivery in empirical terms.

However, several fairly popular midwife specialists in each community, who also qualify as religious-medical specialists, combine empirical methods, such as the use of herbs as herbs for increasing lactation, with supernatural procedures, such as the ng'ondu (magical substance) ceremonies. One of these specialists who was interviewed is an expert in divination, and another is an expert in counteracting by means of supernatural methods the debilitating effects of violating sexual taboos.

The following account provided by a man to explain the death of his two sons is suggestive of the felt need for persons who combine the roles of midwife and religious-medical specialist in that it illustrates the relationship between empirical obstetrics and the traditional belief system regarding the supernatural.

> The man, who is approximately forty years old, was asked if he had any sons in secondary school. He explained that he had had two sons in high school,

but they had died because of ubito (ritual impurity). After they died, it was revealed that his wife had had a miscarriage which she kept secret. She should have had a special kuusya (power neutralization) ceremony performed by a religious-medical specialist. Her failure to do so, the man explained, resulted in their sons dying.

V. CIRCUMCISION AND CLITORIDECTOMY

Among the Kamba there have traditionally been two circumcision rites through which male and female initiates pass. The first is nzaiko ila nini (small circumcision, and the second, which occurs a minimum of one but usually two to six years after the small circumcision, is nzaiko ila nene (big circumcision). The small circumcision is devoted primarily to the procedure of removing the penis foreskin of males and the clitoris of females, and the surgery is accompanied by a very limited amount of ceremony. The children undergoing the small circumcision are usually between the ages of five and seven years, and those initiates participating in the big circumcision are usually between eight and twelve years of age. The age of the children going through these ceremonies is dependent to a certain extent on the ability of the father to pay the leader of the ceremonies the required fees.

The big circumcision which involves five days of extensive ceremony and formal training has become very rare in Kamba society. The small circumcision is still common but is usually done secretly because of missionary and

Government disapproval. Male circumcision and female clitoridectomy are still important prerequisites to marriage even though the associated rites of passage have become considerably attenuated.

Qualifications of the Surgeon

It is acceptable in Kamba society for a male to perform both circumcision and clitoridectomy. However, a female surgeon is permitted to perform only clitoridectomy. These surgeons are always very respected older persons. That is, they usually have the qualification either of an elder or of a religious-medical specialist. The surgeon's eminent position of elder or religious-medical specialist gives the circumcision activity religious sanction; it gives these practices of surgery a sacred quality as contrasted with the secular quality of circumcision in the health center.

Geographic Proximity

The small circumcision is usually conducted for male and female candidates from a small group of homesteads forming a hamlet or for a group of candidates from one large homestead. The ceremony itself usually takes place near the house of the eldest male who is requesting the traditional surgeon to perform clitoridectomy or circumcision on his children.

The Small Circumcision Process

The small circumcision usually takes place in August or September, depending each year on the beginning of warmer weather. Kilumi (ancestor spirit dance) often precedes circumcision during the evening before the ceremony in order to propitiate the ancestor spirits and thus to provide an auspicious setting for the operations.

The following case account is based on observation of the small circumcision. Two days were required to complete the ceremony. One boy and one girl were circumcised on kutema (the opening day), and the remainder of the children were circumcised on nthambiisio (the closing day).

> During the night prior to kutema (the beginning day of the circumcision rite), kilumi (the ancestor spirit dance) was performed in the house of the surgeon who is a very renowned religious-medical specialist. Ten women and two men continued dancing until about eight o'clock in the morning. During the last hour of the dancing, the circumcision surgeon sharpened his special knives for male circumcision and those designed for clitoridectomy.
>
> After the dancing ceased the surgeon walked to his eldest son's compound and placed his special stool in the middle of the compound where the circumcision was to be performed. He also placed a burlap mat in front of the stool.
>
> The surgeon and his eldest son entered one of the mud walled and thatch roofed houses and ceremonially drank some uki (home brewed beer made from sugar cane). Then the surgeon carried some of the beer in a half gourd drinking cup outside to sprinkle in a circle around the circumcision place and on the stool as an offering to the ancestor spirits. The surgeon's son followed him in a clockwise direction pouring water as an offering. The surgeon also took out some tobacco snuff which he sprinkled as an offering to the ancestor spirits. Then a group of the women present performed the ancestor spirit dance for a few minutes.
>
> A six year old boy wearning a white cotton blanket

was led from the same house, and he was seated on the burlap sack. A middle-aged male assistant seated himself behind the boy and placed his legs over the boy's legs so as to brace them. Finally, another assistant positioned himself behind the other one to provide additional support. The surgeon then sat on his stool in front of the boy and proceeded to cut away the foreskin. After the operation was completed, the boy was led over to sit at the side of the house. A solution of potassium permanganate was applied to his wound with a feather, and the boy was given some maize and beans to eat.

Then a five year old girl was led by a middle-aged woman out of the house to the circumcision area. The woman sat on the stool, and the girl sat in the woman's lap with her back against the woman's chest. The male assistants positioned themselves over each of the girl's legs to hold them apart, and one more male assistant stood behind the woman on the stool to help support her. Finally, the surgeon, facing in the same direction as the girl and the woman holding her, straddled the girls legs. Leaning over, the surgeon reached and touched the dusty ground for the purpose of increasing the friction on his fingers for holding the clitoris. Once a good grip was obtained he cut upwards with his knife and severed the clitoris. The girl was then led behind the house. Both the boy and the girl appeared stoic throughout these procedures.

On nthambiisio (the closing day of the ceremony) the surgical process with its attending ritual was very similar. However, one of the girls lost control and cried out before and during the surgery. After she was taken behind the house, the older woman who attended the girls admonished her for her tears. The girls stood behind the house while one of the women gathered large minty smelling leaves which were arranged into small ground coverings for the young girls to sit on. They were eased into position by the older women. These ladies took some of the leaves to wipe away the blood from the girl's wounds. Then cotton which had ghee on it was placed into the pubic opening to absorb the blood.

The surgeon came with a half gourd full of water. He poured the water from the calabash onto the circumcision knife and from the knife over the wound. After the surgeon left, the women took a cup of potassium permanganate solution, dipped a feather into it, and then used the feather to administer the liquid to the wounds. Throughout these procedures the women were jovial and laughed a great deal. The sitting position of the girls were corrected on several occasions by the women. The girls were instructed to sit with their legs close together, flat against the ground, hands on knees, and backs straight.

After this assistance to the girls the women briefly performed the ancestor spirit dance which includes both dancing and chanting. Then there was an interlude during which the girls were left to themselves behind the house while the adults drank beer and conversed in the main part of the compound.

The only significant procedural difference between kutema (the opening day) and nthambiisio (the closing day) was ceremonial spitting on all the initiates at the close of nthambiisio. All the initiates and attendants formed a line in front of the aforementioned house. First the surgeon spat beer three times on the initiates and attendants. Then the surgeon's eldest son and the mother of one of the initiates each spat on the group. This ceremonial spitting was done with a great deal of laughter and joviality. The remainder of the Kamba beer in the gourd cup was poured on the floor of the house.

In Kamba culture this kind of ceremonial spitting is a form of blessing. After the ceremonial spitting is over, the small circumcision is considered completed, and the adult men turn to drinking and feasting.

VI. ALTERNATIVES PROVIDED BY THE HEAD OF THE HOMESTEAD AND BY THE ELDER OF THE HAMLET

In this section there is a discussion of homestead activities and hamlet activities which are consciously perceived as functioning to prevent illness and misfortune in the homestead and/or hamlet.

A homestead or hamlet alternative for the purpose of preventing hostile interpersonal relations and the correlate of sorcery is the administration of the ndundu oath by the homestead or hamlet head. This oath is administered to members of the homestead or hamlet, often to women who have been chronically quarrelling and are suspected of using or

planning to use sorcery against each other. The oath is a method of preventing further hostility, use of witchcraft, and witchcraft accusations. The following case from the health center community is illustrative of the administration of the ndundu oath.

> The homestead head administered the ndundu oath to his three wives in his homestead compound. These women had been quarrelling with the three women living in the neighboring homestead. The head of this neighboring homestead is the brother of the man who administered the oath. Thus the quarrel and fear of resultant witchcraft were problems of two neighboring homesteads which were under the control of male members of the same clan and lineage. The steps in preparing and giving the ndundu were as follows. First a bull was killed. Then they removed a section of the small intestine which is called muethi. One end of the muethi was tied with a sisal string to form a container. The following substances were placed in the muethi: blood from the bull, small pieces of meat from the bull's hump, soil from a grave, dry grass from the roof of the house of a woman who had died, and red liquid from the sap of a tree called kilaa. Six inch sticks from the mukulwa bush were cut and sharpened at the ends. The muethi was hung from the tree called kilaa. Then each of the women who had been quarrelling was given a stick, told to puncture the muethi with the stick, lick the stick twice and repeat simultaneously: "I myself will never quarrel with the other women."
>
> The homestead head explained that if the women were to break their oath, then they would be expected to become ill and die.

The power of the ndundu oath is taken seriously by the Kamba people, but they regard its power as being considerably less than the kithitu oath which is used to settle property disputes, especially disputes about land transfer and boundary settlement. The kithitu oath is not customarily used for settling interpersonal quarrels within a homestead or between two closely related homesteads.

Most Kamba informants say that the ndundu is a milder form of oath, and a positive outcome is always expected. That is, no one expected any of the oath takers in the foregoing case to die. Rather they thought of the ndundu oath in terms of having a controlling effect on the women's behavior, i.e. the women would be a little anxious about the implications of the oath and hence quarrel less and refrain from using sorcery on each other.

Kuthemba (sacrificing to the ancestor spirits) and kilumi (ancestor spirit dance) are two major community preventive medicine alternatives. They are organized by the religious-medical specialists and by the elders for the ceremonial prevention of epidemics. Upon the request of the elders who represent the traditional leadership in the community, the religious-medical specialist consults the ancestor spirits who communicate to him whether kuthemba and kilumi are necessary. The ancestor spirits also tell the religious-medical specialist the appropriate time for holding a sacrifice and for organizing the spirit dance.

The sacrificing ceremony and the ancestor spirit dance are also used for the prevention of sickness and death to livestock. These activities are usually initiated after some member of the hamlet has reported losing cattle because of disease. Another common purpose of these ceremonies is propitiation of the ancestor spirits for plentiful rain and good harvests.

The sacrificing ceremony is always performed at the

community ithembo (place of sacrifice) which is an uncultivated grassy area with a grove of trees surrounding a sacrificial shrine. People are prohibited from cultivating in the ithembo area, and they are not allowed to gather firewood there. The elders are entrusted with the duty of protecting the ithembo from violators, as well as commissioned with the responsibility of conducting the ceremonial sacrifices.

The ancestor spirit dance usually accompanies the sacrificing ceremony. The sacrifice by the elders and the ancestor spirit dance by a special group of older women are both propitiations to the ancestor spirits. The ancestor spirit dance is used for other rituals besides the sacrificing ceremony. It is often used as a major feature of or an accompaniment to a curing rite and as a feature of circumcision ceremonies. In general the ancestor spirit dance is called for by the religious-medical specialist or by the council of elders as a principal means of creating harmony and beneficial communication with the ancestor spirits.

CHAPTER THREE

THE MODERN MEDICAL RESOURCES

Whereas the traditional Kamba medical system is analyzed in Chapter Two, this chapter is primarily concerned with making explicit the inter-community variation in availability and level of modern medical resources so as to test in Chapter Four the effects of this variation on medical cognition and behavior. The variation in length of availability of modern medical alternatives is pronounced, i.e. there is a marked difference with respect to the periods of time since modern medical services were first introduced in the two communities. Whereas the dispensary community had had clinical services for only a year prior to the beginning of this study, the health center community had had modern medical services for seventeen years.

For the year prior to the beginning of the study, the comparative community had had a one man dispensary. A second enrolled nurse was added at the time the study was started. In contrast, there was a dispensary available in the health center community seventeen years prior to the

initiation of our investigation, and this dispensary was converted into a health center four years prior to the beginning of the research project.

After a discussion of the organization of such rural health facilities from the viewpoint of standards established by medical professionals in East Africa, there are analyses of how these facilities in the two communities operated. Throughout the sections describing how the Health Center and Dispensary are delivering health care to the surrounding populations, there is an effort to stress aspects of the care which may be particularly salient to the patient.

In Medical Care in Developing Countries edited by Maurice King (1966), there are contributions by King, Richard Jolly, and Rex Fendall on the prescribed standard services of dispensaries and health centers in Eastern Africa. In developing the organizational guidelines for rural health care in Eastern African countries, these authors have stated that a dispensary and a health center should not be on a continuum, i.e. a health center should not grow out of a dispensary merely by increasing the number of patients and the number of clinical staff members. Jolly, a medical economist, and King, an expert in social medicine, maintain in their chapter on the organization of health services that health centers should be distinguished from dispensaries "...by the range of services they can provide by their activity in the surrounding area and by the

emphasis placed on health education" (1966: Chapter 2; Section 4).

These authors regard a dispensary as a stop-gap insitution. King, Jolly and Fendall propose that, in the course of social-medical development, most Eastern African dispensaries be replaced by fully equipped health centers. Prior to replacement, these authors conceptualize a standard dispensary being housed in a small building, possessing two or three staff members, and doing only minor curative activities.

Jolly and King (1966) emphasize that a dispensary cannot be converted into a legitimate health center without first (1) expanding the facilities, e.g. more rooms and equipment; (2) adding more highly qualified personnel; and (3) introducing a plan of organization which can accommodate more diversified curative services (e.g. tuberculosis clinic) as well as promotive services (e.g. maternity care) and preventive services (e.g. health education regarding sanitation).

Rex Fendall, former Director of Medical Services in Kenya, has outlined and discussed the services which distinguish a health center from a dispensary. Many of these services, especially the health center's community services, also distinguish a Kenyan health center from a district hospital. In other words, the concept of the Kenyan health center is that it should not function as an overdeveloped dispensary nor as an underdeveloped hospital.

Rather it can ideally be distinguished from a dispensary and hospital by its promotive and preventive functions.

Dr. Fendall (1966: Chapter 3; Section 9) lists the following personal services in addition to "general curative outpatient services" as basic components of a health center program:

a. Maternity care
b. The care of the under-fives (e.g. immunization)
c. The care of school children
d. Consultative clinics (e.g. visiting physicians and health experts)
e. Clinics for special diseases (e.g. tuberculosis)
f. Dental care
g. Mental care
h. Home visiting
i. Case work
j. Limited inpatient care

In the 1966 summary of his articles on the health center concept in Kenya (1963a, 1963b, 1963cm 1965) Dr. Fendall prescribes the following community services as standard expectations for a rural health center:

1. Health education
2. The improvement of water supplies
3. The improvement of excreta disposal
4. The supervision of housing conditions
5. The regulation of food shops and markets
6. Campaigns against communicable disease
7. The collection of statistics.

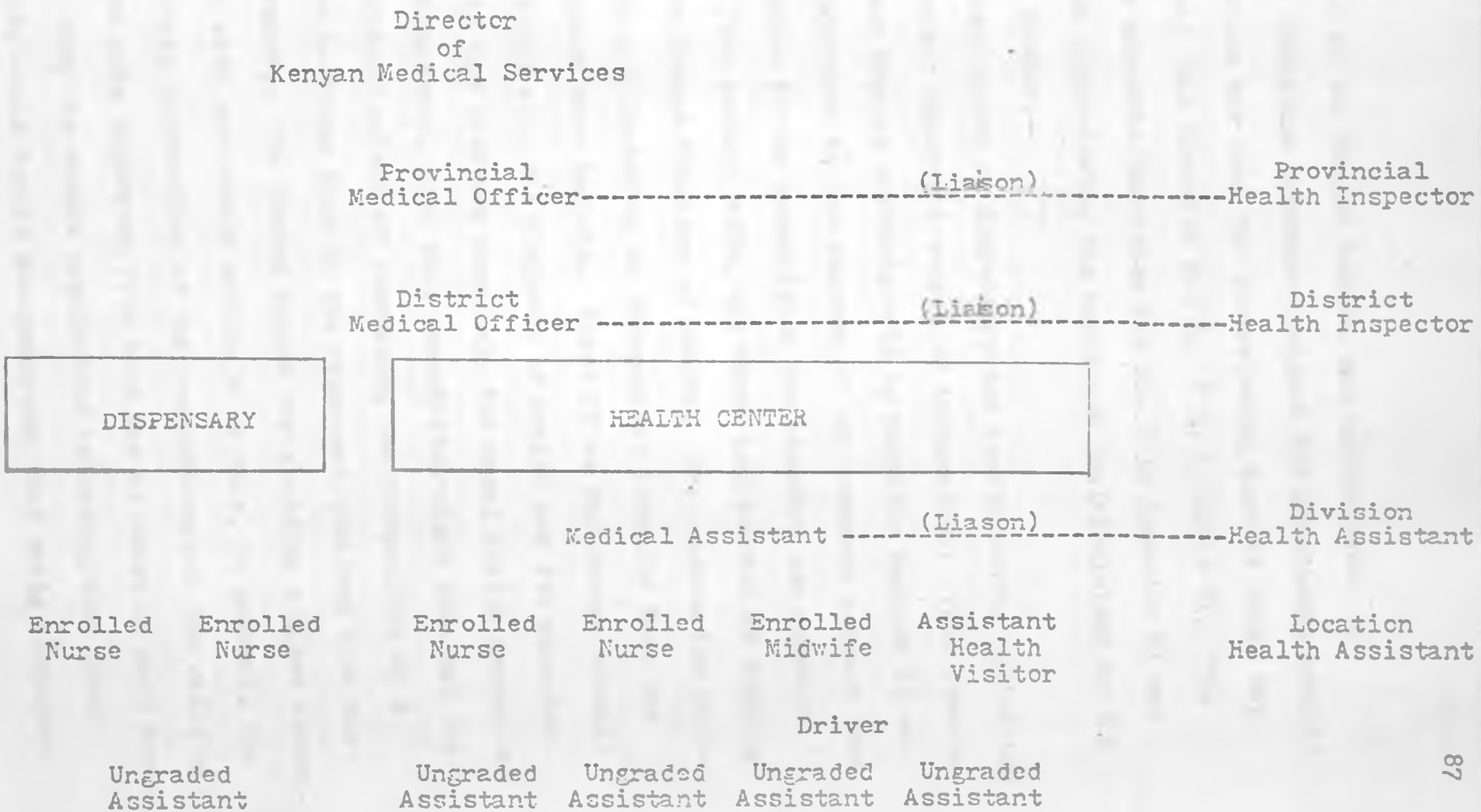
At the time that Maurice King's volume went to press (1966) Dr. Fendall pointed out that family planning as a health center service was being considered on the national level. Shortly thereafter, family planning became a prescribed service in Kenyan health centers.

I. METHODS OF SAMPLING AND DATA COLLECTION

The primary sampling method was the selection of key personnel in the Dispensary and in the Health Center (see Chart III-1) and the quota selection of mothers who had had babies during the year prior to the beginning of the research project. Nine mothers were selected from the health center community sample, and eight were selected from the dispensary community sample. The dispensary was staffed by two male enrolled nurses and one female ungraded assistant. The two enrolled nurses were selected for interviewing. The Health Center was staffed by one male medical assistant, one male health assistant trainee, two male enrolled nurses, one female enrolled midwife, one female assistant health visitor, three ungraded nurses, one motor vehicle driver, and one gardener. The key personnel selected for interviewing were the medical assistant and the assistant health visitor who was responsible for midwifery while the enrolled midwife was on leave. Also, the divisional health assistant, who was working in the health center community but not directly

CHART III-1

Organization of Rural Medical and Health Personnel



attached to the Health Center, was interviewed. A special interview schedule designed for government medical auxiliaries was used for interviewing most of these key personnel (see Question Set No. 5 in Appendix V). The midwife schedule (Question Set No. 2 in Appendix V) was used for interviewing the assistant health visitor at the Health Center.

Observation of dispensary and health center activities was another important source of information. This observation was done as unobtrusively as possible because it was very important to the success of our research project that the people in the communities not identify our research group (the author, wife, and three assistants) as working for the Kenyan Ministry of Health. The reasons for maintaining and fostering an independent identity from the Government were twofold. First if we had become closely identified with the Ministry of Health and its agencies such as the district hospital, the rural health center and the dispensary, then this association might have had the undesirable effect of increasing the probability of a modern medicine bias in the responses obtained from our informants. The second reason for avoiding a close association with government officials is that, in general, the voluntary cooperation of the respondents and the validity of the data collected from them was at least in part dependent upon the sample populations believing that their identity would remain anonymous and that their responses

would under no circumstances be used to their personal detriment.

II. NATURE AND AVAILABILITY OF ALTERNATIVES PROVIDED BY THE CLINICIANS

There are clinicians operating in the modern medical system in both research communities.

In the Health Center the medical assistant and one enrolled nurse diagnose illnesses and prescribe treatment. Two other enrolled nurses dress wounds and ulcers, give injections, dispense pharmaceutical mixtures, and perform minor surgery such as wound suturing, abscess incision, and tooth extraction.

In the Dispensary, the two enrolled nurses diagnose and prescribe treatment. Also they given injections and the same type of minor surgery as is listed above. The ungraded assistant dresses wounds and ulcers and dispenses pharmaceutical mixtures.

In addition to these government medical auxiliaries in the Health Center and the Dispensary, there are ex-government medical auxiliaries who illegally dispense drugs in their homes. That is: for a charge, they provide penicillin injections, aureomycin salve etc. for patients who prefer to go to private but modern practitioners. The factors which make these fee charging modern practitioners attractive are tribal and kinship ties, proximity

to a patient's homestead, availability when the health center or dispensary is closed, and the prestige accrued from showing that one can afford the services of a private practitioner.

Qualifications of the Clinicians in Each Community

The enrolled nurses at both government health facilities have the same level of education and training, eight to ten years of general schooling plus a three year training course at a district hospital. These positions are held by males whose responsibilities vary among the following combinations of duties: (1) diagnosis and prescription of treatment; (2) diagnosis, prescription of treatment, administration of injections, and minor surgery; (3) application of dressings to wounds and ulcers, administration of injections, minor surgery, and dispensing of pharmaceutical mixtures.

The medical assistant has approximately the same level of general education as the enrolled nurses, i.e. eight to ten years. However in addition to the three years of practical training in basic curative services, the medical assistant has one year of additional training in diagnosing specialized cases and in promotive and preventive medicine practices. The guidebook role expectation (see King, 1966: Chapter 3, Section 5) for the health center medical assistant is that he act as supervisor of the curative, promotive and preventive services of the health center. However, at

the Health Center, the major responsibility of the medical assistant appears to be the diagnosis and prescription of treatment for adults. One of the enrolled nurses has the duty of diagnosing illness of children and prescribing treatment for them.

In discussing qualifications of rural government auxiliaries, a very important consideration is that the local people generally do not distinguish between medical assistants and enrolled nurses, nor do they usually make a distinction between these auxiliaries and occasional visiting doctors with M.D. degrees. All male practitioners associated with the modern medical system are referred to as kitali. This is a shortened form of ndakitali, an adaptation of the Swahili term, daktari, which in turn is the borrowed English term, doctor. Female practitioners associated with the modern medical system are usually referred to by the traditional term for midwife, mwisikya.

Proximity and Availability

Regarding proximity at an inter-community comparative level, the government clinicians are equally near their respective communities, i.e. the outpatient facilities are located at the center or very close to the center of each community. (See Maps 5 and 6.)

In both community populations studied, a patient seeking help at a government health facility must walk a distance of from one quarter to three and one half miles

depending upon the location of the patient's homestead. This is a range in walking time of five minutes to one hour.

Rainy weather is a significant factor affecting attendance at the health facilities as people are less inclined to leave the vicinity of their homesteads during the rainy season.

The government health facilities usually have heavier attendance on market days because people tend to combine use of the market with attendance at the health center or dispensary.

The outpatient hours are usually 8:30 or 9 a.m. to 1 p.m. and 2 p.m. until 4:30 or 5 p.m.; i.e. the clinics are open about seven hours each day except on Saturday when there is a four hour clinic period in the morning. The number of government practitioners diagnosing illnesses tends to be constant across the two communities. The health center and dispensary facilities both have two clinicians diagnosing the patients' complaints and sending most of them for treatment to the pharmacy. In the dispensary there is usually only one assistant in the pharmacy-treatment room who treats wounds and tropical ulcers. In the health center there are usually two assistants working in the pharmacy and treatment rooms.

A difference between the two outpatient facilities is the much greater number of visits made to the Health Center. Over a period of four months the Dispensary

reported receiving an average of 4,295 visits each month, whereas the Health Center outpatient clinic reported receiving an average of 12,052 visits each month. (See Table III-1).

TABLE III-1

Patient visits at the clinics in the Health Center and the Dispensary for the months of December, 1968, through March. 1969.

	Dec. 1968	Jan. 1969	Feb. 1969	Mar. 1969
Health Center	11,610	12,923	11,798	11,876
Dispensary	3,383	4,354	4,928	4,516

The female-male ratio in the waiting area in front of the government health facilities is approximately 3:2. The waiting part of the treatment process provides a social occasion for the patients, especially for the mothers with babies. During their long wait they exchange holding each other's babies and have conversations with each other as they would in the market place. The patients usually wait between one and four hours prior to seeing the diagnostician.

[1] The Dispensary visits represent 36 percent of the visits made to the Health Center. Even when account is taken of the larger population of the Health Center Community (the Dispensary Community population represents 57 percent of the Health Center Community population), less usage is being made of the dispensary (see pp. 16-17 for population density of the two communities.

Treatment Process

The patient typically goes through the same diagnosis and treatment steps in the health center community and the dispensary community.

When the patient is called in to see the diagnostician he is asked: "What is your complaint?" Frequently the medical assistant or enrolled nurse in charge of diagnosis and prescription of treatment gives the patient a prescription for treatment at this stage of the process. For example, if the patient complains of a headache, then the diagnostician may go no further in the diagnosis and simply give the patient a slip of paper which entitles him to a small quantity of aspirin from the pharmacy. Sometimes, the diagnostician takes more time to ask the patient a series of questions and/or give the patient a medical examination. However, detailed medical history taking and physical examination of all patients would be too time consuming to process the large numbers of persons who visit the government health facilities. At the conclusion of the diagnosis session the patient is given a slip of paper which prescribes the form of treatment he is to receive.

Patients usually have to wait another half hour to two hours prior to being attended in the treatment room of the health center or dispensary. The most common treatment is the dispensing of common aspirin and/or simple antihistamine compounds for relieving pain in various parts of the body.

Antibiotics are given to patients suffering from infection. An injection of penicillin is the most common form of antibiotic treatment. Minor surgery performed includes the following: wound suturing, abscess incisions, tooth extraction, and circumcision. The cleaning and dressing of wounds and of tropical ulcers are very common treatment activities.

Cost-Benefit Analysis of the Government Community Health Facilities as a Treatment Alternative

The more salient perceived costs of utilizing the government curative services are (1) excessive allocation of time in the long periods of waiting for diagnosis and for treatment; (2) the rigid time schedule of the clinic which means that government curative services are not available on Sundays, holidays, and during the evening and night; (3) the unfamiliar surroundings of the clinic waiting area, the diagnosis room and the treatment room; (4) the foreign tribal identity of some of the clinicians and the communication problems due to language differences. (One of the two clinicians in the dispensary community is from another tribe, and two of the four clinicians in the health center community are from other tribes.)

Three of the major perceived benefits of utilizing the government curative services are: (1) the believed potency of some of the government medicines; (2) the lack of fees for any government health service with the exception of transportation and in-patient maternity care; (3) the

opportunity for women to have social interaction with other women of the same clan while waiting for diagnosis and treatment.

Non-Curative Services of the Clinician

One of the expected non-curative services of Kenyan health centers is family planning advice and implementation. The Health Center clinician is entitled to prescribe and fit the intrauterine coil (IUD). However, no intrauterine devices were given out during the period of our investigation. The educational aspects of the Health Center family planning program are discussed in the section of this chapter on alternatives provided by the health assistant and in the section on family planning. No family planning services are provided by the Dispensary.

Health education involving preventive and promotive medicine is offered by one of the clinicians at the Dispensary on a daily basis. This health education at the Dispensary was an innovation voluntarily introduced by one of the enrolled nurses who began work one month prior to the beginning of our research project. No formal health education is provided by the clinicians at the Health Center.

What education they do provide is done informally on a personal basis when the patient's illness is being diagnosed. However the shortage in time due to heavy attendance and the language problem of these non-Kamba speaking clinicians tend to result in only minimal, if any, general

preventive health education being practiced by these Health Center clinicians.

The out-patients at the Dispensary are predominately women, (6:4 female-male ratio at most outpatient clinics in the Machakos District) many of them with babies, and the clinician focuses on such topics as dietary improvement of infants' food, boiling of liquids, and use of a clean cup or glass in place of the more difficult to clean bottle and nipple for administering liquids to infants. These talks are given each morning between 8:30 and 9:00 a.m. to the group of patients who are waiting for treatment. After the half hour talk the enrolled nurses turn to their tasks of diagnosis and treatment.

The following account of health education by a government clinician was observed at the Dispensary between 8:30 and 9:00 in the morning on May 30th 1969:

> There were about twenty-five patients waiting for treatment when the male enrolled nurse began his talk. The nurse asked the group how many of them had come yesterday. About half of them indicated that they had come the day before. Then the nurse asked the patients to show him their handkerchiefs. He has been requiring all patients to carry handkerchiefs. He told them that if they cough without a handkerchief they will infect other people.
>
> Then the nurse told the patients that he was going to talk to them about proper food for adults and for children.
>
> Before beginning this talk he checked one baby to see if it had a clean diaper. He has been requiring the mothers to bring their babies clad in clean diapers. (Most rural Kamba mothers do not diaper their babies.)
>
> The nurse then asked the mothers why they should eat good foods. Then he told them that if they do not eat good foods they will be subject to infections.
>
> He warned the patients about protein deficiency and its symptoms of swollen legs and change in hair

color. He emphasized that those children with these signs are not given a proper diet. He told them that the children should be given milk, eggs, meat, and beans.

The nurse asked an inattentive mother if she was listening and to tell him what he had said. She said that she did not know what he said, so he repeated his points for her. Then he asked her again, and she was able to answer him.

He encouraged the people present to eat milk, eggs, meat, cow peas, sweet potato and millet. He also told them that oranges, and mangoes are good for preventing infection. He added that food builds the body like materials are used in the construction of a house.

Then the nurse told the women in the group that for the last five minutes he wanted them to tell him what foods they will cook when they go home. The first lady that he asked replied that she would go home and cook foods that can be cooked quickly such as cabbage and English potatoes. She said that she cannot afford meat.

The nurse asked a second woman what she would cook that evening, and she replied that she would cook maize and beans. She said that she cannot afford to buy oranges and cabbages.

Then another lady was asked what she would eat tomorrow morning. She said that she would drink tea and eat an egg. Another lady, who was asked the same question, said that she cannot afford to buy eggs. The enrolled nurse replied that if she were able to buy such a nice scarf and dress, then she could afford to buy eggs.

The nurse told the mothers to trade their maize for better food or to work for money so that they could buy better food for themselves and their family. He told them that if they have three children, then they should buy three eggs daily, also oranges and meat. He said that if they bought the right things, then they would be able to use a small amount of money for good foods. He encouraged them to work as laborers and get paid five shillings per day, then they would have enough to spend 1/40 shillings (approximately twenty U. S. cents) on food and still have some money remaining.

The Dispensary enrolled nurse reported that when he first introduced these talks in November, 1968, the patients were resistant and inattentive. The patients complained that the diagnosis and dispensing of medicines should begin

when the dispensary opens and that the talks only cause patients to wait for longer periods of time. Whenever patients clearly showed in their behavior that they were unwilling to listen to these talks, the nurse told them to go home and return another day for treatment when they would be willing to participate in the talks.

Another technique the nurse used to get the attention of the patients was to question them, as he did in the foregoing case account. If they appeared not to have been listening, he would embarrass them by asking them questions repeatedly until they showed signs of having listened. The end result was that this particular nurse was able to effectively expose a group of people seeking treatment to some of his ideas about preventing illness and promoting health.

The germ theory of disease is little known among rural Kamba people (see Table 14 in Chapter IV), but interpersonal contagion via sorcery is well established in Kamba culture. The idea that one person can cause another to become sick by coughing in his direction is difficult for Kamba people to accept because the sorcery causal analog does not operate in such a casual way. When a person uses sorcery to infect another person, he is expected to do this consciously and to have malevolence as his motive. Unconsciously used witchcraft is not considered by the Kamba to be common.

Requiring mothers to put diapers on their babies is a

recent innovation among rural Kamba. The usual practice is to leave babies uncovered from the waist down, and after they have learned to walk they eventually learn that it is appropriate to urinate and defecate outside the house and away from the compound. The diaper innovation may become more of a health hazard than a health benefit, considering the limited cloth available to most mothers for diapering and the limited washing facilities. The use of diapers when they cannot be changed frequently may decrease the spread of feces born diseases but will foster skin infections which tend to heal slowly in the tropics.

Another modern innovation which has already brought serious negative health consequences is the use of the bottle and nipple to feed babies liquids. Most mothers do not have the proper knowledge or facilities for maintaining cleanliness in these bottles, and therefore baby bottles have become vehicles for gastro-enteritis infection. The enrolled nurse at the Dispensary is aware of this problem, and consequently he has been encouraging mothers to substitute a cup and a spoon for the bottle and nipple. The rationale behind this substitution is that a cup and a spoon can be washed and dried more easily, and consequently there is less risk of spreading infection.

The Dispensary enrolled nurse concentrates on influencing the mothers in his talks. Besides exposing them to ideas about the benefits of cleanliness, the nurse emphasizes favorable changes in the diet of the mothers and their

children. He attempts to devalue the starchy foods and encourages the mothers to add citrus fruits, whole grain cereals (as a substitute for maize), eggs, and meat to their children's diet.

III. NATURE AND AVAILABILITY OF ALTERNATIVES PROVIDED BY HEALTH ASSISTANTS

Dr. Fendall, former Director of Medical Services in Kenya, has written the following comments on the duties of rural health assistants:

> They were responsible for providing safe water by digging wells and protecting springs, and often have a mason to help them in these tasks. These health assistants also provide latrines and see that these are used, they advise on improvements in indigenous housing, they assist in measures against diseases such as malaria, and they help to trace the contacts of infectious cases. They inspect meat and supervise markets. Like other members of the staff, assistant health inspectors /equivalent to division health assistant/ and health assistants go into the patients' homes where their work is particularly valuable in times of epidemic, because it is then that the villager is most susceptible to advice and instruction.
>
> (King, 1966: Chapter 3; Section 6)

Presence of a divisional health assistant is a distinguishing factor between the health center community and the dispensary community. A divisional health assistant is approximately equivalent in status to the position of assistant health inspector to which Dr. Fendall is referring. Both communities have health assistants. The dispensary community has a locational health assistant, and the higher level of auxiliary health worker, the divisional health

assistant, has been provided in the health center community. Both locational and divisional health assistants are given the duty of providing community rather than personalized health services. Their most frequently practiced tasks are the inspection of markets and shops for the purpose of preventing and controlling epidemics. Other tasks of these assistants are improvement of home environmental sanitation, improvement of water facilities, and health education. In both communities the health assistants are responsible to the district health inspector and therefore work independently of the local clinic facilities. From our observations it appeared that as a corollary of this independent relationship there was little, if any, institutionalized coordination of the efforts and activities of the Health Center personnel and the health assistant.

The divisional health assistant worked for five and one half years at the health center community prior to the beginning of the study. Prior to this assignment, he worked as a health assistant in other locations. He has had ten years of general education, two years of special training at Kenyatta National Hospital Medical Training Center, and six months on the job training.

The divisional health assistant in the health center community reported that his main duties were visiting various locational market centers in the division and inspecting the food shops, meat shops, and the market area proceedings. He also reported that he was organizing certain

health projects which included building wells in a remote area and constructing a washing area near the community market. During the course of our study these projects were under construction.

The divisional health assistant also pointed out that he conducted health education at group meetings called by the chief of the location or the headmen of the sub-locations. These meetings were not called regularly or often. He reported that occasionally he visited homesteads to teach people about better housing and the importance of building latrines. He said that he also stressed improvements in diet and encouraged mothers to use a clean cup and spoon instead of a bottle for supplemental feeding and for weaning.

In regard to birth control the divisional health assistant reported that a family planning office was established in the health center community located in a building adjacent to the clinic. He said that every Wednesday for part of a year a physician from the Machakos District Hospital visited the Health Center for consultations with mothers interested in birth control. Intrauterine devices were supplied and fitted for women who requested them. The divisional health assistant reported that as a part of his duties he advises interested families regarding the feasibility of spacing their children.

IV. NATURE AND AVAILABILITY OF ALTERNATIVES PROVIDED BY THE MIDWIVES

One of the major distinctions between the Health Center

and the Dispensary is the provision by the Health Center of maternity, prenatal, and postnatal services. It was reported by the Dispensary clinicians that for a period of a few months an assistant health visitor visited the Dispensary once per month to provide mothers with routine prenatal and postnatal health services. However, during the period that this research was being conducted this assistant health visitor was on maternity leave, and no substitute person was provided. In contrast, the Health Center has two full time enrolled level auxiliaries, a labor room, a delivery room, and equipment for the provision of maternity and perinatal services.

Qualifications of the Health Center Maternity Unit Personnel:

At the Health Center the assistant health visitor and the enrolled midwife have approximately the same amount of training. They both have had eight years of schooling prior to medical training, and they have both participated in three years practical training courses at district level hospitals. Both of these persons are young women, and they are regarded by members of the community as government midwives.

These Health Center midwives have several duties in the maintenance of the Health Center maternity unit: assistance in normal deliveries, making arrangements for referring women with perinatal and term complications to the district hospital, and health education regarding prenatal and

postnatal care of the mothers. Well baby services and health education are other obligations of these midwives. In addition to these duties, the midwives are sometimes asked by the medical assistant to help out in the treatment room of the clinic.

Proximity, Availability, and Cost of Maternity Care

Proximity is probably a major factor explaining the low frequency of utilization of the health center maternity unit. According to the Masii Health Center records, there were only seventeen deliveries in January, fourteen in February, and twelve deliveries in March, 1969. In the health center community population studied, an expectant mother seeking assistance in the delivery of her child at the health center would have had to walk a distance varying between one quarter and three and one half miles depending on the location of the expectant mother's homestead. With the general lack of transportation facilities, it is not usually possible for a mother to be transported to the Health Center when she begins labor. Therefore, if an expectant mother desires to use the Health Center for delivery of her baby, then she must plan on walking to the maternity unit during the initial stages of labor.

Maternity services were available at the Health Center about four years prior to the beginning of our research project. The charge for a normal delivery is a "bed fee" of fifteen shillings (about two U. S. dollars and fifteen

cents). For a complicated birth which involves referral to the Machakos District Hospital there is an additional charge for transportation. For comparison with the government maternity service fee of fifteen shillings, the quota sample of nine health center community mothers gave the following reports. The fees reportedly paid by four mothers for the services of traditional midwives were shillings 10/-(approximately one and one half U.S. dollars), 7/-(approximately one U.S. dollar), 0/-, and 0/-. In addition to the two mothers who paid no fee for the services of traditional midwives because these midwives were close kin, three mothers in the health center paid no fee because they delivered their own babies without help from anyone, and one mother paid no fee as she received help only from a kin relation who was not normally considered a practicing midwife. Only one of the mothers interviewed in the health center community utilized the delivery services at the local health center.

In the dispensary community the mothers paid shillings 6/-(approximately eighty-five U.S. cents), 5/-(approximately seventy U.S. cents), 2/(approximately thirty U.S. cents), 0/-, 0/-, and 0/-, for the services of midwives. One dispensary community mother used the services of a hospital in Nairobi where she paid shillings 60/-(approximately eight and one half U.S. dollars). The lower cost, greater proximity and easier availability of the traditional midwives are no doubt strong incentives for utilizing their services rather than those provided at modern facilities.

Process of Assisting Delivery

The assistant health visitor, who at the time of being interviewed was the only midwife working in the maternity unit, reported that neither she nor her colleague who was on leave ever visited homes to deliver babies. The assistant health visitor said that she performed all deliveries in the Health Center and that she delivered the babies unassisted.

At the Health Center a woman is normally expected to remain in the maternity unit for three days after giving birth. However the assistant health visitor pointed out that when all four beds are being used and there are more women in labor, then a mother is allowed to stay for one to two days after delivery.

The following report is a typical case account of a normal delivery at the Health Center.

> The woman came to our maternity unit when she began to feel labor pains. The woman was taken to the lavatory where she washed herself thoroughly. Then she was taken to the bed and given hospital clothing to wear. I examined her to determine how far her labor had advanced and administered an enema to this woman.
>
> When the labor pains became strong, I examined the woman every half or quarter of an hour, and prepared everything for the delivery. When the woman became fully dilated I gave her permission to push.
>
> As soon as the baby was born, the umbilical cord was tied with a strong thread at about one inch and at one and three fourths inches from the baby, and then it was cut between the two places where it had been tied. I examined the placenta and determined that it had satisfactorily come out in its entirety. (If the placenta does not follow the birth of the child within five minutes, then I make arrangements for transferring the woman by the Health Center Land Rover to the district hospital). The baby was bathed and weighed and then placed in a cot. I told the woman who brought the mother to the clinic to give her something hot and nourishing to drink. Meanwhile I

told the woman who had given birth to bathe herself. Throughout the remainder of this woman's stay at the clinic, she was given vitamin tablets.

After giving the foregoing account of a normal delivery, the midwife reported that she always gives mothers after delivery an intra-muscular injection of ergometrine so as to cause the uterus to contract and minimize bleeding. She pointed out that if a woman bleeds excessively after giving birth, then ergometrine is injected intravenously for more rapid results.

Another special problem reported by the Health Center midwife is delayed breathing by the baby after delivery. She reported the following procedures for dealing with this problem. First she determines if the baby is alive. If she finds that the baby is alive, then she applies mouth to mouth artificial respiration and sucks out any mucus which may be impeding the respiratory tract with a very narrow plastic tube which is inserted through the baby's mouth and throat. Laboline is injected into the baby's thigh or, if the umbilical cord has not yet been tied and cut, into the cord where it has a particularly rapid effect on starting the baby to breathe.

The Health Center midwife reported cases of premature births commenting that in these contingencies the premature babies are not bathed but are wrapped in warm cloths and sent immediately by Land Rover to the district hospital. Her most recent case was premature twins born in the seventh month of pregnancy. She had them sent to the district

hospital; only one of the prematures survived.

Other special problems are the following prenatal complications which according to the midwife, require in most cases referral to the District Hospital: obstructed labor, bleeding prior to the onset of labor, distress of the fetus, contracted pelvis, breach birth, and serious anemia. The Health Center midwife reported that obstructed labor is usually associated with women who attempt to deliver at home, begin pushing too early, become too exhausted to deliver, and consequently the contractions stop. The midwife reported that if she notices that labor is not advancing but should be, she then waits for two hours. If the baby has not arrived after two hours, the woman is taken by Land Rover to Machakos Hospital for a caesarean section or for a vacuum or forceps delivery.

The midwife reported that when she finds the fetus in a breach position during the thirty-fourth to thirty-sixth week of pregnancy, she refers the pregnant woman to the Machakos District Hospital where the fetus can be turned internally so that it lies in the correct position. The woman is not referred to the hospital before the thirty-fourth week of pregnancy because shifting of position still occurs naturally. After the thirty-sixth week, the position of the fetus can no longer be adjusted, so the midwife delivers the baby in the breach position. She reported that for the two years that she has been working at the Health Center, she has delivered a total of four breach

births, one of which died.

Treatment of Perinatal Problems

Rural health centers in the Machakos District are scheduled to hold a pre-natal clinic every Monday and a child health clinic every Thursday; but from our observations it appeared that attendance at these clinics was very low (average under 12 patients per day). The low attendance rates might be explained at least in part by failure to actively advertise the clinics and by the fact that medicines are not distributed to patients at these clinics.

The attendance pattern which the Health Center midwife reported is probably a professional ideal rather than a modal pattern. She reported that women first begin attending the clinics when they are three months pregnant. Then according to the midwife's report, the expectant mothers revisit the pre-natal clinic once per month until the thirtieth week of pregnancy or at approximately seven and one half months when they begin attending every two weeks. The midwife added that when the women's pregnancies have reached full term, they are expected to return to the clinic once per week.

According to the Health Center midwife, the most common complaint of expectant mothers is low abdominal pain. She said that the most common cause of this pain is simple pressure of the fetus. Another cause is infection. She reported to us that if the cause of the low abdominal pain

appears to be only due to pressure, she tells the patient not to work so hard and to get more rest. However if her examination indicates infection, then she refers the woman to the outpatient clinic where medicines may be prescribed. The midwife added in her report that no medicines or vitamins are given at the mother-child health clinics because of inadequate supplies.

The midwife's report and reports from mothers in the two random samples of homesteads indicate that the prenatal utilization of the services of modern health facilities and/or traditional midwives appears to be correlated with the experiencing of abdominal pain or other discomforts during pregnancy. Whereas the vast majority of mothers in both quota samples (7/9 in the health center community sample and 6/8 in the dispensary community sample) complained of illnesses associated with pregnancy, two of the three mothers in the health center community and the one mother in the dispensary community who did not seek prenatal medical help complained of no such discomforts during pregnancy. These data indicate that the Health Center has not created the felt need in expectant mothers for general health care. The view of the majority of women is that it is appropriate to attend a health center only when one is suffering from an illness or when one desires the delivery services of the government midwife.

Health Education for Mothers

The midwife's health education for mothers is carried on in the prenatal and postnatal clinics scheduled on Mondays and Thursdays at the Health Center. The midwife reports that in addition to examining mothers who attend her clinics she advises the mothers regarding how to keep themselves and their children healthy. The midwife encourages the expectant mothers to improve their diet, keep their bodies clean, do less physical labor, and plan on using the Health Center for delivery.

Regarding diet the Health Center midwife reports that she advises the expectant mothers to eat high protein foods such as meat, eggs, and beans. She also tells the expectant mothers to eat green vegetables such as cabbage or spinach. The midwife tells the mothers that if they eat too much starchy food they will suffer from anemia, and she tells the expectant mothers to limit their intake of salt so as to avoid swelling.

When the mothers leave the maternity unit after the birth of their babies, the midwife advises them to avoid doing heavy physical labor for a month. She also advises the mothers to eat meat soup, milk, carbohydrates, and cocoa to help them produce milk for their babies. When these mothers return to the mother-child care clinics they are given advice on child care, infant diet cleanliness of nursing bottles, and weaning.

Advice on general infant care includes the following admonitions: (1) wash one's breasts for each nursing;

(2) nurse one's baby only five times daily so as to give the baby adequate time for digestion; (3) keep the child warm but not hot because too much clothing can cause the baby to have a rash; (4) bathe the baby twice daily -- once in the morning and once in the afternoon -- with warm water; (5) keep the baby's clothes clean.

When women return to the mother-child health clinic one month after giving birth, the Health Center midwife gives the following dietary instructions: (1) addition to the baby's diet of boiled cows milk diluted with boiled water at one to one and one half months old; (2) addition of diluted orange juice at one and one half months of age; (3) addition of boiled undiluted cow's milk at three months; (4) addition of millet or sorghum porridge rather than maize meal porridge at three months; (5) addition of paw paw fruit at three months; (6) at four and one half to five months of age the baby should be given an egg yolk diluted with warm milk which has been boiled and mixed with sugar; (7) ripe bananas should be added to the baby's daily diet at six months; (8) at seven to eight months the baby should be given beans with the outer skins taken off, well cooked cabbage, sweet potatoes, soup made with meat cut into small pieces, and greens (nunyi sya nthooka).

In talking to the mothers about feeding the infants, the midwife encourages the mothers not to feed their babies with bottles because of the difficulty of keeping these bottles clean. She recommends instead that they use

a clean cup and spoon to feed their baby.

The midwife reported that she encourages mothers to wean their babies when they are one year old. She is able to supply the mothers with tablets which stop the production of milk, but the midwife pointed out that the average woman does not like to stop nursing at this time. She said that normally Kamba mothers only want to stop nursing when they become pregnant again.

Family Planning

The midwife was asked if family planning advice was part of the mother-child health education program, and she replied that it was not presently included because the local women were uninterested in birth control. She reported that during the previous year a family planning clinic was provided: "A doctor from the Machakos hospital came weekly for about six months to the Health Center to advise any woman who might be interested, but he simply sat in the office with no clients. Consequently the family planning clinic was closed."

The data on family planning gathered from nine health center community mothers and eight dispensary community mothers are instructive of Kamba women's attitude toward limiting family size. The mothers in both samples were asked how many children they desired. Those in the dispensary community responded in the following manner: 3 (2 more than she presently has), 4 (no more), 5 (2 more), 5

or 6 (2 or 3 more), 7 (2 more),7 (2 more), 10 (5 more), and "does not know" (presently has 1 child). The mothers in the health center community responded: 5(2 more), 5 (4 more), 6 (no more), 7 (no more), 7 (no more), 8 (no more), and "does not care" (presently has 5 children). The average number of children desired is approximately the same for both samples: 6.1 children in the dispensary community as compared to 6.4 in the health center community. Whereas only one mother in the dispensary community expressed a desire to have no more children, five mothers in the health center community expressed a desire to have no more children. This difference is probably best explained in terms of the larger average number of children which the sampled mothers in the health center community presently have (5.3 compared with 3.4 for the sample of mothers in the dispensary community).

We found that beliefs about when conception takes place do not vary significantly between the women interviewed in the health center community and those interviewed in the dispensary community. There was a general tendency for the women in both communities to profess that conception takes place shortly before, during, and/or shortly after the menstrual period. This tendency to emphasize the menstrual period for conception has been reported by the ethnographer Gerhard Lindlom; "Married people ... always cohabit when the wife is menstruating since the Akamba believe that a woman can be impregnated only during the period of

menstruation," (Lindblom, The Akamba. 1920: 40). Lindblom's assessment that the Kamba believe that conception can only take place during menstruation appears to need revision when analysing the beliefs of contemporary Kamba women. We found that only one woman in each sample reported that conception can occur only during menstruation. However, in the health center community sample seven out of nine gave responses which fall within a range of five days before to seven days after menstruation. And in the dispensary community all eight of the women gave responses which fall within this same range of days. Five women in each sample asserted that whereas conception can occur only sometime during this range, it cannot occur during menstruation or, more specifically, when the menstrual flow is heavy. Two additional women from the health center community denied that conception can take place during menstruation but assert that conception takes place from one to twenty-one days after menstruation. These two women were the only respondents who appeared to have somewhat medically accurate knowledge of when conception normally takes place.

When asked if they knew of any ways a woman who wants no more children can keep from having more, five women in the health center community responded either that they knew of no way or that the only way was to abstain from intercourse. The four other mothers interviewed in this community expressed knowledge that methods of controlling the number of children a woman produces are obtainable at

modern health facilities in their community or Machakos (the district center). When these women were asked what methods are available at these health facilities, two mentioned kamuvila (intrauterine coil, literally translated "pieces of plastic" or "rubber"). Another mentioned an operation which she said would make it impossible for the woman to ever bear children again, and one said she did not know what methods were obtainable at these health facilities. One of the mothers who mentioned kamuvila (intrauterine coil) said she had considered using it, but when another woman told her it was painful she decided against this method. The other women who expressed some knowledge that modern family planning services are available said that they had never considered using these services.

In the dispensary community, seven of the eight mothers said they knew of no way to limit the number of children a woman produces. Only one mother knew that help could be obtained from a doctor, but she did not know by what methods, and she had not considered using the services.

The differences between the two communities regarding knowledge of family planning services can probably be best explained by the influence of the family planning office which was in operation for six months at the Health Center during the year prior to our research project. It is possible that the much higher frequency of Catholicism in the dispensary community may also be an influencing factor

(see Chapter I, Section IV on religious affiliation). However, the women in the dispensary community did not express moral objections during the interview to the idea of limiting family size, and the questions asked appeared to stimulate an interest among many of the women.

The women in the health center community appear to have been influenced by health center family planning efforts, but the influence appears to have been too weak to have given these mothers sufficient knowledge of techniques to successfully limit the size of their families.

V. CIRCUMCISION

The Health Center provides the male circumcision operation for a fee of five shillings. According to the medical assistant the ages of the boys vary between about six years of age and the middle teens. During the year of 1968 there were three cases of male circumcision reported in the Health Center records. During the first three months of 1969 there was one case of male circumcision reported in the records. The following tables indicate the reliance on traditional practitioners for initiation surgery (III-2 and III-3).

During August, 1969, we observed a boy about seventeen years of age return to the health center after closing hours for rebandaging of his operation wounds. He publicly expressed a great deal of pain which in the traditional

TABLE III-2

Initiation surgery (circumcision) for all married males in the random samples of homesteads.

	Health Center community (52 males)	Dispensary community (47 males)
Traditional circumcision	N=50 96%	N=47 100%
Modern circumcision	N= 2 4%	N= 0 0%
No circumcision	N= 0 0%	N= 0 0%

TABLE III-3

Initiation surgery (clitoridectomy) for all married females in the random samples of homesteads.

	Health Center community (71 females)	Dispensary community (57 females)
Traditional clitoridectomy	N=70 99%	N=57 100%
Modern clitoridectomy	N= 1* 1%	N= 0 0%
No clitoridectomy	N= 0 0%	N= 0 0%

*Performed at a health center in another Machakos District location.

situation would be considered very unmanly and unacceptable behavior. The chief of the location had transported this boy to the Health Center in his car, and we had a chance to talk with the chief about Health Center circumcision. He did not realize that most American males are circumsized, and so he talked to us somewhat self-consciously about the subject. Circumcision is not customary among the British and was not introduced by the British into the Kenyan government health system. Rather, rural health center male circumcision may have been introduced due to demand by local people, but the statistics show that most people prefer to have their children circumsized in the traditional home environment (see Tables III-2 and III-3).

CHAPTER FOUR

CURING ILLNESS

The primary focus of this chapter is the analysis of behavioral and cognitive data which test the two central hypotheses in the research design. In the two preceding chapters, traditional and modern therapy resources were analyzed so as to present the field of alternatives which constrain therapy behavior and influence beliefs about curing illness in each of the two populations. In this chapter an effort is made to show the ways in which cognitive factors, i.e. disease etiologies, folk assessments of seriousness of illnesses, concepts of the relative power of treatment alternatives, and therapy preferences, determine the expected benefits and costs of therapy decisions. It is proposed that these beliefs and attitudes channel the actors' therapy behavior through the maze of available alternatives so that in curing illness perceived benefits are maximized and perceived costs are minimized.

I. METHODS OF SAMPLING AND DATA COLLECTION

All of the data used to test these hypotheses were

collected from the random samples which represent the two communities in our study. (See Chapter One on the methodology of selecting these random samples.) Most of the data were drawn from two sources within the random samples of homesteads: adult representatives from all of the cooperating sampled homesteads and quotas of homestead members based on prearranged distributions according to sex and age. In each section of this chapter the particular kind of sampling is specified.

Most of the data used to formally test the hypotheses were collected by means of the following kinds of research instruments: question schedules for recording data on illness behavior and beliefs and paired comparison tests for eliciting folk assessments of illness seriousness and therapy effectiveness. The paired comparisons are designed to elicit responses in terms of relative amounts of a given property, e.g. selection of one of two illnesses which is assessed as being the more painful (see Thurstone, 1927, on the method of paired comparisons). In each section of this chapter the method of sampling and the technique of data collection are specified.

We found that we were able to do the most precise analysis of the data on curing illness by grouping therapy responses into three categories: responses to the occurrence of short term episodic illnesses, responses to long term episodic illnesses, and responses to the presence of chronic illnesses. Most Kamba illnesses are described in

terms of the suffering part of the body and/or in terms of the symptomatic experience. With the exception of a Kamba illness such as nyunyi (chronic headache), discussed in Chapter II, which is traditionally described in terms of the causal agent (the "bird in the head"), it is not common for specific illnesses to be described in terms of causation.

In the biweekly visits to each of the fifty-one[1] homesteads, we collected reports on nine hundred and ninety five occurring and prevailing illness cases. In these case reports we kept track of the reported cause of the illness, the time of onset, and the alternatives used for treating these illnesses. In processing these data from the illness cases occurring and prevailing in the two communities, we analyzed the cases as representing kinds of illness on a diachronic continuum: short term episodic illnesses (one day up to one month in duration), long term episodic illnesses (one month through one year in duration), and chronic illnesses (more than two years in duration). The dividing line between short term and long term episodic illnesses is admittedly somewhat arbitrary, but this division is a useful analytical device for constructing a predictive model of therapy because at this point Kamba people are beginning to think and behave in terms of their illness becoming chronic, i.e. they are expecting and

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[1] One homestead in the health center community withdrew from the study prior to the beginning of the biweekly visits.

experiencing chronicity. The dividing line between long term episodic illnesses and chronic illnesses is also arbitrary in terms of the criterion of duration, but all of the illnesses which were reported as having lasted for more than two years were also reported as presently persisting, i.e. also perceived as chronic in the sense of the failure of these illnesses to yield to treatment. After such a long period of time the patient and/or those persons related to him tend to perceive the illness as a permanent part or a characteristic of the sick person. In most chronic cases, the patient and his kin accept the belief that an illness which has persisted for a long period of time will probably continue unless some kind of special treatment is secured which will eliminate the cause. Otherwise they anticipate only minor amelioration of the pain and the discomfort via the selection of ordinary therapies.

II. HYPOTHESIS OF PROXIMITY TO MODERN CLINIC SERVICES

The following proposition is a general statement of the hypothesized relationship between proximity of a modern clinic, therapy behavior, and rural Kamba people's medical knowledge and attitudes:

> Rural Kamba populations who have government clinic services nearer and for longer periods of time are expected to exhibit higher frequencies of utilizing government therapy and to express more understanding of and greater preference for government clinics.

> Longer exposure to new alternatives of curing illness, the lower perceived costs in allocating time and resources to modern therapeutic care, and the expected benefits from consulting government treatment specialists are hypothesized as the major independent variables.

Both temporal and spatial aspects of propinquity are of major concern in testing this hypothesis in two rural Kamba communities. The temporal aspect of propinquity in this controlled comparison is how long modern local clinic services have been available in each community. At the time that the study was initiated, the dispensary community had had services for approximately one year, and the health center community had had services for seventeen years. In Chapter Three the differences in level and variety of health services offered by the Health Center and the Dispensary were also discussed, and these differences are judged to be of less importance in influencing the behavior and beliefs of these two populations than the factor of longer presence of health services in the health center community.

This section will deal mainly with examining data which test the influence of proximity and longevity of health services, particularly the local clinic or outpatient services, on medical knowledge, beliefs and attitudes of rural Kamba people. The influence of proximity of clinic services includes the factor of the relative closeness of the district hospital. The health center community is considerably closer to the district hospital (only eighteen miles), whereas the dispensary community is approximately

thirty six miles from the district hospital. Consequently, the time allocated to travel, the difficulties, and the expenses are much greater for people in the dispensary community.

There is a fairly good dirt road between the health center community and the district center, and several public busses travel daily on this route. In comparison the dispensary community is more isolated from the district hospital partly because of the difficulty in traveling to Machakos Town during the heavy rains. However, comparative accessibility of the district hospital was not found to be an important factor -- mainly because very few persons from both communities were using the district hospital's services.

Comparison of the health center and dispensary monthly reports shows a larger number of visits at the health center outpatient clinic (see Table III-1). However these data do not show the distribution of alternative choices for treating illnesses, nor do the data represent a geographically controlled random sample.

During the months of December, 1968, and January, February, March, April, and May, 1969, the two random samples were visited every two weeks to obtain data on therapies used for each illness episode. These data on self reported therapy behavior have been tabulated.

according to the following categories: (1) type of therapy, (2) folk type of illness, and (3) duration of illness. In each therapy behavior distribution table, all of the recorded therapy responses (including all of the multiple responses in single illness cases) are represented.

Summaries of the reports given by each homestead every two weeks indicate, in accordance with our expectations, that the health center community utilizes government therapy relatively more frequently, whereas the people in the dispensary community rely more than the health center community on shop medicines and traditional therapies (see Tables IV-1, 2, 3, and 4).

However it is important to note that although overall reliance on traditional therapy is greater in the dispensary community than in the health center community, both sample populations have demonstrated fairly low frequencies of resorting to traditional therapy alternatives compared to their very high frequencies of resorting to shop medicine and government therapy for short term episodic illnesses. (Refer to Section III for analysis and discussion of treatment of long term illnesses.)

Sub-hypothesis A: The population with the longer established Health Center will express more knowledge of the health facility's personnel than will the people of the more recently established dispensary community.

In the survey of the homesteads in the two samples the respondents were asked to give the names of the government

TABLE IV-1

Reported selection of therapies for all short and long term episodic illnesses (i.e. all illness episodes with durations of less than one year).

	Health Center community responses (623 cases)	Dispensary community responses (351 cases)
Government therapy	N=273 44%	N=132 38%
Shop medicine therapy	N=219 35%	N=143 41%
Traditional therapy	N= 61 10%	N= 55 16%
Other therapy	N= 7 1%	N= 3 1%
No therapy	N= 87 12%	N= 53 15%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

TABLE IV-?

Reported selection of therapies for short term episodic illnesses (illness cases with durations of less than four weeks)

	Health Center community responses (533 cases)	Dispensary community responses (316 cases)
Government therapy	N=209 39%	N=114 36%
Shop medicine therapy	N=206 39%	N=137 43%
Traditional therapy	N= 43 8%	N= 31 10%
Other therapy	N= 6 1%	N= 3 1%
No therapy	N= 82 15%	N= 49 15%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

TABLE IV-3

Reported selection of therapies for long term episodic illnesses (illness cases with durations of four weeks through one year)

	Health Center community responses (90 cases)	Dispensary community responses (35 cases)
Government therapy	N=64 71%	N=18 51%
Shop medicine therapy	N=13 14%	N= 6 17%
Traditional therapy	N=18 20%	N=24 69%
Other therapy	N= 1 1%	N= 0 0%
No therapy	N= 5 5%	N= 4 14%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

TABLE IV-4

Reported selection of therapies for chronic illnesses (uncured illness cases with durations of more than two years)

	Health Center community responses (10 cases)	Dispensary community responses (11 cases)
Government therapy	N= 8 80%	N= 2 18%
Shop medicine therapy	N= 1 10%	N= 0 0%
Traditional therapy	N= 0 0%	N= 8 73%
Other therapy	N= 0 0%	N= 0 0%
No therapy	N= 1 10%	N= 1 10%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

curers and the government midwives in their local communities. The percentages in Table IV-5 show that the health center community has a significantly greater knowledge of local government clinic personnel than do the people of the dispensary community. The Health Center has had a longer history serving the surrounding population than the Dispensary. As a result, the people in the Health Center community have had more time to become familiar with the local health facility and its personnel.

TABLE IV-5

Knowledge of local government clinicians

	Health Center community sample N=30	Dispensary community sample N=21
Expresses knowledge of local government clinicians	20 (67%)	0 (0%)
Expresses knowledge of health assistant only	1 (3%)	1 (5%)
No knowledge of local government clinicians	9 (30%)	20 (95%)

The inter-community comparison of responses to the question: "Who are the government midwives in this location?" is complicated by the fact that there is no regular

government midwife in the dispensary community. A Dispensary enrolled nurse reported that there had been monthly mother-child health clinic visits by an assistant health visitor from the sub-hospital at the Northern Division center at Kangundo, but these visits were suspended shortly before the beginning of our study. This assistant health visitor had conducted a mother-child health clinic at the Dispensary but she did not offer assistance in the delivery of babies.

TABLE IV-6

Knowledge of local government midwives

	Health Center community sample N=30	Dispensary community sample N=21
Expresses knowledge of local government midwife	20 (67%)	0 (0%)
Expresses knowledge of ungraded female ass't only	0 (0%)	12 (57%)
No knowledge of local government midwives	10 (33%)	9 (43%)

In our survey of the dispensary community none of the respondents reported the name of this female health visitor (see Table IV-6). However, a fairly large percentage of the respondents reported the name of the ungraded female

assistant as a local government midwife. This probably indicates that even though this particular ungraded auxiliary did not practice midwifery for the Dispensary, she was identified as a midwife by many of the local people because of the Kamba tendency to identify all known female personnel at health facilities as isikya (midwives).

Furthermore this ungraded auxiliary worker at the Dispensary was a native of the community, whereas the other two dispensary personnel were from other locations or districts. It appears that the Dispensary has not been providing services long enough for the surrounding population to become sufficiently familiar with its non-native personnel to know their names. In contrast the Health Center's clinicians and midwife are not native but their names have become fairly well known in the community. In summary, it can be concluded that when the native status of health facility personnel is controlled for, the population with the health center expresses prominently more knowledge of the health facility's medical and health staff.

Sub-hypothesis B: The population with the Health Center will express greater knowledge of modern concepts of illness causation than the people in the dispensary community.

One proposition in our research design is that the presence of the government clinic facilities in the health center community for a period of seventeen years would influence the population's concepts about disease causation

as well as effect changes in the population's patterns of seeking treatment. Another research expectation related to this hypothesis is that the people in the isolated dispensary community would express a higher frequency of traditional etiological beliefs, as well as express a lower frequency of modern concepts of illness causation. Specifically, the isolated people will tend to cite sorcerers and ancestor spirits more frequently as agents of misfortune.

This hypothesis has been tested by analyzing the cited causes of all cases of the major illnesses which were reported by the two sample populations.

In Table IV-7 there are summaries of the cited causes of these four frequently reported illnesses. The distribution of responses regarding etiologies indicates some prominent differences between the two communities. The health center community cited mosquitoes as a cause of ndetema ("fever") more frequently than the dispensary community sample. This probably reflects the efforts of the health center personnel to propagate the concept of mosquitoes causing malaria, an illness which includes the symptom of a very high fever. Flowers as "pathogenic agents" of congestion were also cited more frequently in the health center community, but it is difficult to determine whether this particular difference in beliefs can be attributed to modern influence.

There was a prominently higher frequency of reporting

the cause of illness episodes as unknown in the dispensary community. In the course of our study we found that refraining from speculation on the cause of illnesses is traditionally appropriate among the Kamba people. The ordinary person is not considered capable of diagnosing the cause of an illness. Rather he is expected to go to a divining specialist for this kind of information. Exceptions to this generalization would be a case such as tropical ulcers caused by wounds, wherein the agents are easily observable. In this kind of illness, the patient, no matter how traditional his belief system, will volunteer the information that a thorn, a sharp stick or a knife was the agent causing his wound. In eleven cases of tropical ulcer (kitau) reported in the dispensary community ten of these were attributed to a sharp object, and one case was attributed to a blister. However, if a tropical ulcer persists and becomes very troublesome to the patient, then the questions of "Why is the illness persisting for so long?" and "Why is the wound festering and creating so much pain?" will be asked but not answered by the patient. Rather the patient may seek a divining specialist (a mundu mue) to answer these questions. On some occasions when patients reported that they do not know the cause of their illnesses, they added the phrase: "I do not know because I have not been to a diviner yet."

There were certain unanticipated similarities in the response patterns regarding etiologies in the two communities.

TABLE IV-7

Cited cause of four frequently reported illnesses during the months of December 1968, January, February, March, April and May 1969. (Percentages are computed by dividing the number of responses by the total cases.)

	ndetema ("fever") (290 cases)		ikua ("congestion") (155 cases)		kuiwa ni mutwe ("head ache") (97 cases)		kuiwa ni ivu ("stomach ache") (105 cases)	
	Health Center community responses (181 cases)	Dispensary community responses (109 cases)	Health Center community responses (93 cases)	Dispensary community responses (62 cases)	Health Center community responses (58 cases)	Dispensary community responses (39 cases)	Health Center community responses (76 cases)	Dispensary community responses (29 cases)
ndetema ("fever")				N= 8 13%	N= 1 2%	N= 3 8%		
ikua ("congestion")	N=68 38%	N=47 31%			N=12 21%	N=14 36%		
wound, sore and/or swollen glands	N= 6 3%	N= 1 1%			N= 2 3%			
Pregnancy							N=12 16%	N= 1 3%
Rain, coldness, or dampness	N= 9 5%	N= 8 7%	N= 8 9%		N= 3 5%			
Bad water	N=10 5%						N= 2 3%	
Bad, poorly cooked, or green food	N= 8 4%		N= 1 1%				N=14 18%	N= 5 17%
Mosquitoes	N=27 15%	N= 4 4%						
Flowers	N= 3 2%		N=43 46%	N= 1 2%	N= 2 3%			
Dust			N= 8 9%		N= 1 2%			
Hot sun					N=15 26%	N= 6 15%		
"Caught from a sick person"			N= 1 1%	N= 3 5%				
koi ("sorcery")							N= 1 1%	N= 2 7%
ue ("ritual error")	N= 2 1%							
Other cause	N= 3 2%		N= 3 3%	N= 1 2%	N= 4 7%	N= 1 3%	N= 6 8%	
Cause unknown	N=45 25%	N=49 45%	N=29 31%	N=49 79%	N=18 31%	N=15 38%	N=41 54%	72%

For example, in both communities there was practically no indication of knowledge of "catching an illness" such as a cold from another person. The germ theory of disease has not become part of the health center community's medical belief system for two proposed reasons: (1) In the past seventeen years the Health Center clinicians have failed to propagate the concept of the interpersonal spread of contagious diseases and/or (2) the people in the health center community have been resistant to accepting this concept of disease causation because of its affinity to sorcery accusations. (See Cassel, 1955.) Determination of sorcery as a cause of illness and the identity of the sorcerer is the responsibility of a Kamba diviner, and seldom do people publicly speculate about sorcery.

Another similarity between the two communities was the mutual dearth of knowledge of illnesses being caused by consumption of contaminated water or food. Only in one case out of a combined total of sixty-six cases from the two communities was "bad food" cited as a cause of stomach disorder. "Green food" was cited in a combined total of three cases. The general lack of beliefs about food and water causing such illnesses as stomach trouble give indication that these modern concepts of illness causation have not been propagated in either of these communities or that Kamba resist accepting the concept of contamination because of the sorcery analog. (See Cassel, 1955:33, for a discussion of how a Western clinical explanation of a

tuberculosis case was construed by a Zulu chief as an accusation of witchcraft.)

Fairly large numbers of patients in both communities (see Table IV-7) gave reports of one illness causing another illness. A fairly common response was reporting ikua (congestion or the "common cold") as causing ndetema ("fever"). Also in our sequential visits we recorded cases of ikua becoming redefined as ndetema on a subsequent visit.

At the outset of the study it was not anticipated that supernatural explanations of cause would be absent in the patients' discussions of their short term episodic illnesses. In the course of the research we found that when an illness lasted for less than a month, it was uncommon to suspect supernatural causation and to consult traditional practitioners (see Table IV-7). This absence of supernatural explanation at the initial stage of illnesses is directly related to the short time perspective involved and not to a general lack of traditional supernatural concepts of causation in the two communities. That is, chronicity and the related recognition that the illness is difficult to cure indicate to a Kamba person that the illness may be some kind of personal misfortune. Therefore he should consult a diviner to find out whether ancestor spirits are causing him trouble or whether some person has been using sorcery against him. (See Evans-Pritchard, 1937, for the similar finding among the Zande of Sudan.)

The data collected on the folk etiologies assigned to illnesses and deaths in the two communities do not indicate prominent inter-community differences, but the various measures do point in the same direction: a slightly greater emphasis on sorcery as an etiology in the less medically acculturated dispensary community. The health center community cited sorcery once as a cause in one hundred cases, and the dispensary community cited sorcery as a cause in three out of forty-six cases.

In the data collected from the two samples on child mortality we found that the dispensary community population attributed five out of thirty deaths to sorcery (17%) as compared with the health center community's reporting of sorcery in two out of forty three deaths (5%).

In the survey of the two communities a higher number of sorcery cases were reported by the dispensary community sample for the past year than by the health center community sample. Five homesteads out of twenty-two in the dispensary community reported involvement in sorcery cases during the past year (23%), and three homesteads out of twenty-nine in the health center community reported involvement in sorcery cases during the same period (10%). In addition a preventive sorcery ritual called kuvinga musyi (ceremonially closing the homestead compound against sorcerers) is reported slightly more frequently in the dispensary community sample. Six homesteads out of twenty-one[1] reported calling a mundu

[1]No data available from one homestead in the dispensary community random sample.

mue (religious-medical specialist) during the past year for kuvinga musyi in the dispensary community (29%) as compared with six out of twenty-nine in the health center community (21%).

Sub-hypothesis C: The people in the health center community will express a higher frequency of preferences for modern clinic services than the population with the dispensary.

The instrument used to gather data on preferences was a paired comparison test of therapies for each of the twelve illnesses (see Question Set No. 8 in Appendix V). The twelve selected illnesses are commonly occuring and/or prevailing illnesses in both communities. The data were gathered from fourteen females and seven males in the health center community random sample and from seven females and seven males in the dispensary community random sample. We selected males and females according to age quotas so as to gain representation from three age groups: 13 to 19 years; 20 to 34 years; and 35 years and older. The average years of education per person for each of the community samples is: the health center community (1.8 years) and the dispensary community (2.6 years).[1]

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[1]Female status and lack of education both correlate with traditionalism in medical beliefs and behavior. Because these variables are more prevalent in the health center community sample, any bias as a consequence of these variables would be expected to influence the research results in the opposite direction of hypotheses tested.

For determining therapy preferences in the sample groups from the two communities, the respondents were presented with three paired comparison questions for each of the twelve illnesses. The three alternatives which were paired for each illness were "government therapy", "shop medicine therapy", and "traditional Kamba therapy" (consulting a herbalist or a religious-medical specialist). From our research knowledge that these were meaninful responses, i.e. responses wherein each alternative is given an equal rank. As it turned out, less than four per cent of the responses demonstrated this kind of ambiguity, and these ambiguous responses tended to be scattered throughout the sample rather than be concentrated in the response repertories of a few informants. The distributions of first preferences (Tables discussed in this chapter and those in Appendix II) for government therapy, shop medicine therapy, and traditional Kamba therapy are used to test the hypothesis that people in the health center community will express a higher frequency of preferences for modern clinic therapy. (The totals of less than 35 in the preference tables reflect the ambiguous responses wherein each alternative was given an equal rank.)

In totaling the preferred therapies for all of the twelve illnesses, there is a prominently higher percentage of preferences for government therapy in the health center community (see Table IV-8). And whereas there is an equally low percentage of preferences for shop medicine therapy in both communities, the percentage of preferences

TABLE IV-8

Total therapy first preferences for twelve common illnesses.*

	Health Center community responses** (N persons=21)	Dispensary community responses** (N persons=14)	
Preferences for government therapy	N=166 69%	N=67 41%	233
Preferences for shop medicine therapy	N= 24 10%	N=19 12%	43
Preferences for traditional therapy	N= 50 21%	N=77 47%	127
	240 100%	163 100%	403

* ikua (" cold ") , kuiwa ni ivu ("stomach ache"), kuiwa ni kavaso ("sternum pain"), kuiwa ni kithui ("chest pain"), kukooa ("cough"), kwituua ("diarrhea"), kyambo ("pneumonia"), mukambi ("measles"), muluo ("gonorrhea"), mutambuko ("rheumatism"), kuiwa ni mutwe ("head ache"), ndetema ("fever").

** Twelve responses are missing from the health center community sample, and five responses are missing from the dispensary community sample.

for government therapy in the dispensary community is appreciably lower than the percentages in the health center community.

The distributions of therapy preferences for the individual illnesses (see Tables 1-49 in Appendix II) also support our hypothesis in a majority of illnesses. Health center community respondents exhibit preference for government therapy in ten out of twelve illnesses: ikua ("cold"); kukooa ("cough"); mutwe ("head" ache); kithui ("chest" pain); kyambo ("bronchial pneumonia"); kwituua ("diarrhea"); ndetema ("fever"); ivu ("stomach" ache); muluo ("gonorrhea"); and mukambi ("measles"), whereas the dispensary community respondents prefer government therapy in only five of these illnesses: ikua ("cold"); kukooa ("cough"); mutwe ("head" ache); kithui ("chest" pain); and kwituua ("diarrhea"). In reference to the remaining two illnesses a slight majority of the health center community respondents expressed a preference for traditional therapy in treating kavaso (chronic or recurrent pain in the area of the "sternum"), and a large majority expressed a preference for traditional therapy in treating mutambuko ("pain in the limb joints"). A considerably higher percentage of respondents in the dispensary community as compared to the health center community expressed preferences for traditional therapy in the treatment of kavaso ("sternum" pain), and a slightly higher percentage of dispensary community respondents expressed preferences for

treating mutambuko ("pain in the limb joints") with traditional therapy.

Whereas the data are generally in the hypothesized direction for all illnesses, five of the illnesses show particularly marked support of the hypothesis of greater preference for government therapy in the health center community and greater preference for traditional therapy in the dispensary community.

The results for three of the illnesses show high correlations in using a Chi-square measure of association for the dichotomous variable of preferences for traditional and modern government therapy -- an average corrected Pearson contingency coefficient of .73 for mukambi ("measles"), ivu ("stomach" ache), and muluo ("gonorrhea"). (See Tables IV-9. 10. and 11.

The distribution of therapy preferences for mukambi ("meales") indicate a demonstrated preference for and a probable behavioral reliance on traditional therapy among the dispensary community respondents (see Table IV-9.). A traditional method of treatment for mukambi ("measles") is the plastering of the patient's body with red mud and the administration of herbal mixtures. Measles usually occurs among children, and many parents have the traditional belief that children suffering from measles should not be given meat or milk. According to the health center assistant, dehydration becomes a major health problem because of this traditional avoidance of giving the child milk.

TABLE IV-9

Therapy preferences for mukambi ("measles")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	(11.9) N=19 100%	(8.1) N= 1 9%	20
Prefer traditional therapy	(7.1) N= 0 0%	(4.9) N=12 91%	12
	19 100%	13 100%	32*

$X^2 = 22.8$

C = .65 (corrected to .92)

P < .001 (data are from a quota sample)

* Three first preferences are missing.

TABLE IV-10

Therapy preferences for ivu ("stomach" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	(9.8) N=14 74%	(7.5) N= 3 21%	17
Prefer traditional therapy	(9.2) N= 5 26%	(6.8) N=11 79%	16
	19 100%	14 100%	33*

$X^2 = 9$

C = .46 (corrected to .65)

P < .01 (data are from a quota sample)

* Three first preferences are missing.

The prominent association of government therapy for measles in the health center community as compared with the prominent lack of association in the dispensary community probably reflects health education in the health center community. These health education efforts have involved combatting traditional beliefs about the treatment of measles (e.g. avoidance of giving the sick child milk) and encouraging the mothers of sick babies to attend the clinic. The health center community health assistant reported that the measles virus could not be combatted directly, but preventive and ameliorative measures were provided for the people.

TABLE IV-11

Therapy preferences for muluo ("gonorrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	(11.5) N=14 74%	(8.5) N=6 43%	20
Prefer traditional therapy	(7.5) N= 5 26%	(5.5) N= 8 57%	13
	19 100%	14 100%	33 *

$X^2 = 7.60$

C = .43 (corrected to .61)

P < .01 (data are from a quota sample)

* Two first preferences are missing.

The distribution of therapy preferences for muluo ("gonorrhea") indicate that a large majority of the respondents in the health center community prefer government treatment, whereas only a slight majority prefer traditional treatment in the dispensary community (see Table IV-11).

This distribution probably reflects the longer presence of a clinic in the health center community. That is, modern medicines such as the antibiotics are effective in combatting most cases of gonorrheal infection, and consequently in the course of time this knowledge of the effectiveness of government therapy in curing gonorrhea has spread through the population. There is evidence from the distribution of therapy preferences in the dispensary community that this knowledge has also begun to pervade the population surrounding the recently established dispensary.

The distributions of therapy preference responses for ivu ("stomach" ache) exhibit significant differences between the health center community and the dispensary community (see Table IV-10). Whereas seventy-four per cent of the respondents in the health center community prefer government therapy for treating stomach disorders, a similarly high percentage (79%) in the dispensary community prefer traditional therapy. Stomach disorders often tend to become chronic illnesses among the Kamba, and consequently, satisfaction is seldom gained in seeking treatment solely at government clinics or in buying shop medicines.

Because of its common chronicity or periodic reoccurrence, even a community which has had clinic services for seventeen years will tend to rely on several methods of treatment. The people will tend to discontinue ordinary shop medicine remedies when the illness becomes difficult to cure and resort more to modern and traditional specialists for the treatment of ivu (stomach" ache) (Tables IV-12 and 13).

The prominent expression of preference for use of traditional specialists in treating ivu ("stomach" ache) in the dispensary community is probably a reflection of the fact that the dispensary community people have not had a long enough period of exposure to government therapy to have developed confidence in the local clinicians for the treatment of difficult to cure illnesses such as ivu ("stomach" ache).

The therapy preferences for ndetema ("fever") in the dispensary community vary significantly from the preferences exhibited in the health center community, but this variation deviates from the overall pattern (see Table IV-14). There are no exhibited preferences for traditional therapy for treating ndetema ("fever") in either of the communities (see Lindblom, 1920: 317 for his observation of "comparatively few /traditional/ remedies for fever."). Rather, the respondents in the dispensary community expressed a significantly greater percentage of preferences for shop medicine theraphy. An explanation of this variation is that prior to the establishment of this

TABLE IV-12

Therapy preferences for ivu ("stomach" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	(7.5) N=12 63%	(5.5) N= 1 7%	13
Prefer traditional therapy	(11.5) N= 7 27%	(8.5) N=13 93%	20
	19 100%	14 100%	33 *

X^2 = 10.6

C = .49 (corrected to .70)
P = <.01 (data are from a quota sample)

* Two first preferences are missing.

TABLE IV-13

Therapy preferences for ivu ("stomach" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=17 89%	N=14 100%	31
Prefer shop medicine therapy	N= 2 11%	N= 0 0%	2
	19 100%	14 100%	33 *

* Two first preferences are missing.

Dispensary, patterns of utilizing shop medicine anti-malarials such as chloraquin and nivaquin became well established.

TABLE IV-14

Therapy preferences for ndetema ("fever")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	(13.2) N=17 81%	(8.2) N= 5 36%	22
Prefer shop medicine therapy	(7.8 N= 4 19%	(4.8) N= 9 64%	13
	21 100%	13 100%	35

X^2 = 7.8
C = .42 (corrected to .60)
P <.01 (data are from a quota sample)

The behavioral reponses to the onset of ndetema also indicate, but not as prominently as the preference responses, this greater reliance by the dispensary community people on shop medicine. (See Table IV-19 in the following section on the "Hypothesis of Seriousness of Illness.")

Discussion of the Findings. The results of the measures used generally confirm the foregoing proximity hypothesis that the health center community will exhibit more frequent

use of government therapy and express more understanding of and greater preference for government clinics. The differences in reported utilization of government therapy are not very large. However the survey has shown that the health center community population which has had a clinic for a much longer period of time, has acquired considerably more knowledge of health facility personnel than have the dispensary community people.

The data on disease etiologies show greater sophistication in the health center community regarding modern medical concepts of causation. Yet this sophistication is not very prominent and is generally limited to the awareness of mosquitoes as causal agents of ndetema ("fever"). In accord with our research expectations the more isolated dispensary community shows greater concern with sorcery as a cause of persistent illnesses and deaths. However the expression of sorcery as a cause of these misfortunes is not very frequent.

The data on therapy preferences indicate more favorable attitudes toward government therapy in the health center community. For ten of the twelve commonly reported illnesses, the health center community people have expressed greater preference for government therapy. In contrast, both communities have expressed very high frequencies of preference for traditional specialists in the treatment of kavaso ("sternum" pain) and mutambuko ("limb joint pain"). Both of these illnesses tend to be chronic for most afflicted persons.

For most sufferers, kavaso ("sternum" pain) is a reaction to psychological stress. The most commonly reported symptoms are pain in the area of the sternum -- often pain of a burning nature and sometimes penetrating through to the sufferer's back, nausea, and vomiting. Women are the most common sufferers of this illness, and they often complain of having difficulty in making the food go down into the stomach. Sometimes the patient reports the feeling that his kavaso ("sternum bone") or kavoo ("sternum cartilage") is blocking the esophagus pathway. Certain traditional specialists are reputed to be experts in removing these perceived blockages.

Mutambuko ("pain in the limb joints") is generally an illness of aging. It is believed that excessive physical exertion will cause this illness periodically in older persons. There are beliefs among Kamba people that government therapy is not only ineffective in treating mutambuko ("pain in the limb joints"), but that injections given to sufferers of this illness may result in their death. Both of these beliefs have resulted in practically total reliance on traditional measures for the treatment of this Kamba form of rheumatism. Harold Gould (1957) discovered a similar reliance on traditional medicine for the treatment of chronic illnesses in a North Indian village:

> The limited utility of scientific medicine leaves open a relatively permanent area of chronic nonincapacitating dysfunctions within which a primitive system of medical therapy may thrive and continue in a complementary structural position in the folk setting (Gould, 1957:515).

III. HYPOTHESIS OF PERCEIVED SERIOUSNESS OF ILLNESSES

In our study of how Kamba people cope with short and long term illnesses in a medically acculturative situation, we have abstracted a general principle which may account for a fairly large share of the behavioral choices of therapy. This principle of therapy decision behavior can be stated in terms of two related variables: folk assessment of the relative seriousness of occurring and prevailing illnesses and folk assessment of the relative powerfulness of available modern and traditional treatment alternatives. A formal statement of this hypothesis is:

> Members of rural Kamba communities are likely to prefer to seek more powerful therapy alternatives for illnesses which they perceive as more serious. That is: rural Kamba people are expected to choose illness specialists as contrasted with dispeners of ordinary medicines for the diagnosis and treatment of those illnesses which are perceived as difficult to cure (chronic), painful, and discomforting.

Two corollaries of this general hypothesis are:

1. Both the health center and dispensary communities will tend to similarly perceive the modern medicine alternatives (i.e. shop medicines and government therapy) as adequate for the treatment of the less serious illnesses (i.e. for the less difficult to cure and less painful illnesses).

2. However, the longer presence of government medical facilities in the health center community can be expected to have the effect of increasing the perceived power of

the government therapy alternative for the people who live in that community. It can therefore be expected that the data will reveal a greater tendency in the health center community as compared to the dispensary community for people to prefer the government facility for the treatment of illnesses they perceive as being serious, whereas the people in the dispensary community can be expected to express greater preference than those in the health center community for the traditional specialists for illnesses they perceive as being serious.

These corollaries allow us to predict that when an illness does not yield to treatment received in the initial stages, the health center community people will increase their reliance on the health center clinicians, and the dispensary community people will increase their reliance on traditional specialists. It is anticipated that both populations will decrease their reliance on shop medicines (e.g. aspirin, cough syrup, rubbing linament).

The cognitive and behavioral data to test this hypothesis were gathered from the two samples selected from within the two random samples of homesteads (see Section II for a discussion of the influence of age, sex, and education). The instrument used to elicit responses on seriousness was a paired comparison test (see Question Set 8 - Parts I (A) and I (B) in Appendix V). This test of folk assessed seriousness was presented to the

same sample of males and females as reported in Section II of this chapter. Two criteria of seriousness were used: "difficulty in curing" and "pain and discomfort". Twelve commonly occurring and prevailing illnesses were selected for these tests of seriousness. These are the same illness categories which were used for eliciting therapy preferences. By arranging the twelve illnesses in a total possible number of sixty-six dyads for each of the two tests of seriousness, we were able to gain rank order assessments from the twenty-one respondents in the health center community and from the fourteen respondents in the dispensary community.

The data from the seriousness rankings show significantly high rank order correlations between the dispensary community assessments and the health center community assessments of seriousness, i.e. assessments of "pain and discomfort" and "difficulty in curing" (see Tables IV-15 and 16). Both samples have ranked ndetema ("fever"), ikua ("congestion"), and mutwe ("head" ache) as the three least difficult to cure illnesses. The samples of respondents from both communities have also ranked ikua ("congestion") and ndetema ("fever") as the two least painful and discomforting illnesses. There is a very high level of agreement that ikua ("congestion") and ndetema ("fever") are not serious illnesses, and a fairly high level of agreement that mutwe ("head" ache) is not serious. Consequently it is anticipated that this kind of cognitive

TABLE IV-15

Rank orders for assessed pain and discomfort in the two communities.

	Health Center community (21 respondents)	Dispensary community (14 respondents)
muluo ("gonorrhea")	1	3
kvambo ("pneumonia")	2	1
mutambuko ("limb joint pain")	3	4
ivu ("stomach" ache)	4	2
kithui ("chest" pain)	5	6
kwituua ("diarrhea")	6	12
kavaso ("sternum" pain)	7	9
mutwe ("head" ache)	8	8
mukambi ("measles")	9	5
kukooa ("cough")	10	7
ndetema ("fever")	11	10
ikua ("cold")	12	11

Spearman r_s = .74

p <.01 (data are from a quota sample)

TABLE IV-16

Rank orders for assessed difficulty in curing in the two communities.

	Health Center community (21 respondents)	Dispensary community (14 respondents)
muluo ("gonorrhea")	1	2
kyambo ("pneumonia")	2	3
mutambuko ("limb joint pain")	3	1
kavaso ("sternum" pain)	4	7
kukooa ("cough")	5	8
mukambi ("measles")	6	4
ivu ("stomach" ache)	7	6
kwituua ("diarrhea")	8	9
kithui ("chest" pain)	9	5
mutwe ("head" ache)	10	11
ndetema ("fever")	11	12
ikua ("cold")	12	10

Spearman r_s = .82

P < .01 (data are from a quota sample)

agreement between the two communities will be a major influence in effecting convergent inter-community patterns of behavioral selection of therapy for these illnesses.

The other hypothesized influencing factor of attitudes toward modern medicine forthe treatment of the less serious illnesses (e.g. ikua and ndetema) may be measured by examining the expressed therapy preferences for these illnesses in the two communities. For two of the three illnesses which were given low seriousness rankings (ndetema - "fever" and mutwe - "head" ache) all of the respondents in both communities have indicated a preference for modern medicine (government clinic or shop medicine). For the treatment of mutwe ("head" ache) ninety-two per cent of the respondents in the dispensary community and ninety-four per cent of the respondents in the health center community have expressed a preference for the modern medicine alternatives as compared with the traditional medicine alternatives. The only significant variation between the patterns of expressed preferences for therapy between the two communities regarding these illnesses was the preference for shop medicine over government clinic medicine for the treatment of ndetema ("fever") in the dispensary community. This variation probably reflects the reliance on shop medicine which the dispensary community developed prior to the establishment of the government clinic.(See Tables A 2-3, 4, 35, 36, 39, 40, 41, in Appendix II, and Table IV-14.

The reported therapy behavior for short term illnesses (duration of less than one month) in both communities provide strong support of this hypothesis of the relation between assessed seriousness of illnesses, attitudes toward modern medicine and behavioral patterns of selecting therapy.

The therapy reports for two hundred and eighty cases of ndetema ("fever"), one hundred and fifty-two cases of ikua ("congestion"), and ninety one cases of mutwe ("head" ache) demonstrate a very heavy reliance on modern medicine for treating these less serious illnesses in both communities and a very low reliance on traditional medicine for the treatment of these illnesses. (See Tables IV-17, 18 and 19).

An examination of the seriousness rankings of the twelve selected illnesses shows that kyambo ("pneumonia"), muluo ("gonorrhea"), and mutambuko ("pain in the limb joints") are assessed by both community samples as the most painful and discomforting and most difficult to cure illnesses. The samples of respondents from both communities have also ranked ivu ("stomach" ache) as one of the more painful and discomforting illnesses. In regard to this seriousness criterion the health center community ranked ivu fourth, and the dispensary community ranked ivu third. However in regard to the criterion of difficulty in curing, ivu has been given a medium ranking in both communities. (See Tables IV-15 and 16).

Differential attitudes toward the use of available

TABLE IV-17

Reported selection of therapies for ikua - "cold" (cases with duration of less than four weeks)

	Health Center community responses (90 cases)	Dispensary community responses (62 cases)
Government therapy	N=15 17%	N= 7 13%
Shop medicine therapy	N=46 51%	N=39 63%
Traditional therapy	N= 4 4%	N= 6 10%
Other therapy	N= 0 0%	N= 0 0%
No therapy	N=27 30%	N=15 24%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

TABLE IV-18

Reported selection of therapies for kuiwa ni mutwe - "headache" (cases with duration of less than four weeks)

	Health Center community responses (52 cases)	Dispensary community responses (39 cases)
Government therapy	N=17 33%	N=10 26%
Shop medicine therapy	N=33 63%	N=25 64%
Traditional therapy	N= 1 2%	N= 3 8%
Other therapy	N= 0 0%	N= 0 0%
No therapy	N= 5 10%	N= 5 13%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

TABLE IV-19

Reported selection of therapies for ndetema - "fever" (cases with duration of less than four weeks)

	Health Center community responses (171 cases)	Dispensary community responses (109 cases)
Government therapy	N=72 42%	N=43 39%
Shop medicine therapy	N=74 43%	N=53 49%
Traditional therapy	N= 6 3%	N= 4 4%
Other therapy	N= 0 0%	N= 0 0%
No therapy	N=29 17%	N=13 12%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

therapy resources for treating the more serious illnesses (e.g. kyambo, muluo, mutambuko, ivu) prevalent in the two communities may be partially understood by examining the expressed therapy preferences for those illnesses. In regard to ivu ("stomach" ache) the dispensary community sample of respondents expressed a very high percentage of preferences for traditional treatment, whereas the health center community expressed a fairly low percentage of preferences for traditional treatment. (See Tables IV-10, 12 and 13, and Table A2-5 in Appendix II).

The analysis of the data on therapy preferences for muluo ("gonorrhea") indicate significant differences which support the expectation that the dispensary community will exhibit greater preferences for traditional therapy for the more serious illnesses, but the differences regarding kyambo ("pneumonia") are not great enough to be statistically significant considering the relatively small number of respondents. Furthermore there are very high percentages of preferences for traditional alternatives in the treatment of mutambuko ("pain in the limb joints"), but these percentages are equally high in both communities. (See Tables A2 -27, 35, 39 in Appendix II).

The number of reported cases of kyambo ('pneumonia"), muluo ("gonorrhea"), and mutambuko ("limb joint pains") are not sufficiently numerous to make inter-community comparisons of therapy distributions for each of these illnesses. However this part of the hypothesis that the dispensary

community will tend to exhibit greater reliance on traditional specialists for the treatment of the more serious illnesses can be indirectly tested by making inter-community comparisons of therapy distributions for the total number of long term episodic illnesses and also for the reported chronic illnesses from each community. When these results are examined it is found that there is a prominently greater reliance on traditional therapy for the long term episodic illnesses in the dispensary community. (See Tables IV-2 and 3).

In examining the distribution of therapy selection of traditional and modern alternatives in the two communities there is a significant association of reliance on traditional therapies in the dispensary community in contrast to a significant association of reliance on government therapy in the health center community for long term episodic illnesses (see Table IV-20). The chronic illness data also lends strong support to the hypothesis, but the number of cases is too low to allow for tests of significance (see Table IV-4).

The hypothesis may be tested more directly by comparing the selection of therapy distributions of one illness, ivu ("stomach" ache). Comparative analyses have been made in the collection of short term episodic illnesses and in the data on long term episodic illnesses. Since ivu ("stomach" ache) is an illness which among the Kamba has a tendency to occur fairly frequently both as a short term and a long

TABLE IV-20

Reported selection of therapies for long term episodic illnesses (illness cases with durations of four weeks through one year)

	Health Center community responses (90 cases)	Dispensary community responses (35 cases)	
Government therapy	[54.3] N=64 71% (78%)	[27.8] N=18 51% (43%)	82
Traditional therapy	[27.8] N=18 20% (22%)	[14.3] N=24 69% (57%)	42
	82	42	124

Percentages = $\frac{\text{responses}}{\text{total cases}}$ and percentages in parentheses

= $\frac{\text{responses}}{\text{total responses}}$

$X^2 = 15.3$

C = .33 (corrected to .47)

P $< .001$ (data are from a random sample)

term illness, this provides a research opportunity to simulate the expected changes in therapy selection in two stages of one illness.

In the short term stage, the patterns of therapy selection for ivu ("stomach" ache) are similar in both communities, i.e. modern therapy alternatives are chosen more often in both communities for the treatment of ivu cases which do not exceed a month in duration. However when we examine the corpus of ivu cases with durations of four weeks through a year, the dispensary community cases exhibit a pattern of therapy responses which are predominantly traditional, and the health center community cases demonstrate a modern therapy emphasis (see Tables 4-1 and 2 in Appendix II).

This reported therapy behavior for ivu ("stomach"ache) as a short term episodic illness and as a long term illness supports the hypothesis that the more isolated dispensary community will probably rely more on the traditional specialists for the treatment of illnesses which become defined as serious. In addition, the more general and less direct evidence in the distributions of therapy selections for all of the long term illnesses gives further indication that the people who have been more isolated from modern clinic facilities will tend to switch from government services to traditional specialists when a very serious illness prevails or when a moderately serious illness persists and becomes threatening to the patient.

Discussion of the Findings: The data have supported the proposed corollaries and in turn confirmed the general hypothesis of perceived seriousness of illnesses. These corollaries have allowed us to test the influence of chronicity as an independent variable, i.e. the effect of experienced and/or expected chronicity on therapy selection.

Since the other criterion of seriousness, "pain and discomfort," correlates highly with "difficulty to cure" (folk assessed chronicity), both criteria of seriousness are confirmed by the data as factors which have a similar influence on the selection of therapy. Generally stated: when an illness becomes assessed as more painful and discomforting and difficult to cure, the likelihood is increased that the sufferer will resort to treatment specialists. And specifically stated: therapy patterns of the two community populations tend to diverge in the directions of more government therapy for the health center community and more traditional therapy for the dispensary community when the illnesses are perceived as being serious.

Cost-benefit analysis provides explanation for health center community people's increasing their dependence on government clinic specialists and dispensary community people's increasing their dependence on traditional specialists for the treatment of illnesses which are assessed as serious.

Attitudes toward shop medicines are similar in both communities. Both populations perceive the following

benefits in shop medicines:

1. The shops are near the homesteads. There are isolated market plots located approximately three miles in all directions from the market centers. No person has to walk more than a mile and one half from his homestead to a shop.
2. Acquiring shop medicines is a very quick process. This quickness allows time for other activities such as selling agricultural produce in the market areas.
3. Friends, neighbors, or kin run the shops. These primary relationships make the transactions enjoyable and relatively unstressful.

Both populations perceive the following costs in resorting to shop medicines:

1. The shop medicines cost money, whereas some of the same medicines may be acquired at no cost from the government clinic.
2. Shop medicines are not regarded as powerful. They are perceived as pain relievers for easy to cure and self-curing illnesses.

As shown in previous sections, the attitudes toward government therapy vary between the two communities. Yet both populations see the benefit of free medicine from the government clinics. Some shop medicines are not available at the government clinics (e.g. some of the rubbing liniments) and other medicines are not dispensed by the

government clinics in abundance because of the high costs (e.g. antimalarials). Consequently a patient may wait a long time at the clinic hoping to be given his favorite medicine and then be disappointed by being given some other mixture.

Costs which both populations perceive in selecting the government treatment alternative are as follows:

1. Sick persons in both communities see the costs in time of walking long distances to the government clinic and waiting long periods of time for treatment.
2. Both Kamba populations anticipate psychological stress in receiving diagnosis and treatment from persons of another tribe and language.

A major difference in perception of costs and benefits is that the people of the health center community perceive the government clinicians as treatment specialists as well as perceive them as ordinary dispensers of standard medicines. This means that when an illness becomes serious, the people in the health center community tend to discontinue using the shops' remedies and make more visits to the clinic for treatment because of the perceived benefit in using the more powerful therapies of the government specialists for serious illnesses.

The adaptation to modern medicine in the health center community has been a process of the accommodation or passive addition of another treatment alternative to their cognitive

and behavioral systems of coping with illness. The people have learned to benefit from the government clinic without having to make any major cognitive or life style changes.

It appears that the Health Center clinicians have been added to the available repertory of specialists, whereas at an earlier stage, this Health Center was probably perceived in similar terms as the Dispensary appears to be presently perceived, that is: as a government pharmacy which has been added to the repertory of sources of simple medicines.

Both traditional specialists and modern specialists are flourishing in the health center community. The herbalists have begun to concentrate more on such chronic or periodic illnesses as mutambuko ("pain in the limb joints") and ivu ("stomach" ache) and to devote less attention to such illnesses as muluo ("gonorrhea") and kyambo ("pneumonia") which the Health Center clinicians are demonstrating their success in curing to the surrounding population. And to some extent these herbalists have adopted and modified some of the techniques of modern medicine and modern commerce, so as to compete more effectively with the government's outpatient clinics. (See Chapter Two on Traditional Medical Resources.)

The religious-medical specialists continue to flourish because the government clinicians and these traditional specialists, as far as most of the people are concerned, are not competing on the same level of

competency. Whereas the government clinician is a competant empiricist, the religious-medical specialist is an effective supernaturalist. The religious-medical specialists' authority and expertise in dealing with the supernatural cause of misfortune remains largely unchallenged in the health center community.

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

In analyzing how rural Kamba people cope with illnesses, a general principle was abstracted to account for a fairly large share of the behavioral choices among therapies. This formulation of a cost-benefit principle of social change (Barth, 1967) is stated in terms of two related variables: 1) folk assessment of the relative seriousness of occurring and prevailing illnesses which includes difficulty in curing and pain, and 2) folk assessment of the relative powerfulness of available modern and traditional alternatives for the treatment of these illnesses. In his essay on the study of social change Fredrik Barth has stressed the importance of investigating the relationships between values and decision making in rural small-scale societies:

> If we look for the bases on which people make their allocations in primary cultural facts such as people's categorization...and their preference criteria for evaluating different outcomes of their allocations, then we are relating their choices to the cultural values...to which they subscribe (1967:664).

The cost-benefit hypothesis tested is that members of rural Kamba communities are likely to prefer and seek more powerful therapy alternatives for illnesses which they

perceive as serious. For example, Kamba are expected to choose illness specialists rather than dispensers of ordinary medicines for the treatment of those illnesses which are perceived as difficult to cure and painful. A corollary which is confirmed by reported and observational data collected over a period of ten months is that both the populations in the health center community (with seventeen years of clinic service) and the dispensary community (with one year of clinic service) perceived the modern alternatives (i.e. shop medicines and government therapy) as adequate for the treatment of the less serious illnesses.

A second corollary also confirmed is that the longer presence of government clinic facilities in the health center community and the demonstrated effectiveness of the anti-biotic drugs have the effect of increasing the perceived power of the government-therapy alternative for the people who live in that community. This, in turn, increases their reliance on modern medicine for the treatment of the more serious illnesses.

A major intercommunity difference in folk assessment of the costs and benefits of government-therapy is that more persons in the health center community (than persons in the dispensary community) appear to perceive the government clinicians as illness specialists (e.g. specialists capable of eradicating such a very painful and difficult to cure disease as gonorrhea) in addition to perceiving them as dispensers of ordinary medicine for the treatment of

symptoms (e.g. dispensers of aspirin compounds for alleviating a moderately painful and short term headache episode). The behavioral data collected from the random samples of homesteads on a biweekly basis for a period of six months also support the expectation that the local health center clinicians tend to be added to the surrounding populations' repertory of acute and persistent illness specialists.

An additional confirmation of the general hypothesis is that there is a tendency for sick persons in both communities (though it is much more pronounced in the less medically acculturated dispensary community) to decrease their reliance on shop medicines and to increase their reliance on traditional specialists when illnesses become particularly painful and difficult to cure. (For other applications of cost-benefit models to illness and health behavior, see Colson, 1969, and Kasl and Cobb, 1966).

E. E. Evans-Pritchard has advanced a similar principle of seriousness to account for Zande therapy behavior (1937: 479-510). In his discussion of how the Zande of Sudan cope with illness, Evans-Pritchard made the following comments which may be compared with Kamba therapy behavior:

> When a Zande suffers from a mild ailment he doctors himself. There are always older men of his kin or vicinity who will tell him a suitable drug to take. If the ailment does not disappear he visits a witch-doctor. (1937:488) But they do not like to send for a witch-doctor unless sickness is diagnosed as serious, because it is necessary to pay for his services. It is usually the presence of more or less severe pain that persuades them to take that course. (1937:490)

> ...the more serious the disease becomes the less they trouble about administering drugs and the more they consult oracles and make counter-magic. At death the thoughts of a dead man's kindred are directed only towards witchcraft and revenge, to purely mystical causation, while in minor ailments or at the early symptoms of an illness from which a man may be expected to recover without difficulty they think less of witchcraft and more of the disease itself and of curing it by the use of drugs. This is seen in those small ailments in which they are able to give a fairly sure and optimistic prognosis, for they often do not refer them to any supernatural agency at all but simply name them and treat them. Thus, when a man cuts his foot either they do nothing or wash it and bind it with leaves, and it is only when it begins to fester that they commence to trouble about witchcraft. (1937:509)

Evans-Pritchard (1937:479-510) and the medical missionary, De Graer (1929:226-390) whom Evans-Pritchard uses as an additional source of information on Zande therapy beliefs and practices, reported that whereas Zande with minor ailments, such as headaches or cuts, would visit De Graer's clinic or Evans-Pritchard's home for treatment, Zande sick persons with serious illnesses, such as bronchial pneumonia or gonorrhea, would prefer to visit native practitioners who provided special concoctions and rituals for eradicating these diseases and/or preferred to visit those specialists who were able to divine and combat the supernatural agency, i.e. witchcraft or sorcery. In the 1920's Kamba patterns of behavior in coping with illness were probably quite similar to those of the Zande (see Lindblom, 1920).

Evans-Pritchard examines the data on Zande curing in terms of three related dichotomies: (1) minor and serious

illnesses, (2) treatment of the symptoms and removal of the cause, and (3) empirical and supernatural techniques. In using these constructs, Evans-Pritchard has ably demonstrated the correlation between perceived disease seriousness, concern for removal of the cause, and emphasis on supernatural techniques.

Evans-Pritchard's findings are similar to the results in this study regarding the general principle of seriousness: both Zande and Kamba seek more powerful therapy alternatives for treatment of the more painful and difficult to cure diseases, and these more powerful therapy alternatives are obtained from illness specialists in both societies. However, there is a specific and major difference between Evans-Pritchard's findings in rural Sudan in the late 1920's and our findings in rural Kenya among another Bantu group in the 1960's. Whereas the Kamba have indicated in their preferences and in their behavior that there <u>are</u> powerful therapy alternatives in both systems of medicine, the Zande perceived and sought powerful therapy alternatives <u>only</u> in the traditional medical system.

One way of accounting for the differential effect of modern medicine on the Zande (as observed during 1926-1929) and the Kamba (as observed during 1968-1969) is to examine illness beliefs and behavior on three interconnected levels: (1) alleviation, (2) eradication, and (3) prevention of illness, and then assess the impact of modern medicine at each of the three levels. The corresponding questions which

the Zande or Kamba sick person may ask sequentially or simultaneously are: (1) How can I lessen the pain or discomfort?, (2) How can I get rid of the illness?, and (3) How can I prevent its continuation or re-occurrence?

The apparent situation in Zandeland during Evans-Pritchard's investigation in the latter part of the 1920's is that the Zande perceived the representatives of modern medicine as only competent in the process of alleviation, e.g. alleviating the pain of simple headaches. Both the Zande and the Kamba have numerous herbal, magical, and herbal-magical rites which deal with illness at the level of eradication as well as traditional repertories for alleviation and prevention of illness. With the advent of the dramatic success of the anti-biotics in curing such serious bacterial illnesses as bronchial pneumonia and gonorrhea, Kamba people are adding and substituting modern methods for coping with serious illnesses at the level of eradication.

However in 1969 among rural Kamba there is still no indication that modern medicine has made prominent inroads at the level of prevention either in effecting behavioral change or in modifying etiological beliefs. On the basis of our study in rural contemporary Kenya it seems that modern medical technology (e.g. anti-biotic drugs) is not interfering with the pervasive "ancestor spirit--sorcery theory" of causation which has traditionally been used to account for all major misfortune including the onset and

persistence of serious illness. John Nottingham has well summarized the pervasiveness of supernaturalism in modern rural Kamba life:

> As in Homeric Greece so in modern rural Africa, nothing happens except through divine or human will: no-one dies, is born, becomes ill, gets well, falls in or out of love, gains or loses wealth or cattle, in the course of things. Misfortunes occur because somewhere, someone has bewitched you; or somehow, sometime, you have failed to do, or done incorrectly, some prayer or sacrifice. For the pagan rural Mkamba, life has no meaning without sorcery, nor can he trust any explanation of existence, even the Christian God, which excludes it: the natural is the supernatural. (1959:13-14)

At the levels of amelioration (e.g. aspirin compounds) and eradication (e.g. anti-biotics) modern medicine is ably demonstrating its effectiveness to rural Kamba, and consequently shop owners sell large supplies of patent medicines, and government clinics draw large numbers of patients. Yet at the level of prevention or manipulation of the ultimate cause (supernatural or empirical by Western standards, e.g. "spirits" or "conditions") modern medicine provides no alternatives which compete favorably with those offered by the awe (religious-medical specialists). The rural Kamba who has easy access to modern medicine (e.g. shop medicine and government therapy) will tend to alternately rely on the shops and clinic for alleviating pain; jointly or alternately utilize herbalists, religious-medical specialists, and government clinicians for treating serious illness; and exclusively depend on religious-medical specialists, especially those with powers of divination, for deterring

misfortune. For example, many Kamba in the health center community would experience no conflict in resorting to all of the following modern and traditional alternatives: buying shop medicines to alleviate the pain of a headache, seeking a mixture from a herbalist for a persistent stomach ache, visiting a nyunyi expert for the eradication of a chronic headache, attending the health center for injections which may cure bronchial pneumonia, and consulting a diviner for finding out the ultimate cause of a series of misfortunes which may include a chronic case of severe headache and an acute episode of bronchial pneumonia.

Ozzie Simmons found a similar reaction to modern medicine among the Mestizos of coastal Peru and Chile, i.e. a reaction in which modern therapies are added to the "popular repertories" of these cultural groups without any prominent changes in the etiological beliefs of the people:

> The usual pattern is to take the modern cure along with its popular counterpart, regarding it as an additional measure for insuring a successful outcome of the treatment. In both Peru and Chile, interviewing revealed dependence on popular remedies in many families who also had splendid records of attendance at the local health center. (1955:69)

Simmons found that all of the serious diseases and most of the minor ones are classified according to five etiological categories and that the form of treatment varies according to the category with which the illness is identified. For example, among Mestizos in Peru, measles is identified with the etiological category of obstruction.

of the gastro-intestinal tract, and pneumonia is associated with the etiological category of undue exposure to excessive cold or heat. Simmons found that modern therapies are not supplanting popular cures, but instead, are being added to the traditional etiologically based repertories of cures according to "the old pattern of juxtaposition and interchangeability of magical and empirical cures" (1955:70):

> Drugstore preparations and patent medicines are also very popular with the people, while sulfa and penicillin are enthusiastically accepted as wonder-working drugs. However it is important to note that these modern remedies are utilized mostly for the illnesses whose etiologies fall within the categories of gastrointestinal obstruction and heat or cold /as contrasted with the other categories of severe emotional upset, contamination by ritually unclean persons, and exposure to mal aire (bad air)/. Moreover, the modern cures have not replaced popular remedies but have simply been added to the popular repertory. They are regarded as alternative cures, not necessarily as better ones, and are used along with household remedies. (1955:67)

The cultural content and social dynamics of the illness syndrome reported by Simmons on the Mestizo peoples of Peru and Chile is markedly different from the syndrome reported for the Bantu peoples of Sudan and Kenya in Evans-Pritchard's study of the Zande and in this study of the Kamba. Nevertheless there are regularities in how these diverse cultural groups have responded to the introduction of modern medicine. One of these regularities is the tendency for both Mestizo and Bantu peoples to selectively add modern cures to their own repertories rather than substitute modern therapies for analogs in their traditional

medical systems. However among the Kamba who have had a long term exposure to a clinic's modern therapies (e.g. penicillin injections), there are indications that some substitution of modern cures for traditional analogs is taking place. There is evidence that Kamba herbalists are doing less treating of gonorrhea and bronchial pneumonia primarily because afflicted persons are discovering that health center clinicians are able to provide more powerful cures. (See Gould, 1957, and Erasmus, 1952, for discussions of the interactions between systems of folk and scientific medicine in India and Ecuador.)

Another regularity which may be abstracted from Simmons's study in Peru and Chile and from our study in Kenya is the persistence of basic etiological systems among people who have behaviorally adapted to modern medicine:

> The present analysis points to the conclusion that attempts to introduce modern curing practices will have a higher probability of success than attempts to modify basic causal concepts...It is apparent that the people have considered their own theories of disease more useful and adequate than the one advanced by modern medicine, but at the same time they have been willing to accept modern remedies as still another means of curing illness, once they have demonstrated their pragmatic value. (Simmons, 1955:71)

The conclusion advanced by Ozzie Simmons regarding the tenaciousness of traditional systems of disease etiology is consistent with the findings in this dissertation. This kind of resistance to cognitive change accompanied by ready acceptance of modern therapies poses a major difficulty for action programs in countries like Peru or Kenya. Modern

but alien practices of preventive medicine are introduced in folk and tribal communities, yet rejected, either because the relationships between means and ends are not perceived, or the particular modern health benefits are not sufficient to outweight the perceived costs of implementing the programs.

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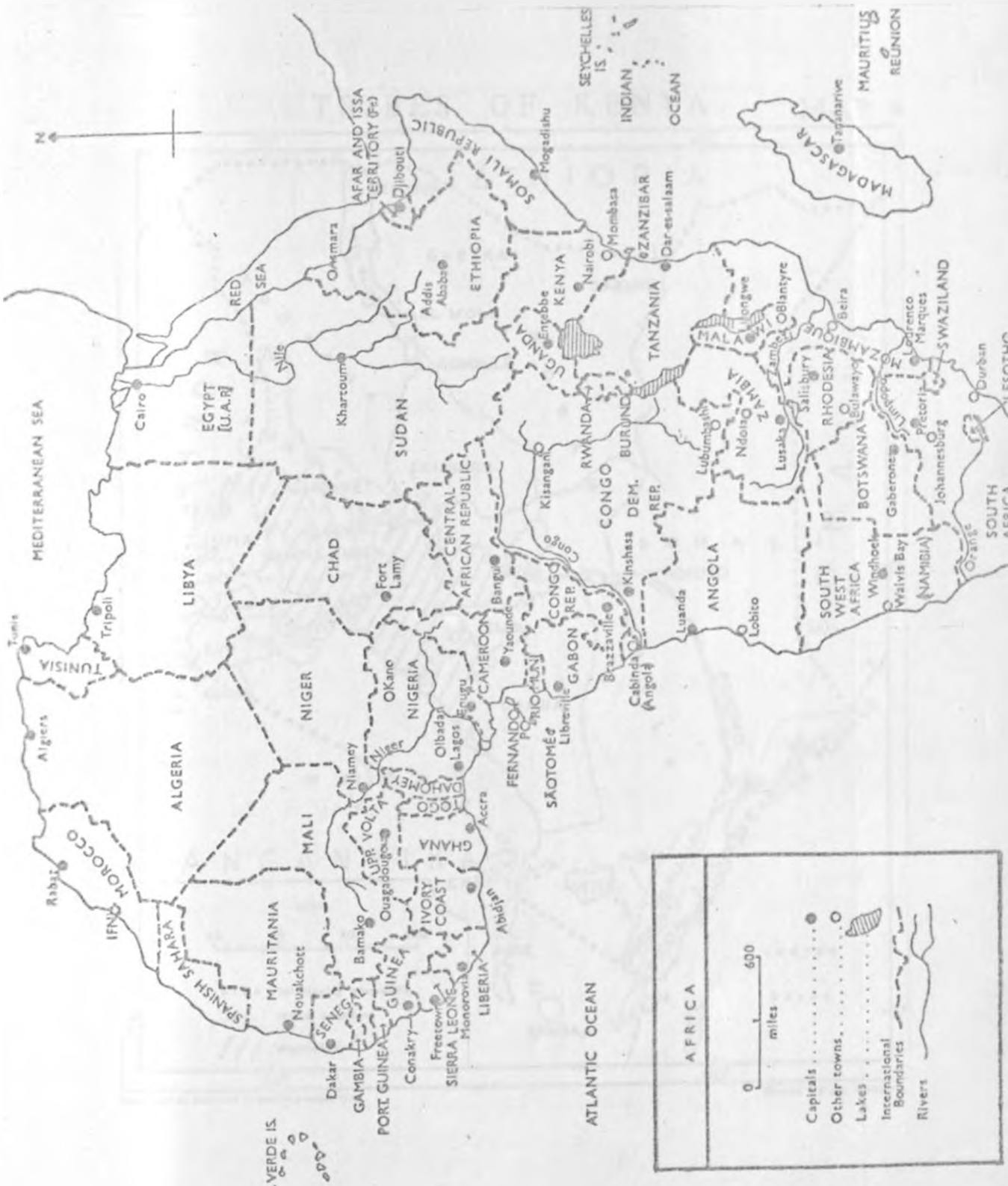
APPENDIX I

MAPS

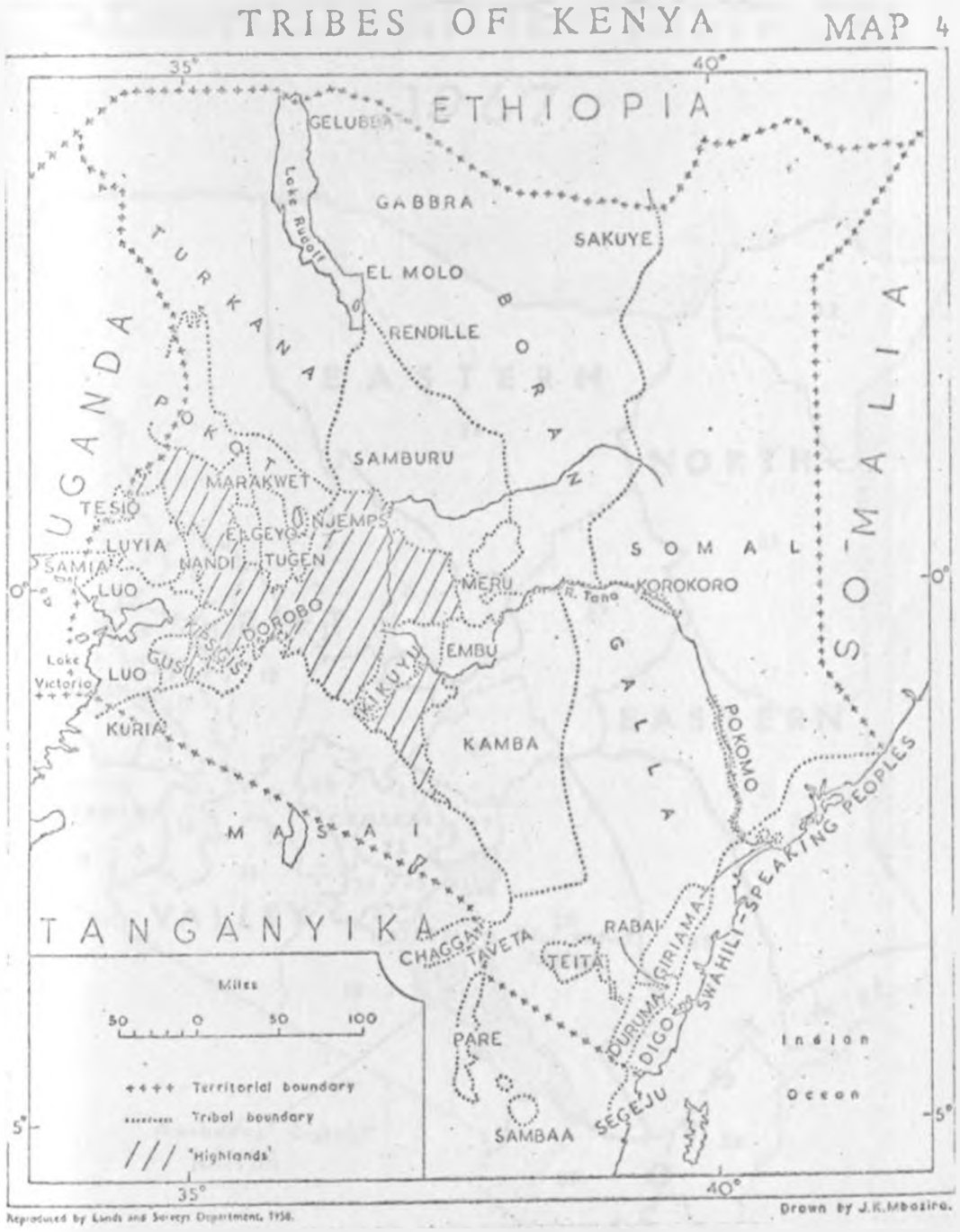
MAP 1

Countries of Africa (from Legum, 1969)



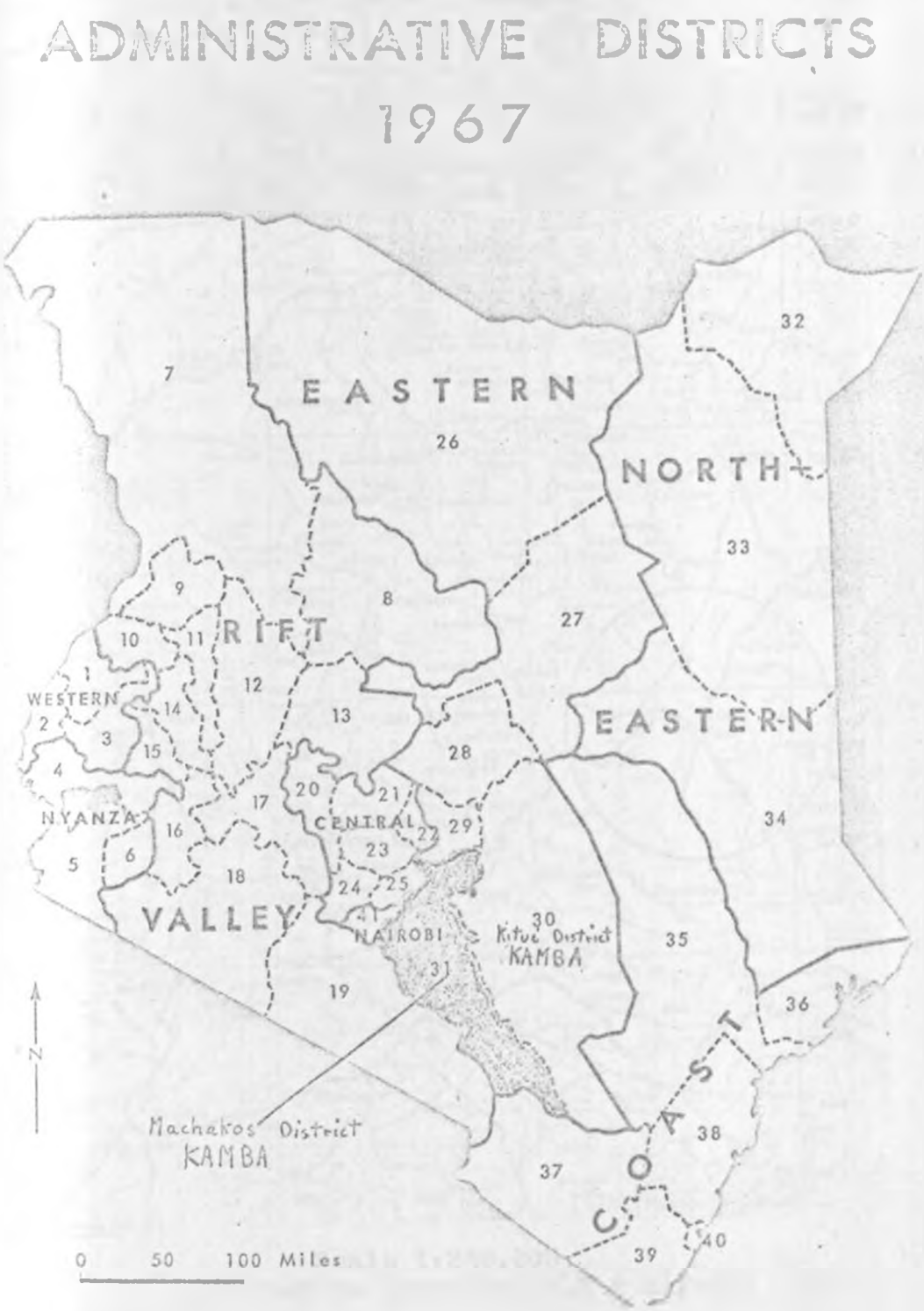
MAP 2

Tribes of Kenya (from Goldthorpe and Wilson, 1960)



MAP 3

Administrative districts of Kenya (from Soja, 1968)



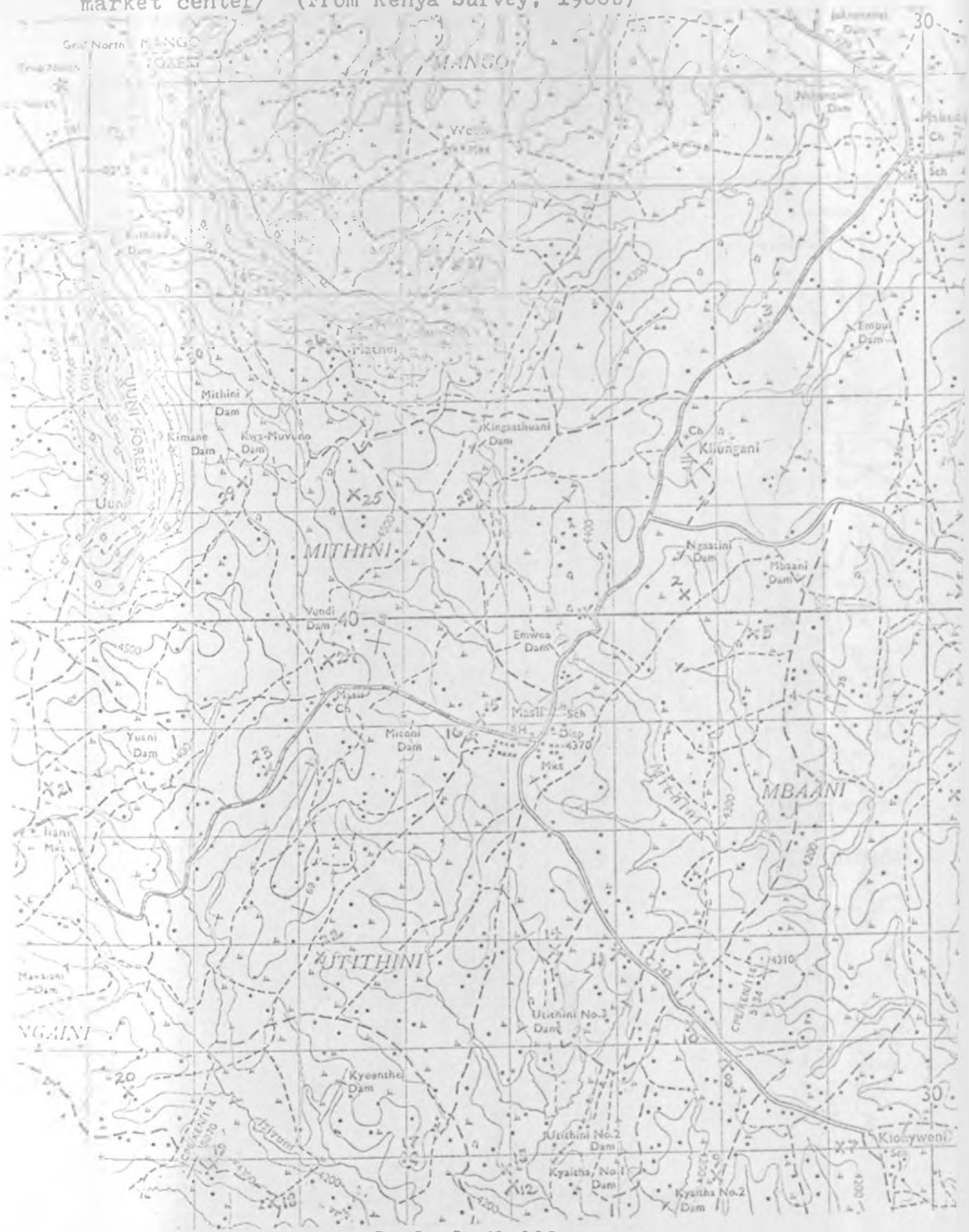
MAP 4

Research areas in central [health center community] and northern [dispensary community] Machakos District (From Kenya Survey, 1968a)

Scale 1:250,000
(1 inch to approximately 4 miles)

MAP 5

Health center community -- Masii, Machakos District [The random sample is located within a 3 mile radius from the market center] (From Kenya Survey, 1968b)



Scale 1:50,000
(1 inch to approximately 0.8 miles)

MAP 6

Dispensary community--Mbiuni, Machakos District [The random sample is located within a 3 mile radius from the market center] (From Kenya Survey, 1968c)

Scale 1:50,000
(1 inch to approximately 0.8 miles)

Health center community

MASII KENYA 1969

From Blankhart, 1969b and Kenya Survey, 1968 b

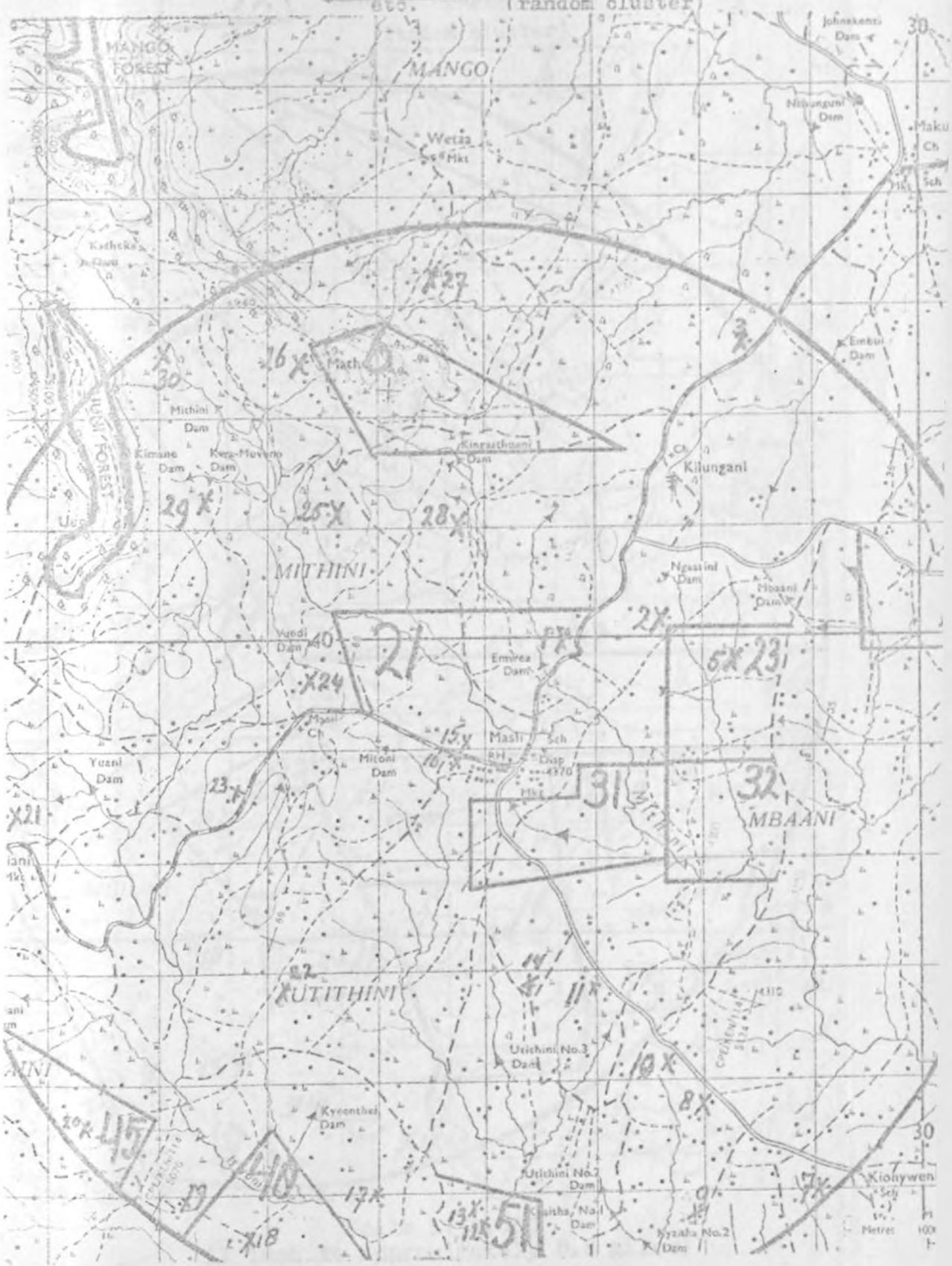
19

X 1-30 Social sample (random homesteads)

NORTH

MAP 7

6 General sample (random cluster)



Scale 1:50,000

(1 inch to approximately 0.8 miles)

Dispensary community

MBIUNI KENYA 1969 [From Blankhart, 1969 b and Kenya Survey, 1968c]

X 1-23 Social sample (random homesteads)

MAP 8

12 General sample (random cluster)

etc.

NORTH

Scale 1:50,000
(1 inch to approximately 0.8 miles)

APPENDIX II

THERAPY PREFERENCE DISTRIBUTIONS
(Not Incorporated Into the Text)

TABLE A2-1

Therapy preferences for ikua ("cold")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=17 80%	N=10 71%	27
Prefer shop medicine therapy	N= 3 14%	N= 3 21%	6
Prefer traditional therapy	N= 1 6%	N= 1 8%	2
	21 100%	14 100%	35

TABLE A2-2

Therapy preferences for ikua ("cold")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=19 90%	N=12 92%	31
Prefer traditional therapy	N= 2 10%	N= 1 8%	3
	21 100%	13 100%	34 *

* One first preference is missing.

TABLE A2-3

Therapy preferences for ikua ("cold")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N=19 90%	N=11 85%	30
Prefer traditional therapy	N= 2 10%	N= 2 15%	4
	21 100%	13 100%	34 *

* One first preference is missing.

TABLE A2-4

Therapy preferences for ikua ("cold")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=19 90%	N=10 76%	29
Prefer shop medicine therapy	N= 2 10%	N= 3 24%	5
	21 100%	13 100%	34 *

* One first preference is missing.

TABLE A2-5

Therapy preferences for ivu ("stomach" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=12 63%	N= 3 21%	15
Prefer shop medicine therapy	N= 2 10%	N= 2 0%	2
Prefer traditional therapy	N= 5 27%	N=11 78%	16
	19 100%	14 100%	33 *

* Two first preferences are missing.

TABLE A2-6

Therapy preferences for kavaso ("sternum" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N= 8 40%	N= 0 0%	8
Prefer shop medicine therapy	N= 3 15%	N= 0 0%	3
Prefer traditional therapy	N= 9 45%	N=14 100%	23
	20 100%	14 100%	34 *

* One first preference is missing.

TABLE A2-7

Therapy preferences for kavaso ("sternum" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N= 8 40%	N = 0 0%	8
Prefer traditional therapy	N=12 60%	N=14 100%	26
	20 100%	14 100%	34 *

* One first preference is missing.

TABLE A2-8

Therapy preferences for kavaso ("sternum" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N= 9 45%	N= 0 0%	9
Prefer traditional therapy	N=11 55%	N=14 100%	25
	20 100%	14 100%	34 *

*One first preference is missing.

TABLE A2-9

Therapy preferences for kavaso ("sternum" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=16 75%	N=14 100%	30
Prefer shop medicine therapy	N= 4 25%	N= 0 0%	4
	20 100%	14 100%	34 *

*One first preference is missing.

TABLE A2-10

Therapy preferences for kithui ("chest" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy.	N=17 80%	N= 8 61%	25
Prefer shop medicine therapy	N= 2 10%	N= 0 0%	2
Prefer traditional therapy	N= 2 10%	N= 5 29%	7
	21 100%	13 100%	34*

* One first preference is missing.

TABLE A2-11

Therapy preferences for kithui ("chest" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=18 86%	N= 8 61%	26
Prefer traditional therapy	N= 3 14%	N= 5 39%	8
	21 100%	13 100%	34*

*One first preference is missing.

TABLE A2-12

Therapy preferences for kithui ("chest" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	(8.0) N=13 61%	(4.9) N= 0 0%	13
Prefer traditional therapy	(12.9) N= 8 29%	(8.0) N=13 100%	21
	21 100%	13 100%	34 *

X^2 = 12.9

C = .52 (corrected to .73)

P <.001 (data are from a quota sample.)

*One first preference is missing.

TABLE A2-13

Therapy preferences for kithui ("chest" pain)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=19 90%	N=13 100%	32
Prefer shop medicine therapy	N= 2 10%	N= 0 0%	2
	21 100%	13 100%	34*

*One first preference is missing.

TABLE A2-14

Therapy preferences for kukooa ("cough")

	Health Center community repondents	Dispensary community respondents	
Prefer government therapy.	N=13 68%	N= 9 69%	22
Prefer shop medicines therapy	N= 1 5%	N= 1 7%	2
Prefer traditional therapy	N= 5 27%	N= 3 24%	8
	19 100%	13 100%	32 *

*Three first preferences are missing.

TABLE A2-15

Therapy preferences for kukooa ("cough")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=14 74%	N=10 77%	24
Prefer traditional therapy	N= 5 26%	N= 3 23%	8
	19 100%	13 100%	32 *

*Three first preferences are missing.

TABLE A2-16

Therapy preferences for kukooa ("cough")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicines therapy	(8.9) N=11 58%	(6.1) N= 4 31%	15
Prefer traditional therapy	(10.1) N= 8 42%	(6.9) N= 9 69%	17
	19 100%	13 100%	32 *

X^2 = 2.29

C = .40 (corrected to .57)

P > .05

*Three first preferences are missing.

TABLE A2-17

Therapy preferences for kukooa ("cough")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=15 78%	N=10 76%	25
Prefer shop medicine therapy	N= 4 22%	N= 3 24%	7
	19 100%	13 100%	32*

*Three first preferences are missing.

TABLE A2-18

Therapy preferences for kwituua ("diarrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=15 71%	N=10 76%	25
Prefer shop medicine therapy	N= 1 4%	N= 0 0%	1
Prefer traditional therapy	N= 5 25%	N= 3 24%	8
	21 100%	13 100%	34 *

*One first preference is missing.

TABLE A2-19

Therapy preferences for kwituua ("diarrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=16 76%	N=10 77%	26
Prefer traditional therapy	N= 5 24%	N= 3 23%	8
	21 100%	13 100%	34 *

*One first preference is missing.

TABLE A2-20

Therapy preferences for kwituua ("diarrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N= 9 43%	N= 2 15%	11
Prefer traditional therapy	N=12 57%	N=11 85%	23
	21 100%	13 100%	34 *

*One first preference is missing.

TABLE A2-21

Therapy preferences for kwituua ("diarrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=20 95%	N=13 100%	33
Prefer shop medicine therapy	N= 1 5%	N= 0 0%	1
	21 100%	13 100%	34 *

*One first preference is missing.

TABLE A2-22

Therapy preferences for kyambo ("pneumonia")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=16 84%	N= 5 38%	21
Prefer shop medicine therapy	N= 0 0%	N= 1 8%	1
Prefer traditional therapy	N= 3 16%	N= 7 54%	10
	19 100%	13 100%	32 *

*Three first preferences are missing.

TABLE A2-23

Therapy preferences for kyambo ("pneumonia")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=16 84%	N= 7 50%	23
Prefer traditional therapy	N= 3 16%	N= 7 50%	10
	19 100%	14 100%	33 *

*Two first preferences are missing.

TABLE A2-24

Therapy preferences for kyambo ("pneumonia")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N= 9 47%	N= 1 7%	11
Prefer traditional therapy	N=10 53%	N=13 93%	23
	19 100%	14 100%	34 *

*One first preference is missing.

TABLE A2-25

Therapy preferences for kyambo ("pneumonia")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=18 95%	N=12 86%	30
Prefer shop medicine therapy	N= 1 5%	N= 2 14%	3
	19 100%	14 100%	33 *

*Two first preferences are missing.

TABLE A2-26

Therapy preferences for mukambi ("measles")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=19 100%	N= 1 8%	20
Prefer shop medicine therapy	N= 0 0%	N= 0 0%	0
Prefer traditional therapy	N= 0 0%	N=12 92%	12
	19 100%	13 100%	32*

*Three first preferences are missing.

TABLE A2-27

Therapy preferences for mukambi ("measles")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy.	N=10 53%	N= 0 0%	10
Prefer traditional therapy	N= 9 47%	N=13 100%	22
	19 100%	13 100%	32 *

*Three first preferences are missing.

TABLE A2-28

Therapy preferences for mukambi ("measles")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=19 100%	N=13 100%	32
Prefer shop medicine therapy	N= 0 0%	N= 0 0%	0
	19 100%	13 100%	32 *

* Three first preferences are missing.

TABLE A2-29

Therapy preferences for muluo ("gonorrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=14 74%	N= 6 43%	20
Prefer shop medicine therapy	N= 1 5%	N= 0 0%	1
Prefer traditional therapy	N= 4 21%	N= 8 57%	12
	19 100%	14 100%	33

*Two first preferences are missing.

TABLE A2-30

Therapy preferences for muluo ("gonorrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N= 4 21%	N= 0 0%	4
Prefer traditional therapies	N=15 79%	N=14 100%	29
	19 100%	14 100%	33*

*Two first preferences are missing.

TABLE A2-31

Therapy preferences for muluo ("gonorrhea")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=18 95%	N=14 100%	32
Prefer shop medicine therapy	N= 1 5%	N= 0 0%	1
	19 100%	14 100%	33*

*Two first preferences are missing.

TABLE A2-32

Therapy preferences for mutambuko ("rheumatism")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy.	N= 3 15%	N= 1 7%	4
Prefer shop medicine therapy	N= 1 5%	N= 0 0%	1
Prefer traditional therapy	N=16 80%	N=13 93%	29
	20 100%	14 100%	34*

*One first preference is missing.

TABLE A2-33

Therapy preferences for mutambuko ("rheumatism")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N= 4 20%	N= 1 7%	5
Prefer traditional therapy	N=16 80%	N=13 93%	29
	20 100%	14 100%	34*

*One first preference is missing.

TABLE A2-32

Therapy preferences for mutambuko ("rheumatism")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N= 1 5%	N= 1 7%	2
Prefer traditional therapy	N=19 95%	N=13 93%	32
	20 100%	14 100%	34 *

*One first preference is missing.

TABLE A2-35

Therapy preferences for mutambuko ("rheumatism")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=17 85%	N=14 100%	31
Prefer shop medicine therapy	N= 3 15%	N= 0 0%	3
	20 100%	14 100%	34 *

*One first preference is missing.

TABLE A2-36

Therapy preferences for mutwe ("head" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy.	N=15 71%	N= 1 64%	24
Prefer shop medicine therapy	N= 6 29%	N= 5 36%	11
Prefer traditional therapy	N= 0 0%	N= 0 0%	0
	21 100%	14 100%	35

TABLE A2-37

Therapy preferences for mutwe ("head" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=21 100%	N=14 100%	35
Prefer traditional therapy	N= 0 0%	N= 0 0%	0
	21 100%	14 100%	35

TABLE A2-38

Therapy preferences for mutwe ("head" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy.	N=20 95%	N=14 100%	34
Prefer traditional therapy	N= 1 5%	N= 0 0%	1
	21 100%	14 100%	35

TABLE A2-39

Therapy preferences for mutwe ("head" ache)

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=15 71%	N= 9 64%	24
Prefer shop medicine therapy	N= 6 29%	N= 5 36%	11
	21 100%	14 100%	35

TABLE A2-40

Therapy preferences for ndetema ("fever")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=17 81%	N= 5 36%	22
Prefer shop medicine therapy	N= 4 19%	N= 9 64%	13
Prefer traditional therapy	N= 0 0%	N= 0 0%	0
	21 100%	14 100%	35

TABLE A2-41

Therapy preferences for ndetema ("fever")

	Health Center community respondents	Dispensary community respondents	
Prefer government therapy	N=21 100%	N=14 100%	35
Prefer traditional therapy	N= 0 0%	N= 0 0%	0
	21 100%	14 100%	35

TABLE A2-42

Therapy preferences for *ndetema* ("fever")

	Health Center community respondents	Dispensary community respondents	
Prefer shop medicine therapy	N=21 100%	N=14 100%	35
Prefer traditional therapy	0%	0%	0
	21 100%	14 100%	35

APPENDIX III

ILLNESS SERIOUSNESS ASSESSMENT DISTRIBUTIONS
(Not Incorporated Into the Text)

TABLE A3-1

Rank orders for "pain and discomfort" and "difficulty in curing" in the health center community (21 respondents).

	Pain and discomfort	Difficulty in curing
mulyo ("gonorrhea")	1	1
kyambo ("pneumonia")	2	2
mutambuko ("limb joint pain")	3	3
ivu ("stomach" ache)	4	7
kithui ("chest" pain)	5	9
kwituua ("diarrhea")	6	8
kavaso ("sternum" pain)	7	4
mutwe ("head" ache)	8	10
mukambi ("measles")	9	6
kukooa ("cough")	10	5
ndetema ("fever")	11	11
ikua (" cold ")	12	12

Spearman r_s = .734

$p < .01$ (data are from a quota sample)

TABLE A3-2

Rank order for "pain and discomfort" and "difficulty in curing" in the dispensary community (14 respondents).

	Pain and discomfort	Difficulty in curing
kvambo ("pneumonia")	1	3
ivu ("stomach" ache)	2	6
muluo ("gonorrhea")	3	2
mutambuko ("limb joint pain")	4	1
mukambi ("measles")	5	4
kithui ("chest" pain)	6	5
kukooa ("cough")	7	8
mutwe ("head" ache)	8	11
kavaso ("sternum" pain)	9	7
ndetema ("fever")	10	12
ikua ("cold")	11	10
kwituua ("diarrhea")	12	9

Spearman r_s = .791

$P < .01$ (Data are from a quota sample)

TABLE A3-3

Rank orders for "pain and discomfort" and "preference for government therapy" in the health center community (21 respondents).

	Pain and discomfort	Preference for government therapy
muluo ("gonorrhea")	1	7
kyambo ("pneumonia")	2	4
mutambuko ("limb joint pain")	3	12
ivu ("stomach" ache)	4	9.5
kithui ("chest" pain)	5	2
kwituua ("diarrhea")	6	8
kavaso ("sternum" pain)	7	11
mutwe ("head" ache)	8	6
mukambi ("measles")	9	1
kukooa ("cough")	10	9.5
ndetema ("fever")	11	4
ikua ("cold")	12	4

Spearman r_s = -.254

P >.05. (data are from a quota sample)

TABLE A3-4

Rank orders for "pain and discomfort" and "preference for government therapy" in the dispensary community (14 respondents).

	Pain and discomfort	Preference for government therapy
kyambo ("pneumonia")	1	7.5
ivu ("stomach" ache)	2	9
muluo ("gonorrhea")	3	6
mutambuko ("limb joint pain")	4	10.5
mukambi ("measles")	5	10.5
kithui ("chest" pain)	6	5
kukooa ("cough")	7	3.5
mutwe ("head" ache)	8	3.5
kavaso ("sternum" pain)	9	12
ndetema ("fever")	10	7.5
ikua ("cold")	11	1.5
kwituua ("diarrhea")	12	1.5

Spearman r_s = -.475

P >.05 (data are from a quota sample)

TABLE A3-5

Rank orders for "difficulty in curing" and "preference for government therapy" in the health center community (21 respondents).

	Difficulty in curing	Preference for government therapy
muluo ("gonorrhea")	1	7
kyambo ("pneumonia")	2	4
mutambuko ("limb joint pain")	3	12
kavaso ("sternum" pain)	4	11
kukooa ("cough")	5	9.5
mukambi ("measles")	6	1
ivu ("stomach" ache)	7	9.5
kwituua ("diarrhea")	8	8
kithui ("chest" pain)	9	2
mutwe ("head" ache)	10	6
ndetema ("fever")	11	4
ikua ("cold")	12	4

Spearman r_s = -.389

P >.05 (data are from a quota sample)

TABLE A3-6

Rank orders for "difficulty in curing" and "preference for government therapy" in the dispensary community (14 respondents).

	Difficulty in curing	Preference for government therapy
mutambuko ("limb joint pain")	1	10.5
muluo ("gonorrhea")	2	6
kyambo ("pneumonia")	3	7.5
mukambi ("measles")	4	10.5
kithui ("chest" pain)	5	5
ivu ("stomach" ache)	6	9
kavaso ("sternum" pain)	7	12
kukooa ("cough")	8	3.5
kwituua ("diarrhea")	9	1.5
ikua ("cold")	10	1.5
mutwe ("head" ache)	11	3.5
ndetema ("fever")	12	7.5

Spearman r_s = -.461

P >.05 (data are from a quota sample)

TABLE A3-7

Rank orders for "pain and discomfort" and "preference for traditional therapy" in the health center community (21 respondents).

	Pain and discomfort	Preference for traditional therapy
muluo ("gonorrhea")	1	6
kyambo ("pneumonia")	2	7
mutambuko ("limb joint pain")	3	1
ivu ("stomach" ache)	4	4
kithui ("chest" pain)	5	8
kwituua ("diarrhea")	6	4
kavaso ("sternum" pain)	7	2
mutwe ("head" ache)	8	11
mukambi ("measles")	9	11
kukooa ("cough")	10	4
ndetema ("fever")	11	11
ikua ("cold")	12	9

Spearman r_s = .534

P $< .05$ (data are from a quota sample)

TABLE A3-8

Rank orders for "pain and discomfort" and "preference for traditional therapy" in the dispensary community (14 respondents).

	Pain and discomfort	Preference for traditional therapy
kyambo ("pneumonia")	1	6
ivu ("stomach" ache)	2	4
muluo ("gonorrhea")	3	5
mutambuko ("limb joint pain")	4	2
mukambi ("measles")	5	3
kithui ("chest" pain)	6	7
kukooa ("cough")	7	8.5
mutwe ("head" ache)	8	11.5
kavaso ("sternum" pain)	9	1
ndetema ("fever")	10	11.5
ikua ("cold")	11	10
kwituua ("diarrhea")	12	8.5

Spearman r_s = .605

$P < .05$ (data are from a quota sample)

TABLE A3-9

Rank orders of "difficulty in curing" and "preference for traditional therapy" in the health center community (21 respondents).

	Difficulty in curing	Preference for traditional therapy
muluo ("gonorrhea")	1	6
kyambo ("pneumonia")	2	7
mutambuko ("limb joint pain")	3	1
kavaso ("sternum" pain)	4	2
kukooa ("cough")	5	4
mukambi ("measles")	6	11
ivu ("stomach" ache)	7	4
kwituua ("diarrhea")	8	4
kithui ("chest" pain)	9	8
mutwe ("head" ache)	10	11
ndetema ("fever")	11	11
ikua ("cold")	12	9

Spearman r_s = .608

$P < .05$ (data are from a quota sample)

TABLE A3-10

Rank orders of "difficulty in curing" and "preference for traditional therapy" in the dispensary community (14 respondents).

	Difficulty in curing	Preference for traditional therapy
mutambuko ("limb joint pain")	1	2
muluo ("gonorrhea")	2	5
kyambo ("pneumonia")	3	6
mukambi ("measles")	4	3
kithui ("chest" pain)	5	7
ivu ("stomach" ache)	6	4
kavaso ("sternum" pain)	7	1
kukooa ("cough")	8	8.5
kwituua ("diarrhea")	9	8.5
ikua ("cold")	10	10
mutwe ("head" ache)	11	11.5
ndetema ("fever")	12	11.5

Spearman r_s = .741

P $< .01$ (data are from a quota sample)

TABLE A3-11

Rank order of 12 illnesses "pain and discomfort" and "preference for shop medicine therapy" in the health center community (21 respondents).

	Pain and discomfort	Preference for shop medicine therapy
muluo ("gonorrhea")	1	8.5
kvambo ("pneumonia")	2	11.5
mutambuko (limb joint pain")	3	8.5
ivu ("stomach" ache)	4	5.5
kithui ("chest" pain)	5	5.5
kwituua ("diarrhea")	6	8.5
kavaso ("sternum" pain)	7	3.5
mutwe ("head" ache)	8	3.5
mukambi ("measles")	9	11.5
kukooa ("cough")	10	8.5
ndetema ("fever")	11	1
ikua ("cold")	12	2

Spearman r_s = -.482

P >.05 (data are from a quota sample)

TABLE A3-12

Rank order of 12 illnesses "pain and discomfort" and "preference for shop medicine therapy" in the dispensary community (14 respondents).

	Pain and discomfort	Preference for shop medicine therapy
kyambo ("pneumonia")	1	4.5
ivu ("stomach" ache)	2	9
muluo ("gonorrhea")	3	9
mutambuko ("limb joint pain")	4	9
mukambi ("measles")	5	9
kithui ("chest" pain)	6	9
kukooa ("cough")	7	4.5
mutwe ("head" ache)	8	2
kavaso ("sternum" pain)	9	9
ndetema ("fever")	9	1
ikua ("cold")	11	3
kwituua ("diarrhea")	12	9

Spearman r_s = -.207

P >.05 (data are from a quota sample)

TABLE A3-13

Rank order of 12 illnesses "difficulty in curing" and "preference for shop medicine therapy" in the health center community (21 respondents).

	Difficulty in curing	Preference for shop medicine therapy
mulvo ("gonorrhea")	1	8.5
kyambo ("pnemonia")	2	11.0
mutambuko ("limb joint pain")	3	8.5
kavaso ("sternum" pain)	4	3.5
kukooa ("cough")	5	8.5
mukambi ("measles")	6	11.0
ivu ("stomach" ache)	7	5.5
kwituua ("diarrhea")	8	8.5
kithui ("chest" pain)	9	5.5
mutwe ("head" ache)	10	3.5
ndetema ("fever")	11	1
ikua ("cold")	12	2

Spearman r_s = -.452

P >.05 (data are from a quota sample)

TABLE A3-14

Rank order of 12 illnesses "difficulty in curing" and "preference for shop medicine therapy" in the dispensary community (14 respondents).

	Difficulty in curing	Preference for shop medicine therapy
mutambuko ("limb joint pain")	1	9
muluo ("gonorrhea")	2	9
kyambo ("pneumonia")	3	4.5
mukambi ("measles")	4	9
kithui ("chest pain")	5	9
ivu ("stomach" ache)	6	9
kavaso ("sternum" pain)	7	9
kukooa ("cough")	8	4.5
kwituua ("diarrhea")	9	9
ikua ("cold")	10	3
mutwe ("head" ache)	11	2
ndetema ("fever")	12	1

Spearman r_s = -.512

P < .05 (data are from a quota sample)

APPENDIX IV

THERAPY BEHAVIOR DISTRIBUTIONS
(Not Incorporated Into the Text)

TABLE A4-1

Reported selection of therapies for kuiwa ni ivu- "stomach disorder" (cases with durations of less than four weeks)

	Health Center community responses (64 cases)	Dispensary community responses (21 cases)
Government therapy	N=30 47%	N= 9 43%
Shop medicine therapy	N=18 28%	N= 3 14%
Traditional therapy	N=14 22%	N= 6 29%
Other therapy	N= 2 3%	N= 0 0%
No therapy	N= 5 8%	N= 5 24%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

TABLE A4-2

Reported selection of therapies for kuiwa ni ivu - "stomach ache" (cases with durations of four weeks through one year)

	Health Center community responses (12 cases)	Dispensary community responses (7 cases)
Government therapy	N= 9 75%	N= 2 29%
Shop medicine therapy	N= 5 45%	N= 2 29%
Traditional therapy	N= 2 17%	N= 6 86%
Other therapy	N= 0 0%	N= 0 0%
No therapy	N= 0 0%	N= 0 0%

Percentages = $\frac{\text{responses}}{\text{total cases}}$

APPENDIX V

QUESTION SCHEDULES AND PAIRED COMPARISONS

Question Set 1

Illness categories: description, prevention, and treatment

Section A

1. What is the most common illness in this location?
2. Other illnesses in this location?
n. Other illnesses in this location?

The following questions in Sections B through H are used for eliciting information on each illness category which has been reported in Section A.

Section B

1. What is the most common symptom of _____?
2. Other symptoms of _____?
n. Other symptoms of _____?

Section C

1. What is the most common way of preventing _____?
2. Other ways of preventing _____?
n. Other ways of preventing _____?

Section D

1. How does a person behave when he has _____?
2. Other ways a person behaves when he has _____?
n. Other ways a person behaves when he has _____?

Section E

1. What is the most common agent causing _____?
2. Other agents causing _____?
n. Other agents causing _____?

Section F

1. Why does a person suffer from _____?
2. Other explanations why a person suffers from _____?
n. Other explanations why a person suffers from _____?

Section G

1. What is the beginning stage of _____?
2. What is a middle stage of _____?
3. Other middle stages of _____?
4. What is the final stage of _____?
5. What is the length of time that a person has _____?
6. Does _____ return in the same person?
7. Please explain why _____ does or does not return in the same person.

Section H

1. What is the most common way of curing _____?
2. Other ways of curing _____?
n. Other ways of curing _____?

Question Set 2

Midwives

1. How long before a baby is due, do you usually help or advise a pregnant woman?

2. What is the most common problem or illness pregnant women have?

2a. What is the cause of this problem?

3. Is there anything that can be done to help a woman with _____?

4. What is the next most common problem or illness pregnant women have?

4a. What is the cause of this problem?

4b. Is there anything that can be done to help a woman with _____?

5. Are there any special things a woman should do when she is pregnant? (Why?)

6. Are there any things a woman should not do when she is pregnant?

6a. Why?

7. Are there any special foods a pregnant woman should eat?

7a. Why?

8. Are there any foods a pregnant woman should not eat?

9. Why should she not eat _____?

10. Are there any herbs or medicines a pregnant woman should take? (Why?)

11. Are there any herbs or medicines a pregnant woman should not take?

12. Why should she not take _____?

13. When was the last time you delivered a baby?

14. When did you first begin helping this woman?

14a. How often did you see this woman before the baby was born?

15. Did this woman have any problems or illnesses during pregnancy?

16. What is the cause of _____?

17. What did you do to help the woman with _____?

18. How did you come to know it was time for the baby to be born?

19. Was there anybody else present to help with the delivery of the baby?

20. Where was the baby born?

21. How long did it take you to reach there?

22. How long did it take after you arrived for the baby to come?

23. How long did you stay with the woman after the baby was born?

24. Would you please describe in detail exactly what you did when you delivered the baby?

25. Were there any unusual problems with this delivery?

25a. What were the causes of these problems?

26. What did you do about _____?

27. How much was the fee?

28. What is the most common problem which occurs at the time of birth?

29. What is the cause of _____?

30. What can be done about _____?

31. What is the next most common problem which occurs at the time of birth?

31a. What is the cause of _____?

31b. What can be done about _____?

32. Has any baby you have delivered not been in the right position?

33. If 'yes', what did you do when the baby was in the wrong position?

34. Has the placenta not come out after any of the babies you have delivered?

35. If 'yes', what did you do when the placenta did not come?

36. Has any woman whose baby you have delivered bled too much?

37. If 'yes', what causes a woman to bleed too much?

38. What did you do when the woman bled too much?

39. Has any baby you have delivered been born dead?

40. If 'yes', what usually causes a baby to be born dead?

41. Have you ever delivered a baby who was born alive but wouldn't start breathing right away?

42. If 'yes', what did you do when the baby would not breathe?

43. Have any babies you have delivered come too early?

44. Was there anything special you did to keep the baby alive?

45. Is there anything that can be done to keep a baby from coming too early?

46. What do you do with the baby's umbilical cord?

47. What do you do with the placenta?

48. How soon after giving birth can a woman return to work?

49. How soon after giving birth do women start nursing their babies?

50. When should a woman start feeding her baby food other than milk?

51. What foods should a woman give her baby before it is one year old or old enough to walk?

52. Are there any foods a woman should not feed her baby before it is one year old or old enough to walk?

53. If 'yes', why can't a baby eat _____?

54. When should women stop nursing their babies?

55. Has any woman whose baby you have delivered not been able to nurse her baby?

56. If 'yes', what did you advise she feed her baby?

57. If 'yes', how should she give this food to her baby?

58. If 'yes', do you advise that she do anything special to keep the utensils clean?

59. Is there anything that can be done to help a woman's breasts produce milk?

60. Are there any special foods a woman should eat when she is nursing a baby?

61. Are there any foods a woman should not eat when she is nursing a baby?

62. Are there any things you advise a woman to do to keep her baby healthy?

63. Are there any other things a woman should do to keep her baby healthy?

64. Should a mother give her baby any herbs or medicines to keep her baby healthy?

65. If 'yes', what herbs or medicines should a mother give her baby?

66. Are there any herbs or medicines that are not good for babies?

67. What is the most common illness new born babies have?

68. What can be done for _____?

69. What is the next most common illness new born babies have?

69a. What can be done for _____?

70. When can a woman start having intercourse after she has had a baby?

71. Is there any (other) time when a woman should not have intercourse?

72. Should a woman have intercourse while she is pregnant?

73. When during a woman's menstrual cycle are babies usually conceived?

74. Are there any other times when babies are usually conceived?

75. Are there any times during a woman's menstrual cycle when she can not conceive a baby?

76. Are there any (other) times when a woman cannot conceive a baby?

77. If a woman wants to have a baby but does not get pregnant, are there any special things you advise her to do to increase her fertility?

78. If a woman has all the children she wants, is there anything she can do to keep from having a baby?

79. Is there any other thing a woman can do to keep from having a baby?

80. If a baby is already starting inside a woman who does not to have a baby, is there anything she can do to keep from having the baby?

81. How old were you when you first started working as a midwife?

82. How did you learn to be a midwife?

83. Did you inherit the ability to be a midwife?

84. Have dreams helped you in being a midwife?

85. Has anyone ever learned from you to be a midwife?

Question Set 3

Homestead Survey

Part I

Section A - Crops grown on farm.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Section B - Livestock raised on farm.

1. _____
2. _____
3. _____
4. _____
5. _____

Section C - Animals and birds hunted near farm.

1. _____
2. _____
3. _____
4. _____
5. Bow and arrow? Circle yes or no.

Section D

1. What foods do the children eat? _____

_____

2. What liquids do the children drink? _____

_____

3. What foods do the men eat? _____

_____

4. What liquids do the men drink? _____

_____

5. What foods do the women eat? _____

_____

6. What liquids do the women drink? _____

_____

7. What foods do members of the compound avoid eating? ___

_____

8. What liquids do members of the compound avoid eating? _

_____

9. Did members of the compound take part in rituals to prevent illness during this past year? _____. Names of these persons? _____

_____

Names of these rituals _____

10. Where did the rituals for preventing illness take place?

_____

11. Who was the leader of the rituals to prevent illness?

_____

12. When did the rituals for preventing illness take place?

_____

13. Did persons in this compound become sick because of wizardry during this past year? _____. Names of persons having become sick? _____

_____

14. When did this person or these persons become sick because of wizardry? _____

15. Who caused this person or these persons to become sick? _____. Ask for the relationship. Do not ask for the wizard's name.

16. What measures have been used to break the spell? _____

_____

17. What have members of this homestead done to prevent having wizardry used against them? _____

_____

18. Who are the awe in this location? _____

_____

19. Who are the isikya in this location? _____

_____

20. Who are the akimi ma miti in this location? _____

_____

21. Who are the government curers in this location? Names and place of practice? _____

22. Who are the government midwives in this location? Names and place of practice? _____

23. Do you have a person with mental illness in this compound? _____ His or her name _____

24. What was the cause of his or her mental illness? _____

_____

25. How does this mentally sick person behave? _____

_____

26. Has any member of this compound died during this past year (including any children)? _____. His or her name?

_____

27. What or who was the agent causing his or her illness?

_____

28. What ways of curing were tried? _____

_____

29. Why did he or she die? _____

_____

30. How was the dead body disposed of? _____

_____

31. What was done with the clothing of the dead person? ___

_____

32. What kind of funeral was held for the person who died?

_____

33. Has any man in this compound taken a wife during this past year? _____ His name? _____

Wife's name? _____

34. What kind of marriage ceremony did they have? _____

_____

35. Have any babies been born in this compound during this past year? _____ Their names? _____

Names of mothers _____

36. Names of midwives who helped with these births? _____

_____

37. Have any of these babies died? _____ Their names? _____

_____

38. What illnesses did these babies die of? _____

_____

39. What or who were the agents causing these illnesses?

_____

40. How long did these babies have these illnesses prior to dying? _____

41. Why did this baby or these babies get these illnesses?

_____

_____

42. What ways of curing were tried on these babies? _____

_____

Section E

1. Where is the washing of clothes done? _____
2. Where do women wash themselves? _____
3. Where do women wash their children? _____
4. Where do men wash themselves? _____
5. What market do members of this homestead usually attend?

_____

6. How often do they attend this market? _____
7. Last visit to this market? _____
8. Other markets which are sometimes visited? _____

_____

9. Where is water obtained? _____
10. How and where is water stored? _____

_____

Section F - Names of all persons living in the homestead.

No.	Name	Age	Name of biological mother.	Name of biological father.
1.				
2.				
3.				
4.				
5.				
n.				

Place an asterisk * to the left of married men's names and married women. Circle numbers of members of the homestead who are present during first visit. Underline the name of the head of the homestead.

Section G - Use Section F as a guide for asking questions about each member of this homestead. Ask what illness or illnesses each person has had during the past year. Write the kikamba name of the illness. If the person is presently suffering from the illness, then write "presently" in brackets below the illness term. If a person has had more than one illness during the past year, then list all illnesses of this person before going on to the next person.

a. Person's number

b. Illness

c. Cause of illness

d. Length of illness

e. Way or ways of curing

Section H - Use Section F as a guide for asking questions about each married man and each married woman in the homestead.

a. Person's number

b. Clan

c. Religion

d. Occupations

e. Type and age of circumcision

f. Type and age of marriage

g. Name of wife(s) or husband

h. Name of location before marriage

i. Name of sub-location before marriage

j. Years of school

Part II

Section A - Biweekly recording of illness episodes

a. Date of recording

b. Person's number

c. Illness

d. Cause

e. Length

f. Way or ways of curing

g. Presently suffering

h. Had illness before

i. Death

Section B - Biweekly recording of visits to the market

a. Date of recording

b. Person's number

c. Market attended

d. Dates

e. Items sold

f. Money earned

g. Items bought

h. Money spent

i. Transportation expense

j. Other activities at the market center

Part III

Section A

1. Number of buildings which people are living in? _____
2. Type of floors in these buildings which people are living in? _____
3. Type of roofs on these buildings which people are living in? _____
4. Type and number of latrines which the people are using, if any? _____
5. Number of granaries? _____
6. Number of cows? _____
7. Number of goats? _____
8. Number of sheep? _____
9. Number of chickens? _____
10. Types and numbers of homemade equipment? _____

_____

_____

11. Types and numbers of factory made equipment? _____

_____

12. Borehole for water? Yes or no.
13. Oxen and plow? Yes or no.
14. Bicycle? Yes or no.
15. Automobile? Yes or no.
16. Tractor? Yes or no.

Section B

1. Has anyone in this compound taken the kithitu or ndundu? _____
2. Name of the oath _____
3. Names of the persons who took the oath:

4. When was the oath taken? _____
5. What were the reasons for, or cause of, taking the oath?

6. What was the length of time set for the oath to have power?

7. What were the results of taking the oath?

Continuation of Part I, Section D, Question 35 (Case study questions)

1. When was _____ born?
2. Where was _____ born?
3. Who helped you with the delivery? (Get names and relationship of all persons present.)
4. When did you first go to get advice or help from _____?
5. How often did you see _____ before your baby was born?
6. Did you have any problems or illnesses while you were pregnant?
7. Did you do any special things while you were pregnant to keep you and your baby healthy?

8a. Did you avoid doing any special things while you were pregnant?

8b. How long before your baby was born did you stop having intercourse?

9. What did you usually eat every day while you were pregnant?
10. Did you eat any special foods while you were pregnant to keep you and your baby healthy?
11. How often did you eat _____?
12. Did you avoid eating any foods while you were pregnant? (Why?)
13. Did you take any medicines or herbs while you were pregnant? (Why?)
14. Did you avoid taking any special medicines or herbs while you were pregnant? (Why?)
15. How long before your baby came was _____ there to help you?
16. Would you please describe in detail what happened while your baby was coming and what happened right after your baby was born?
17. Did you have any problems at the time of delivery?

18. How long after your baby was born did _____ stay with you?

19. What was her fee for delivering your baby?

20. How long did you wait after your baby was born before returning to work?

21. When did you first start nursing your baby?

22. Are you still nursing your baby?

23. If 'no', when did you stop nursing your baby?

24. If 'no', why did you stop nursing your baby?

25. If 'yes', when do you plan to stop nursing your baby?

26. What have you eaten today?

27. What did you eat yesterday?

28. Do (did) you eat any special foods while nursing your baby?

29. Do (did) you avoid eating any special foods while nursing your baby?

30. Do you ever give your baby water?

31. If 'yes', what do you put the water in?

32. If 'yes', do you do anything special to prepare the water?

33. Do you feed your baby any food other than milk? (What?)

34. What have you fed your baby today?

35. What did you feed your baby yesterday?

36a. How often do you feed _____ to your baby?

36b. How often do you prepare _____?

37. How do you give _____ to your baby?

38a. Are there any foods which are not good for babies before they are 1 year old?

38b. When will you start feeding your baby: (Specific species? How often?)

(a) porridge? (c) fruit? (e) eggs?
(b) vegetables? (d) cow's or goat's milk? (f) chicken? (g) meat?

39. When did you first start giving your baby sun?

40. How long did you put your baby in the sun at first?

41. How much sun does your baby get now?

42. Has your baby been ill at any time?

43. If 'yes', what have you done to cure the baby of this illness?

44. Do you do anything special to keep your baby healthy?

45. How often do you wash your baby?

46. What do you wash your baby in?

47. Do you give your baby any medicines or herbs?

48. If 'yes', how often do you give your baby _____?

49. If 'yes', where do you get _____?

50a. Are there any herbs or medicines that are not good for babies under one year old? (Why?)

50b. Has your baby been vaccinated or innoculated against any illness?

51. If 'yes', when was your baby innoculated against _____?

52. Where did your baby receive this innoculation?

53. Do you plan to have your baby innoculated against any (other) illnesses?

54. If 'yes', what do you plan to have your baby innoculated against? _____?

55. If 'yes', where do you plan to have your baby innoculated against this illness?

56. Where does your baby sleep?

57. Does anyone else care for your baby other than yourself?

58. If 'yes', when does _____ care for your baby?

59. If 'yes', does _____ ever feed your baby?

60. Does your baby (a) hold up his head? 1-2 mos.
(b) roll over? 4-5 mos.
(c) crawl? 7-8 mos.
(d) sit up by himself? 8-9 mos.

(e) stand by himself? 9-10 mos.
(f) say any words? 10-12 mos.
(g) walk? 12+ mos.

1. When do you expect your baby to start controlling his bowel movements?

2. Where will he go to have his bowel movements?

3. When do you expect your baby to start controlling his urination?

4. Where will he go to urinate?

5. How long after having your baby could you start having intercourse again?

6. How many children do you want to have?

7. Do you know of any ways a woman can increase her fertility if she is having difficulty conceiving a baby?

68. Do you know of any ways a woman can keep from having a baby if she does not want more children?

69. Does conception occur at any special time of the menstrual cycle?

70. Is there any other special time when conception can occur?

71. Is there any time during a woman's menstrual cycle when conception does not occur?

72. Is there any (other) time when conception cannot occur?

73. Are you expecting another baby?

Question Set 4

Traditional curing and problem solving specialists

1. As a helper of other people, what do you call yourself?
2. What kinds of problems do people bring to you?
3. Do you give or witness the kithitu? If yes, describe the last time you did this.
4. Do you give the ndundu? If yes, describe the last time you did this.
5. Do you perform the ng'ondu ceremonies? If yes, what kinds of ng'ondu ceremonies do you perform?
6. Do you do kuusya misyi (ubito ceremony)? If yes, please describe the last time you did this ceremony.
7. Do you do kuvinga misyi (mbingo ceremony)? If yes, please describe the last time that you performed this ceremony.
8. Do you do kuvingwa? If yes, please describe most recent ceremony.
9. When did you begin practicing your skills? How old were you when you began practicing? What caused you to decide to do this kind of work?
10. Did you inherit your skills? If yes, who did you inherit your skills from?
11. Did ancestors speak to you in a dream? If yes, which ancestors were those who spoke to you? If yes, what did these ancestors (maimu) tell you?
12. Were there other signs telling you to be a curing specialist?

12a. Did any living person teach you some of these skills? If yes, what person taught you some of these skills? Which skills did he teach you?

13. Are you a kuthemba leader? (If interviewing a woman, ask if she is a kilumi leader). If yes, describe the last time you did this.

14. Do you do uvoo wa kuausya? If yes, describe the last time you did this?

15. If yes to question 14, what are the different kinds of problems which you are able to find out the cause of by uvoo wa kuausya?

16. Do you treat the illness mbusu? If yes, describe the last time you did this.

17. Do you treat the illness nduuka? If yes, describe the last time you did this.

18. What illnesses can best be cured by you?

19. What was the last case which was brought to you by a suffering person? (Or on the revisits: "What cases have you treated in the past two weeks?")

20. What did you do to help this person? What payment did you receive?

21. Was this person male or female?

22. About how old was this person?

23. Has this person come to you for help before?

24. If yes to Question No. 25, when did this person come for help before?

25. If yes to Question No. 25, what was the problem which this person brought to you before?

26. If yes to Question No. 25, what did you do to help this person when he came to you before?

Question Set 5

Government clinicians and health assistants

1. What preventive medicine or health education programs have taken place at this health center during this past year?
2. What preventive medicine programs are expected to take place during the remainder of this year?
3. Do you issue death certificates or keep death statistics at this health center?
4. Do you keep records of babies born per month and per year at this health center? Do you have any records of babies born outside the health center?
5. How many persons do you have working in this health center? Their training and grades? Their work assignments?
6. How long has this been a health center? How long was this a dispensary before becoming a health center?
7. What improvements in this health center do you expect during the next year?
8. What improvements in this health center would you like to see during the next couple of years?
9. When did health center circumcision take place last year?
10. Do you have records of how many boys were circumcised?
11. What caused you to decide on a medical career?
12. Where did you do your training?
13. How long was your training?

14. What is your medical grade within Kenya's medical service?

15. What is your title at this health center?

16. How long have you been working as a medical worker?

17. How long have you been working at this health center?

18. Where were you working before coming here?

19. What was your title at the last place you worked?

20. What do you regard as the most serious health problem in this area?

Question Set 6

Infant birth and morality; divorce

Name of person to be interviewed _____. Age ____

Name of husband _____. Age ____

Name of guardian _____. Age ____
(If husband is deceased)

Relationship of guardian _____
(Write in Kikamba)

Diagram of relationship of guardian:

I. Children who are living (Start with the oldest child and finish with the youngest child):

	Name	Father	Sex	Age	Born where?
1.					
2.					
3.					
4.					
5.					
n.					

II. Children who have died (Start with the first child who died and finish with the last child who died):

Name	Father	Sex	Age at death?	Cause of death? (Write in Kikamba)
1.				
2.				
3.				
4.				
5.				
n.				

III. Previous marriages (if any):

A. Have you had a previous marriage? _____. If the person replies "yes", then ask the following questions.

B. Previous husband's name? _____

C. Reasons for ending the marriage? _____

_____

_____

D. Children from this marriage who are living (Start with the oldest child and finish with the youngest child):

Name	Sex	Age	Born where?	Living where now?
1.				
2.				
3.				
4.				
5.				
n.				

E. Children from this marriage who have died (Start with the first child who died and finish with the last child who died):

	Name	Sex	Age	Cause of death (Write in Kikamba
1.				
2.				
3.				
4.				
5.				
n.				

Ask this person if she has had other previous marriages. If she replies "yes", then use additional printed forms to ask these questions.

Question Set 7

Chronic Illnesses

1. Name of person or persons interviewed?

2. Date of the interview?

3. Compound number?

4a. Name of person with chronic illness? 4b. Sex? 4c. Age? 4d. Years of school?

5. Name of the chronic illness? (Kamba term and an approximate English translation)

6. How long has the person had this illness?

7. What are the symptoms of the illness?

8. What do you think has been the cause or the causes of this illness?

9. What different kinds of treatment have you tried for this illness? (After the respondent has given his first response, then ask him or her:

    a. Have you gone to a health center or hospital? What kinds of medicine were given to you?

    b. Have you gone to a herbalist? What is the name of the herbalist? What particular herbs did he give you?

    c. Have you bought shop medicines for this illness? What were the particular medicines which you bought?

    d. Have you gotten any other kinds of treatment for this illness?

10. Are you interested in having a doctor examine and treat you?

11. Observations of the chronic illness and related factors.

Question Set 8

Paired comparisons of illnesses and therapies

Person interviewed _____ Age _____.

Sex _____. Yrs. of school _____.

Part I(A) Which illness brings more pain and discomfort?

1. mutambuko - mukambi
2. mukambi - muluo
3. ivu - kukooa
4. ikua - kithui
5. kithui - ndetema
6. ndetema - ivu
7. mutwe - kithui
8. mutambuko - kyambo
9. mutambuko - ndetema
10. mukambi - ivu
11. mukambi - kavaso
12. kavaso - ivu
13. muluo - kavaso
14. kwituua - mukambi
15. ikua - kukooa
16. kyambo - ivu
17. mutwe - kwituua
18. kyambo - ndetema
19. kavaso - kwituua
20. ivu - ikua
21. mutambuko - kavaso
22. kwituua - mutambuko
23. kavaso - kukooa
24. kithui - mukambi
25. muluo - ivu
26. muluo - mutwe
27. kukooa - kyambo
28. kyambo - mukambi
29. kyambo - kavaso
30. kukooa - mutambuko
31. ivu - kwituua
32. kithui - kyambo
33. kyambo - muluo
34. mukambi - ndetema

35. kavaso - ndetema
36. ndetema - kukooa
37. mukambi - ikua
38. ikua - kwituua
39. ivu - kithui
40. mutambuko - ivu
41. ndetema - mutwe
42. muluo - ndetema
43. kithui - kavaso
44. ivu - mutwe
45. ndetema - kwituua
46. ikua - mutwe
47. muluo - kukooa
48. kwituua - kithui
49. ikua - mutambuko
50. mukambi - mutwe
51. kwituua - muluo
52. kithui - mutambuko
53. kukooa - mukambi
54. kukooa - kithui
55. kavaso - mutwe
56. ndetema - ikua
57. muluo - ikua
58. kithui - muluo
59. mutambuko - muluo
60. mutwe - kukooa
61. kukooa - kwituua
62. mutwe - kyambo
63. kavaso - ikua
64. mutwe - mutambuko
65. kwituua - kyambo
66. kyambo - ikua

Part I(B) Which illness is more difficult to cure?

1. mukambi - mutambuko
2. muluo - mukambi
3. kukooa - ivu
4. kithui - ikua
5. ndetema - kithui
6. ivu - ndetema
7. kithui - mutwe
8. kyambo - mutambuko
9. ndetema - mutambuko
10. ivu - mukambi
11. kavaso - mukambi
12. ivu - kavaso
13. kavaso - muluo
14. mukambi - kwituua
15. kukooa - ikua
16. ivu - kyambo
17. kwituua - mutwe
18. ndetema - kyambo
19. kwituua - kavaso
20. ikua - ivu
21. kavaso - mutambuko
22. mutambuko - kwituua
23. kukooa - kavaso
24. mukambi - kithui
25. ivu - muluo
26. mutwe - muluo
27. kyambo - kukooa
28. mukambi - kyambo
29. kavaso - kyambo
30. mutambuko - kukooa
31. kwituua - ivu
32. kyambo - kithui
33. muluo - kyambo
34. ndetema - mukambi
35. ndetema - kavaso
36. kukooa - ndetema
37. ikua - mukambi
38. kwituua - ikua
39. kithui - ivu
40. ivu - mutambuko
41. mutwe - ndetema
42. ndetema - muluo
43. kavaso - kithui
44. mutwe - ivu
45. kwituua - ndetema
46. mutwe - ikua
47. kukooa - muluo
48. kithui - kwituua
49. mutambuko - ikua
50. mutwe - mukambi
51. muluo - kwituua
52. mutambuko - kithui

53. mukambi - kukooa
54. kithui - kukooa
55. mutwe - kavaso
56. ikua - ndetema
57. ikua - muluo
58. muluo - kithui
59. muluo - mutambuko
60. kukooa - mutwe
61. kwituua - kukooa
62. kyambo - mutwe
63. ikua - kavaso
64. mutambuko - mutwe
65. kyambo - kwituua
66. ikua - kyambo

II(A) Which kind of treatment is better for ndetema?

1. traditional curers - health centers
2. shop medicines - traditional curers
3. health centers - shop medicines

II(B) Which kind of treatment is better for ivu?

1. health centers - traditional curers
2. traditional curers - shop medicines
3. shop medicines - health centers

II(C) Which kind of treatment is better for ikua?

1. shop medicines - traditional curers
2. health centers - shop medicines
3. traditional curers - health centers

II(D) Which kind of treatment is better for mutwe?

1. traditional curers - shop medicines
2. shop medicines - health centers
3. health centers - traditional curers

II(E) Which kind of treatment is better for kukooa?

1. health centers - shop medicines
2. traditional curers - health centers
3. shop medicines - traditional curers

II(F) Which kind of treatment is better for kwituua?

1. shop medicines - health centers
2. health centers - traditional curers
3. traditional curers - shop medicines

II(G) Which kind of treatment is better for kithui?

1. health centers - shop medicines
2. traditional curers - health centers
3. shop medicines - traditional curers

II(H) Which kind of treatment is better for mutambuko?

1. shop medicines - health centers
2. traditional curers - shop medicines
3. health centers - traditional curers

II(I) Which kind of treatment is better for kyambo?

1. shop medicines - traditional curers
2. traditional curers - health centers
3. health centers - shop medicines

II(J) Which kind of treatment is better for mukambi?

1. traditional curers - shop medicines
2. health centers - traditional curers
3. shop medicines - health centers

II(K) Which kind of treatment is better for muluo?

1. traditional curers - health centers
2. health centers - shop medicines
3. shop medicines - traditional curers

II(L) Which kind of treatment is better for kavaso?

1. health centers - traditional curers
2. shop medicines - health centers
3. traditional curers - shop medicines