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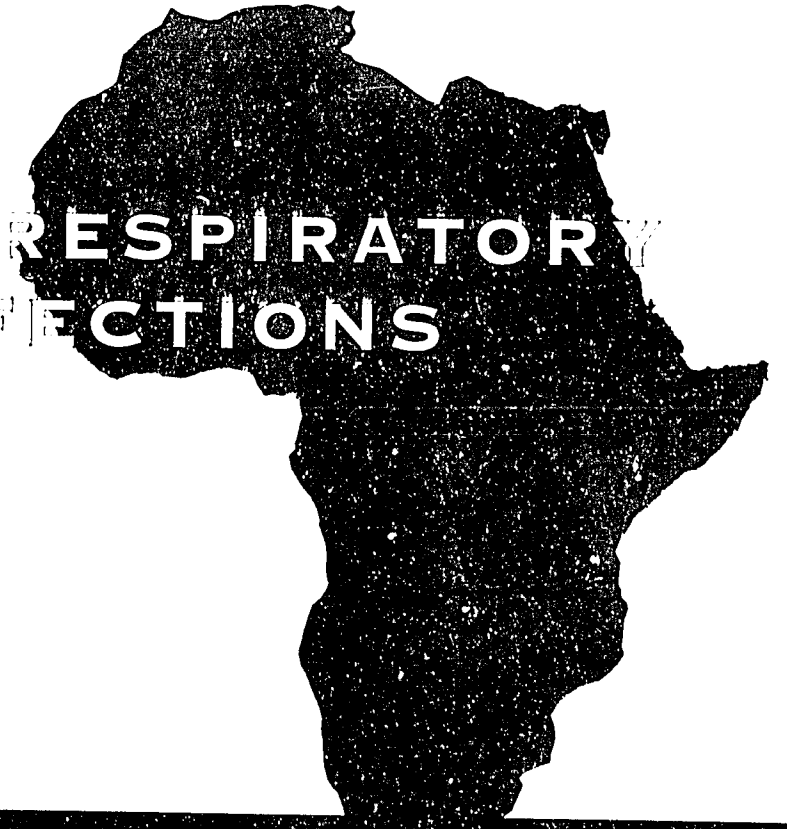
WORKING PAPER:

AN ETHNOGRAPHIC STUDY OF PEDIATRIC ACUTE RESPIRATORY INFECTIONS ILE-IFE, NIGERIA, 1991



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An Ethnographic Study of Pediatric Acute Respiratory Infections in Ile-Ife, Nigeria, 1991

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ABSTRACT

This paper reports key results of a focused ethnographic study (FES) on acute respiratory infections (ARI) conducted October-November 1991 among Yoruba-speaking people in Ile-Ife, Nigeria.

Using the World Health Organization (WHO) FES protocol, a research team collected data from 1) interviews with key informants, 2) 30 semi-structured home-based interviews of mothers using the services of two health facilities (the Eleyele Clinic and Obafemi Awolomo University Teaching Hospital), 3) 24 facility-based interviews of mothers seeking care for children with ARI at the two health facilities, 4) clinical assessment of their children for ARI signs and symptoms, 5) structured interviews with 24 drug dispensers who supply these mothers with medicines when their children are sick, and 6) 13 structured interviews with health providers (3 physicians, 3 herbalists, and 7 nurses) responsible for the diagnosis and treatment of the sick children.

When asked to diagnose several hypothetical ARI case scenarios, the mothers reported *iba* (fever) as their primary diagnosis. Fast breathing, a key sign in the case definition of pneumonia according to WHO, was rarely regarded as a danger sign by the 24 mothers whose children required clinic care, or by mothers who watched a videotape developed by WHO to assess their recognition of a child's fast breathing. When Yoruba children in Ile-Ife have ARI, mothers first treat their children with traditional herbal teas (*agbo*) or home mixtures for cough. Mothers also attempt to treat the child's fever with an antipyretic, or antibiotics purchased from pharmacies or from local drug sellers who were found to routinely provide antibiotics without a prescription.

The data suggest that 1) local [Yoruba] ARI terms are a subset of fever-related illnesses, 2) Yoruba-speaking mothers in Ile-Ife should be taught to recognize fast breathing in their children as an important sign of ARI, 3) effective interventions should begin at the household level where most ARI-related treatment is administered, 4) commercial drug dispensers should be educated on appropriate use of antibiotics, and 5) further technical assistance may be needed in developing plans to implement interventions based on FES results.

INTRODUCTION

In 1990, acute respiratory infections (ARIs) were responsible for 4.3 million deaths of children < 5 in developing countries, an estimated one-third of infant and child mortality in those countries (WHO 1992).[1] Bacterial pneumonia, which can be controlled by antibiotics, is the principal cause of ARI-related mortality.[2] A 1984 study of hospital visits in Nigeria indicated that ARI comprised 56% of all pediatric cases.[3] In response to these and other data estimating the burden of ARI in Nigeria, the Federal Ministry of Health (FMOH) began a series of programmatic activities to formalize its pediatric ARI policy, including this focused ethnographic study (FES).

The term "focused ethnographic study" refers to a specific set of procedures designed by the World Health Organization (WHO) for learning how people define, diagnose, and treat ARIs. ARIs are of two basic types: acute upper respiratory infections (AURI), which include colds, rhinitis, tonsillitis, and ear infections; and acute lower respiratory infections (ALRI), which are primarily pneumonia. Most pneumonias are caused by bacteria and other microorganisms that are treatable with antibiotics; others are caused by viruses and are not curable with medication. Effective treatment of children with ALRI involves early detection of ALRI-related symptoms (cough, fever, and rapid breathing) and appropriate use of antibiotics provided by a health provider. Caretakers of young children at home have a strategic role in assuring early diagnosis and appropriate treatment of ARIs; they detect symptoms in their children, determine whether or not the symptoms merit health facility treatment, and decide how prescribed medications will be used at home. Therefore, identifying how health workers can best communicate information about ARI to caretakers of young children is a key step in ARI program development.[1] The FES was designed to help national ARI programs do the following:

- document the signs and symptoms, and identify terms by which mothers recognize illness that corresponds, in whole or in part, to clinically-diagnosed pneumonia;
- identify factors that facilitate or deter seeking prompt care from a trained health provider;
- identify relevant maternal expectations concerning antibiotics and other drug therapy, and anticipate problems affecting compliance with treatment;
- identify other relevant cultural characteristics and conditions that are likely to strongly influence community responses to program activities;
- improve household morbidity and treatment surveys by suggesting or adapting questions and terminology to include community perceptions and practices; and
- develop effective home care advice and other recommendations for appropriate communication with caretakers of young children.[1]

In 1991, the Nigeria FMOH requested a consultant (RPW) to train local investigators (SA, AA) to use the FES method in Ile-Ife as part of its national ARI program development activities. The study was conducted in collaboration with WHO/Nigeria, the United States Agency for International Development (USAID) Combatting Childhood Communicable Diseases (CCCD) Program in Nigeria, and the U.S. Centers for Disease Control and Prevention (CDC). This paper reports key results of the FES study among Yoruba-speaking people in Ile-Ife.

BACKGROUND

The Yoruba people have been the principal subjects of ARI studies in three regions of the country.[3-6] In a Lagos study, investigators conducted a random sample of patient records and interviews with 10% of the patients seen at a university teaching hospital. Respiratory diseases were among the five leading groups of diseases in children, and ARI and other infectious diseases were higher among children whose parents were unskilled or were semi-skilled workers.[3]

A second study, in Ibadan, was a longitudinal community-based study of ARI in young children < 5 in a low socioeconomic community. Children < 5 were chosen from families of randomly selected households registered at a local clinic, and active surveillance at the household level was conducted for the three years of the study, 1985-1987. Annualized incidence rates of ARI ranged from 6.1-8.1 episodes per child per year. Four percent of all ARI episodes seen at the clinic were severe (respiration rate >70/minute). ARI seasonality corresponded to the *harmattan*, periods during the normally hot, dry season when cold, dusty winds blow from the north. In addition, a decreased incidence of ALRI was observed among children who had been vaccinated against measles.[4]

Child care practices related to the Ibadan study were summarized by Osinusi and Oyejide. Although mothers were the usual care providers, several relatives brought the children to the clinic. Reported treatments at home included cough medicines, antipyretics, antibiotics, and hematinics, which were obtained either from hospitals and clinics and which had been prescribed for previous illnesses. Force feeding of local herbal teas, practiced by 64% of mothers, was believed efficacious in the prevention of ARI.[5]

In a third study, conducted in a predominantly Yoruba population in Ilorin, 479 mothers of children < 5 years were interviewed in a cross-sectional study. The investigators reported that mothers perceived ARI to be second only to fever as the cause of ill health and identified cough and fever to be the most common symptoms of ARI. Mothers reported that fast breathing (44%) and a fast heart beat (9%) were the symptoms of severity that would make them seek help outside the home.[6]

Unlike the studies summarized above, ethnographic studies are designed to present an explanatory model of illness from the perspective of the client or consumer of health services. Besides the use of the client's perspective, an explanatory model provides information on disease classification, providers of health care, treatments, and other health-seeking behaviors. To be useful, ethnographic studies must be conducted quickly and the results communicated to program managers in a timely and practical manner, a task for which the FES was designed.[7]

RESEARCH SETTING

The study was carried out among Yoruba-speaking people in Ile-Ife, Osun State, Nigeria. As of 1991, Ile-Ife had an estimated population of 403,282 predominantly Yoruba-speaking people.[8] Ile-Ife is of great importance in the traditional history of the Yoruba people; it is considered to be the birthplace of civilization.[9] The city has grown rapidly and is currently the site of a major university with a medical school, a modern hospital, as well as the historical palace of the traditional ruler (the Oba). [10-12]

Located in western Nigeria, the Ile-Ife area has two distinct seasons: wet and dry. The rainy season starts in April and ends in October, and the dry season begins in late October and ends in March. There are two periods of relatively cooler temperatures that correspond to greater ARI transmission—the rainy season itself and the *harmattan*. The Ile-Ife FES was conducted from October 15 to November 19, 1991, the transition period between the wet and dry seasons.

METHODS

The FES research method was designed to be conducted in a fairly short time period (six weeks), using in-country investigators familiar with community-based social science methods. To implement the Ile-Ife study, a core research group was assembled consisting of a consultant anthropologist and two collaborating in-country investigators: an FMOH counterpart and a university-based social scientist.

FES data were collected from interviews with different types of respondents and from a physical assessment of children with ARI symptoms. The interviews were conducted using seven data-gathering techniques described in detail in the FES Manual. The physical assessments of children with ARI were conducted using guidelines provided in the Manual and in two videos, also developed by WHO. A brief overview of staff training, types of interviews, and data-gathering techniques are described in this section.

STAFF TRAINING

To facilitate conduct of the study by in-country investigators, the consultant trained the local social scientists in FES research procedures using the workbook and two videos that guide researchers through the FES data-gathering techniques.[13] The workbook consisted of exercises that required completing the data collection and recording them on analysis forms. One video was designed to train health workers in ARI clinical assessment techniques; the second was developed for use in the interviews and included a series of scenarios of children with ARIs of varied severity.

After completing the exercises in the workbook, the consultant reviewed the interview procedures in the FES Manual with the local social scientists; answered their questions about the manual; provided training in the assessment of rapid breathing, wheezing, and stridor (using the videos); and prepared a work plan for field operations.

To assist with conducting the interviews, three Yoruba-speaking research assistants (one man, two women) were recruited from the university community. The local social scientists conducted interviewer training sessions in Yoruba and in English, reviewing each of the research procedures and training videos. These included training on how to code and tabulate the data. The core research group of social scientists provided on-going supervision of the interviewers by accompanying them into the field, working with them in pairs, and assisting them with the interviews.

THE INTERVIEWS

The FES Manual suggests that five types of interviews be conducted: key informant interviews; interviews of mothers at home; interviews with mothers at the health facility; health provider interviews; and interviews of drug providers. A brief synopsis of the types of interviews and data-gathering steps follows.

Key Informant Interviews

Key informants are respondents with whom an investigator has a special relationship; they agree to be interviewed repeatedly by an investigator on a topic about which they have special knowledge. In the FES Manual, key informant interviewing is viewed as an essential beginning exploration. Interviewers ask key informants to recount recent cases of ARI

illnesses and to answer questions concerning appropriate vocabulary, health care seeking behaviors, and other types of information. In Ile-Ife, open-ended, conversational-type key informant interviews were conducted with a staff nurse, a nurse's aide at a government pediatric health facility, and a traditional healer. Key informant interviews were also carried out with four Yoruba mothers with extensive experience in child care, including caring for children with ARI. The four women were identified by the staff of Eleyele Clinic (the main pediatric outpatient clinic in Ile-Ife) and the second author. Here is a translated excerpt from such an interview (See Appendix C for terminology):

Interviewer: "Has your child had any illness related to breathing problems [before]?"

Respondent: "The child had *iko* (cough) and *iko otutu* (cough related to having a cold) before."

Interviewer: "What kind of 'cough' was that?"

Respondent: "I don't know but it was a long period of coughing later diagnosed as *otutu aya* (a cold in the chest—a serious, pneumonia-like ALRI)."

This brief excerpt illustrates the process in which particular local vocabulary is "discovered" from the informants' narratives of illness cases in their children or their patients.

The technique of free listing was used to elicit ARI-related vocabulary during the key informant interviews. Free listing is an interview technique designed to elicit a list of items (e.g., illness terms) that belong together in the same category. After the terms are elicited, the interviewer may ask a series of probes about symptoms of and treatments for the listed illnesses. Here is a brief example from an interview with one of the health providers (See Appendix C for terminology):

Interviewer: "What are the types of [cough] that you have come across in your children?"

Respondent: "You know, *iko* (the common cough) which I have just mentioned; the uncommon ones are *iko tutu* (cough related to cold), which is noted to be hereditary in children, *iko 'fe* (a dry cough), *iko jedo jedo* or *iko egbe*, *iko awubi* (a cough with vomiting), *iko otutu* (cough related to cold or the cold season)."

Interviewer: "How do you know the signs of each of these *iko* (coughs)?"

Respondent: "For instance, with *iko otutu* (the pneumonia-like cough related to cold), the child will have *ara gbigbona* (a high temperature), *gbogbo ara a ma ro mi* (the body will be aching), *aya ati iha ndun* (pains in the chest and sides), *ko ni le huko de le* (inability to cough deeply) - and the child will be using force to breathe. *Aya a m a gbe soke gbe sodo* (The chest will be going up and down). The *iko otutu* makes the breathing more difficult than in other coughs."

Interviews with Mothers at Home

Thirty mothers of children with recent ARIs were selected from the clinic register at the Eleyele Clinic. This number of interviews is suggested in the FES Manual as sufficient to develop the qualitative patterns of illness terminology, recognition of symptoms, and main patterns of care seeking.

The 30 interviews of mothers at home included some of the open-ended interviewing techniques used with key informants (Appendix A). In addition, a series of structured questions were asked to gather data concerning recognition of specific signs and symptoms, vocabulary usage, patterns of home treatment, choice of health providers, and care seeking at health facilities.

Interviews with Mothers and Assessment of their Sick Children at the Clinic

After interviews of key informants and mothers at home were completed, the team conducted interviews of mothers seeking treatment for their children with ARI illnesses at the Eleyele Hospital and at the outpatient clinic of the Obafemi Awolomo University Teaching Hospital on two consecutive mornings. While mothers were waiting to see the physician, the team interviewed them and assessed their children for ARI signs and symptoms using the ARI diagnostic protocol outlined in the FES Manual. Twenty-four mothers whose children fit the diagnostic criteria were identified and interviewed.

These mothers were asked about the signs and symptoms that prompted them to seek care, as well as other questions concerning their perceptions of illness cause and treatment. Their sick children were assessed for ARI symptoms, such as fast breathing. These interviews provided data on observed symptoms and health-seeking behaviors.

The assessment of the sick children seen at the clinic included observations of the respiratory rate, any chest indrawing, nasal flaring, audible wheezing or stridor, and evidence of runny or blocked nose. These observations permitted the research team to link observed signs and symptoms of the sick children with the statements and vocabulary of the mothers or caretakers.

Interviews with Health Care Providers

All staff members at the Eleyele Children's Hospital and at the Obafemi Awolomo University Teaching Hospital's outpatient clinic who were available and willing to be interviewed (3 physicians and 7 nurses) were included in the Ile-Ife health care provider interviews.

Three *elewe omo*, practitioners who specialize in preparing or selling herbs for childhood illnesses, were also interviewed at their places of business in the market.

Interviews with Pharmacists and Drug Sellers

The 24 pharmacists and drug sellers selected in the study were those whose names or place of business were mentioned during interviews with key informants and mother respondents at home. A list of drug dispensers cited by mothers was compiled, and a visit was made to each place of business so that the drug dispenser could be classified by type (e.g., pharmacist, chemist, drug seller, etc.). In addition, the staff from two of the largest pharmacies in Ile-Ife were included.

For the interviews with pharmacists and drug sellers, our interviewers posed as parents seeking treatment for a child with ARI symptoms. The patterns of symptoms presented in these interviews were the same as those in the "scenarios" that had been presented to the mother respondents interviewed at home. The "parent" asked the drug dispenser to prescribe a medicine for the child's illness and to make recommendations concerning alternative, follow-up, or referral care.

Specialized Data-Gathering Techniques

In addition to the free-listing technique discussed earlier, the FES Manual includes several other specially-structured interview techniques to elicit the systematic qualitative patterning of ARI vocabulary (illnesses, signs, symptoms), the explanations of illnesses, expected treatments, and main care-seeking behaviors.

Illness Narratives

The collection of illness narratives is a key step in the initial part of the interviews with the mothers in their homes. In this procedure, a respondent is asked to discuss her experience with treating a previous childhood ARI episode. Responses to narratives of past episodes cue the researcher to normative practices associated with an illness episode, ideas about disease treatment, taboos, feeding habits, concerns of the population, terms, and symptoms. Eliciting illness narratives gives the interviewers the opportunity to further develop information from the ARI illness vocabulary data obtained from key informants.

Videotape Scenarios

The FES materials include a two-part video, each with 20 scenes of children from several national backgrounds and with various levels of severity of ARI symptoms. The scenes include children with fast breathing, some with normal breathing, some with chest in-drawing, stridor, and wheezing. The video scenes are designed to be shown to the respondents individually, so that their comments about the sick children can be systematically elicited and recorded.

During the first part, the videotape segments focused on each child for 1 to 2 minutes, with special attention to the child's chest. As each child is presented in the video, the interviewer informs the mother that the child has been coughing for 2 days. The interviewer then asks, "What is wrong with this child?" and records the respondent's answer. If volunteered, the respondent's information about treatment is also recorded. During the second part of the videotape, each child is shown for 30 seconds. Mothers are asked, "Is this child breathing too fast?" If a video scenario is identified in the FES recording form as having "chest indrawing," the interviewer also asks the respondent, "Is there anything wrong with the child's chest?" "Is this bad?" "Is this dangerous?" or "Is this a problem?" In Ile-Ife, technical problems with intermittent electrical current impeded the collection of data from 6 of the 30 respondents.

Hypothetical Case Scenarios

The FES Manual contains six case scenarios depicting ARIs with varying levels of severity. The texts of the six case scenarios are summarized in the box below.

Hypothetical ARI Case Scenarios
A - a 6-month old child with cough, runny nose
B - a 6-month old child with cough, fever
C - a 2-year old child with runny nose, cough, low fever
D - a 2-year old child with cough, fever, breathing fast, and flaring nostrils
E - a neonate with runny nose, no fever
F - a neonate with breathing irregular, doesn't want to wake up

Each of the 30 mothers in the home-based interviews was presented with three of these ARI scenarios. The three scenarios were randomly assigned to the different women through procedures described in the FES Manual.[7] The mothers were asked to 1) give a name for the illness presented in each case scenario, 2) give advice to the mother concerning treatment, 3) indicate steps to be taken, and 4) list the signs and symptoms for which one should watch.

These same ARI case scenarios of sick children were presented to the drug dispensers (one scenario per respondent), in order to find out the prescribing patterns of those providers.

Paired Comparison of Providers Task for Mothers

The FES Manual provides a "paired comparison" format for asking mothers about their choices in seeking care. During this task, the interviewer asked a respondent to choose between two types of providers. The "generic form" of the paired questions is as follows: "If you could only go to a [private provider] or to [the government clinic], which would you choose? Why would you choose [respondent's selection]?" The providers in the paired choices are individuals from facilities identified during the earlier key informant interviewing.

In Ile-Ife, we included the following providers for the paired comparisons operation: government staff (physicians and nurses working in FMOH facilities), practitioners who prepare or sell traditional medicines; (the *elewe omo* or the *lekuleja*), traditional healers who diagnose and divine illnesses; medicine peddlers who sell patent medicines; private medical staff (physicians and nurses practicing in private health facilities); and chemists or pharmacists.

The systematic presentation of all the possible pairs of choices to the respondents results in a matrix of choices that gives the rank ordering of "popularity" or "perceived choice" among the several different provider options. This technique also elicits the reasons for those choices. Those "reasons" can include information on cost, and socio-cultural preferences (for example, expectations during the clinical encounter).

Sorting Signs and Symptoms of Illnesses

The sorting task, like free listing, is another procedure used to determine how people categorize illness terms. For this procedure, the FES Manual recommends that investigators choose the 4 or 5 illness terms that seem most closely related to pneumonia, along with 15 to 20 terms for ARI signs or symptoms, using the vocabularies collected from the key informants' illness narratives. Mothers are asked to select the signs or symptoms associated with each of the main ARI illness terms. The terms are written on small cards and are presented one at a time to the respondent. The name of the illness term is read to those respondents who cannot read. From a set of 15 to 20 cards of symptoms, the respondents are then asked to choose whatever signs and symptoms "go with" that particular illness. This procedure assists investigators to detect the patterning of symptoms associated with each illness.

Inventory of Medications in the Homes

During the home-based interviews, mothers were asked to show the interviewer all the medicines, drugs, herbs, or other mixtures they had for treating childhood illnesses. These medications were listed on a form provided in the FES Manual.

DATA ANALYSIS

The tasks of synthesizing the FES data and writing the preliminary report were shared by the research team. Immediately after each key informant interview, the interviewers expanded their field and interview notes and a longer, handwritten version of the interview was produced first in Yoruba, and then translated into English. Data from the free listing exercise and the narratives of past ARI episodes were extracted from the text and were entered on a FES data collection form, which was designed to simplify the coding, tabulation, and analysis of the interview data.

Results of the research procedures used during the interviews of mothers at home were recorded and tabulated on FES data collection forms, and data from the clinic-based mother interviews were recorded, entered in a software program (Epi Info), and tabulated.[14] The textual statements collected from the interviews of mothers at home and of health care providers were reviewed manually and summarized. Data from the ARI scenarios were also entered on FES forms and tabulated.

RESULTS

Illness terminology: Fever-related illness terms

A major finding of this study is that mothers often labeled AURI and ALRI scenarios with fever-related illness terms. In several of the research procedures used to investigate local ARI terminology, the primary diagnosis stated by mothers, as well as by other respondents, was *iba* (fever). This concern with *iba* (fever) was most evident in the presentation of the case scenarios to the mothers in the home-based interviews. (See Table 1).

Table 1. Illness Terms Used to Describe ARI Scenarios by 30 Mothers Interviewed at Home*

Illness Terms Used to Describe	ARI Scenarios						Total No. of Responses
	A (N=13)	B† (N=13)	C (N= 14)	D† (N=15)	E (N=15)	F† (N=14)	
IBA‡	8	4	4	9	1	4	30
OFINKIN	3	.	4	.	7	.	14
IKO/IKO TUTU	1	3	5	.	.	1	10
OTUTU/'TUTU	1	1	.	1	1	3	7
IBA PONJU	.	.	1	3	.	1	5
ARA GBIGBONA	.	.	1	1	2	.	4
IGBONA YIYI/EYI	1	.	.	3	.	.	4
IGBONA EYIN	3	1	.	.	.	.	4
GIRI	.	.	1	.	1	1	3
ASMA	.	2	.	.	.	.	2
OTHER	.	3	1	1	3	4	12
DON'T KNOW	.	.	.	.	.	2	2

*Each mother was presented with three of six scenarios.
†Scenarios with pneumonia symptoms; others are non-pneumonia ARI.
‡See glossary (Appendix B) for approximate English equivalents of local terms.

Particularly striking in these data are the responses to Case Scenario A. This is a "six-month old child with cough and runny nose." Although fever was not mentioned in the description, the majority of mothers (8 out of 13) still assigned a label of *iba* to that case scenario.

Overall, *iba* was the diagnosis provided in nearly one-third (30 of 95) of all specific responses. The only "case" that received only negligible labeling as "fever" was Case Scenario E, in which the information specifically states "no fever present."

Medicines found in homes

The concern with fever (especially malaria-related fever) is evident also in the fact that 61% of the homes visited had malaria medication on hand at the time of the interview. The most common antimalarial medication found in the homes was chloroquine (Table 2).

Table 2. Types of Medicines Used to Treat Childhood Illnesses Found in Households (n = 28)

Types of Medicines	No. Households with Medicines	% of Households
Antipyretics/Analgesics	24	86
Food supplements/vitamins	23	82
Antimalarial drugs	17	61
Traditional herbs	14	50
Cough syrup	9	32
Antihistamines	9	32
Antibiotics (unrefrigerated)	8	29
Intestinal tract drugs (for worms, diarrhoea)	3	11
Colic and teething medications	3	11

The emphasis placed by mothers on fever is echoed in the responses of the 24 pharmacists and drug-sellers. They frequently prescribed antimalarial medication in response to the scenarios, including 4 who prescribed antimalarial drugs in response to the "6-month old with cough and runny nose" scenario.

Table 2 shows that about 30% of the households had antibiotics on hand. The antibiotics commonly prescribed in Ile-Ife are syrup-based and are accompanied with brief written instructions. The instructions inform the consumer that the medicines are to be used only for a specific period and should be refrigerated. There were no children with ALRI in households where we conducted interviews of mothers at home. Yet, in some homes, we found antibiotics that were not refrigerated, were prescribed by drug sellers and pharmacists, and were being kept by mothers for the next child with ARI-like symptoms.

Elicited terms for ALRI symptoms

Rapid breathing does not seem to be very salient in the cultural diagnostic system of the Yoruba mothers and caretakers in Ile-Ife. Although 14 of the 20 video scenes were of children with fast breathing, only 1 of the 24 mothers in Ile-Ife who saw the videotape could recognize at least 8 of the children with fast breathing. In actual situations when sick children were brought to clinic, only 4 in 12 mothers of children with rapid respirations mentioned it as a problem or a symptom of the child's illness. Mothers' responses to the case scenarios also seemed to indicate little concern about rapid breathing.

Even more surprising was the seeming neglect of the abnormal breathing sounds of wheezing and stridor. Many of the mothers completely failed to recognize these sounds in the video scenes. They also seemed to have very little vocabulary concerning those breathing sounds.

IDENTIFICATION OF COUGH-RELATED ILLNESSES

Responses to the scenarios and those in the narratives of past ARI episodes suggest that the term *iko* appears to be a part of a compound term for several ARI illnesses. In the Yoruba taxonomy of illnesses (Appendix B) collected during the interviews of key informants and mothers at home, the code *iko* is elaborated in several ways. Serious ARI syndromes are coded at least in part with modifier words in combination with *iko*. For example, *iko otutu*, *iko tutu*, and *iko aya* all refer to serious ALRI that may be pneumonia. *Iko awubi* is a serious illness that resembles pertussis. Other serious ALRIs are labeled *iko 'fe*, *iko egbe*, and *iko jedo jedo*. These findings resemble those in some other areas (e.g., in Lesotho[15]) where milder "common colds" are perceived by mothers as precursors to illnesses that can develop into the more serious, life-threatening forms of ARI.

On the other hand, *otutu aya* was cited by one of the mother key informants whose child had been diagnosed with pneumonia at the clinic; by a health provider key informant; and by health providers. In addition, *asma* was an ALRI-like illness elicited during the free listing exercise with key informants. This term seems to be a recently coined word, and probably covers a range of illnesses that include "clinical asthma" and other fairly serious respiratory sicknesses, particularly when the people suspect some "hereditary" component in the etiology.

HOME AND HEALTH FACILITY-BASED CARE AS PREFERRED SOURCES OF TREATMENT FOR CHILDREN WITH ARI

Table 3 summarizes mothers' suggested actions for treating the children in the case scenarios. Fifty-eight percent of the responses suggest some type of home-based treatment: 49% with medicines, local herbs, or fomentation and 9% with other measures at home. Forty-two percent of responses suggested care away from home: 39% at government-operated facilities and 3% from *elewe omo*.

Table 3. Actions Suggested by 30 Mothers in Response to Scenarios*

SUGGESTED ACTIONS	ARI SCENARIOS						TOTAL NO. OF RESPONSES
	A (N=13)	B† (N=13)	C (N=14)	D† (N=15)	E (N=15)	F† (N=14)	
HOME BASED ACTIONS							
USE LOCAL HERBS	7	4	5	2	1	5	24
TREAT WITH BOUGHT MEDS.	6	4	2	6	2	2	22
USE FOMENTATION	2	2	5	0	8	0	17
KEEP CHEST WARM	1	2	0	0	4	0	7
BATHE WITH COLD WATER	1	0	1	1	0	0	3
CHECK TEMPERATURE	1	0	1	0	0	0	1
TREAT AS SHE HAD TREATED ANOTHER CHILD	0	0	0	0	0	1	1
AWAY FROM HOME ACTIONS							
GO TO HOSPITAL	6	7	7	11	8	11	50
GO TO ELEWE OMO	1	0	1	1	0	1	4

*Each mother responded to 3 of the six scenarios.
†Scenarios with pneumonia symptoms; others are non-pneumonia ARI.

When asked during the paired comparison exercise to indicate their preferred practitioner for care outside of the home, mothers preferred seeking help from local providers in this order: government hospital staff, health staff at private clinics and hospitals, pharmacists and chemists, herbalists who diagnose and sell herbal medicines for childhood illnesses, traditional healers, and medicine peddlers. The major reasons given for preferring health providers at government facilities were their training, experience, and reliability. Costs of the services were mentioned only infrequently, although some statements by key informants and others pointed to economic factors as possibly having an important role in decisions about health care.

The FES data suggest that the only major competitor to the government-sponsored health care system appears to be the people's extensive reliance on home treatment. As can be seen in Table 3, the respondents to the scenario interviews referred frequently to purchases of medicine (modern pharmaceuticals and herbs), as well as to herbal remedies and other home treatments. Local remedies for the discomfort of sore throat and irritating coughs were also elicited during the interviews and were used to develop examples of home care messages that could be used by health workers during clinical encounters with mothers (see Appendix C).

ETIOLOGIC EXPLANATIONS FOR VARIOUS ARI ILLNESSES

The data from the illness narratives indicated that Yoruba mothers in Ile-Ife were concerned about their children eating dirt or dirty things because of their belief about *kokoro*. *Kokoro,* believed to be entities that can cause illnesses like *iko,* can be insects or other creatures too small to see, such as "germs." Mothers who allow their children to put dirt and dirty things into their mouths were perceived by key informants to be negligent or ignorant.

On the other hand, key informants said that exposure to chilly weather, rain, and the *harmattan* can also cause *otutu aya*, a serious ARI. In some situations, an ARI that appears serious is made much more life-threatening if thought to be caused intentionally, such as by a person practicing witchcraft.

Hereditary factors can enter into respondents' explanatory models of ARI, particularly in the case of *asma,* which is an illness characterized by *iko re ko ni se deede* (infrequent cough), *emi lele* (fast breathing), and *aya a maa gbe soke gbe sodo* (an up-and-down movement of the chest). Respondents explained that a child suffering from *asma* is restless, loses appetite, has difficulty breathing, and is unable to breathe "up and down." One mother explained that "a child with *asma* might cough now and not cough again until the evening." Respondents considered *asma* a serious illness and, if left untreated, could result in death.

According to some of our informants, illness can be caused by exposure to cold and may be considered *ajogunba* (hereditary). The Yoruba belief system concerning *ajogunba* focuses attention on the male contribution to one's inheritance, introduced at the time of conception. Some Ile-Ife mothers believed *ajogunba* to be a factor, but they did not believe that mothers could pass the trait to their children because women are considered only the passive receivers and developers of the male heredity, at least as far as "inherited" illness is concerned.

DISCUSSION

ILLNESS TERMS AND DIAGNOSIS

The Ile-Ife FES results present a constellation of ARI terms and symptomatology; we did not detect a term that mirrored the clinical signs and symptoms associated with severe ARI. The terms *iko* (cough) and *otutu* (cold) appeared often in Ile-Ife mothers' illness vocabularies and could be important terms in their explanatory model of ARI. *Iko* seems to refer both to "cough" as a sign of illness and to the illness itself. That ambiguity—the mixing of signs and symptoms with illness vocabulary—is common in most cultural contexts. For example, in the North American (English) popular language, the concept "headache" can be both a specific illness (e.g., migraine headache) and a symptom of some other disease.

Although *otutu aya* appears to have ARLI symptoms, the results provide little conclusive support for suggesting that *otutu aya* or any other single illness term could represent a term used by Ile-Ife mothers to label a child with ALRI. There is a need for more data, collected preferably during the ARI peak season, to more carefully identify and distinguish the illnesses and symptoms associated with the constellation of terms discovered during the study.

Mothers' concern with fever in Ile-Ife, an area where malaria is endemic, is of particular interest. Fever is a hallmark of ALRI and malaria, and it appears that people's attention to possible serious ALRI arises only when the possibilities of malaria fever have been ruled out. That the ARI case scenarios would elicit the term *iba*, which has been identified in the literature as "malaria",[16] suggests that terms for ARI and malaria are part of an overarching domain in the Yoruba classification system, and that ARI terms are a subset of fever-related illnesses. An overlap of malaria- and ALRI-related terms was also identified in a qualitative study in Swaziland,[17] and evidence suggests that there may be a clinical basis for the overlap in folk categories. An evaluation of 1,599 children in Malawi indicated that 95% of the children who met the WHO clinical definition for pneumonia also met the clinical definition for malaria, which is "fever," and 36% of the cases meeting the clinical definition for ALRI were also parasitemic with *P. falciparum*.[18]

Rapid breathing, fever, and cough are important symptoms in the WHO case definition of pneumonia.[1] In Nigeria, in both the Ile-Ife FES and in a study in Ilorin,[6] fever and cough were the ARI symptoms recognized most frequently by mothers. However, whereas fast breathing was commonly reported by mothers in Ilorin, this was not true in Ile-Ife. This discrepancy may be due to the different methods used to elicit mothers' responses. Mothers in Ilorin were asked to report their children's symptoms during an interview; whereas in Ile-Ife mothers interviewed at home responded to visual and auditory stimuli during the video scenarios and mothers bringing their child for treatment at the clinic were asked to recount the child's symptoms. When FES researchers conducted an objective assessment of those children, rapid breathing had been recognized by only 4 of 12 mothers of children with the symptom. Although our sample is not representative of all Ile-Ife mothers, our data suggest that the lack of recognition of the importance of this symptom may be common in Ile-Ife. Support for this suggestion is provided by the triangulated data from two samples of mothers (mothers interviewed at home and mothers at the clinic) that

used two different methods (viewing cases on a videotape and asking a mother to identify symptoms in her own child). If true, ARI program managers should teach mothers to recognize fast breathing and develop health messages to address recognition of ARI symptoms.

HELP-SEEKING BEHAVIOR

The pervasiveness of home care for ARI-related symptoms and illness in Ile-Ife (Table 3) is supported by other studies of Yoruba illness-related behaviors.[5,6] However, belief in the efficacy of home treatments may contribute to delay in seeking care which may in turn compromise a child's recovery from ALRI. Examples of health education messages that could address this problem and others are in the Home Care Box (Appendix C).

TREATMENT

Because the mainstay of pneumonia case management is antibiotic treatment, much of the multiple dose treatment procedure is provided at home by the child's caretaker after initial clinic examination of the child. Given that no child was using antibiotics during the interview period, finding a substantial number of households with antibiotics on hand (all unrefrigerated) suggests that mothers and drug dispensers are either not properly informed in the use of antibiotics, or mothers are not using them properly. The fact that antibiotics were found unrefrigerated in some homes, were available without prescription, and were being kept by mothers to be administered to the next child with *kokoro* could constitute a potentially dangerous practice that should be targeted for programmatic intervention (health education for mothers and drug dispensers) and for policy formation (regulation of antibiotics).

Health providers are responsible for educating mothers who bring sick children to a health facility. Effective management of the child with pneumonia by the caretaker requires an understanding of how to administer the antibiotic to the child and how to recognize the symptoms that would require a follow-up visit to the health center. Use of Yoruba symptom and illness terms identified in the study can help health workers communicate with mothers. Examples of the types of messages that should be communicated to mothers in Ile-Ife are indicated in the Home Care Box (Appendix C). These messages were developed using terminology and practices identified in the Ile-Ife FES data. Specific messages, such as those indicated in Appendix C, should be developed by the ARI program to convey to mothers during clinical encounters and to be supplemented with specific oral, written, and pictorial messages on the appropriate way to administer antibiotics to a child with ALRI.

USE OF THE DATA

The following recommendations, in addition to those in the Home Care Box in Appendix C, were made to the ARI program manager by the Ile-Ife FES research team:

1. Follow-up activities to the Ile-Ife FES should include specific plans to incorporate results of the study into programmatic activities; for example: 1) developing health education messages for mothers on the appropriate use of antibiotics and on distin

guishing malaria from pneumonia in young children; 2) developing a training module for drug dispensers on recognizing ALRI danger signs and the appropriate use of antibiotics; and 3) conducting a training session with health workers to assure that they are familiar with the ARI terms mothers use. A small workshop in which the Ile-Ife FES data are reviewed and followup plans for applying the study results are developed could be an important first step in this direction.

2. The FMOH should follow up this FES with another study in the Hausa- or Igbo-speaking areas. Areas with the highest ARI case load should be prioritized.

3. Additional technical assistance is needed in Nigeria to institutionalize the use of FES data in ARI program activities.

In response to these recommendations, the FMOH has requested technical assistance from WHO to help the ministry develop implementation plans using the Ile-Ife data and has since assigned two social scientists to conduct ARI FES activities among the Hausa and Igbo peoples.

APPENDIX A. TYPE AND NUMBER OF INTERVIEWS AND RESEARCH PROCEDURE

TYPES OF INTERVIEWS AND RESPONDENTS	NUMBER OF RESPONDENTS	RESEARCH PROCEDURES
1. KEY INFORMANT INTERVIEWS (MOTHERS, HEALTH WORKERS, TRADITIONAL PRACTITIONERS)	7	OPEN EXPLORATION WITH FREE LISTING ELICITING NARRATIVE OF PAST ARI EPISODE ASSESSING RELATIONSHIP BETWEEN LOCAL TERMS AND PHYSICAL SIGNS BY USING A VIDEOTAPE PRESENTATION OF HYPOTHETICAL CASE SCENARIOS
2. MOTHERS INTERVIEWED AT HOME	30	PRESENTATION OF 3 ARI SCENARIOS PAIRED COMPARISON OF PROVIDER'S TASK ILLNESS TERMS, SIGNS, AND SYMPTOMS (SORTING TASK) INVENTORY OF MEDICATIONS ASSESSING RELATIONSHIP BETWEEN LOCAL TERMS AND PHYSICAL SIGNS BY USING A VIDEOTAPE
3. MOTHERS INTERVIEWED AT THE CLINIC	24	NARRATIVE OF A CHILD WITH ARI BROUGHT TO THE CLINIC AND EXAMINED ASSESSMENT OF ARI SYMPTOMS IN A SICK CHILD
4. HEALTH CARE PROVIDER INTERVIEWS (MINISTRY OF HEALTH STAFF, TRADITIONAL MEDICINE SPECIALISTS)	10	STRUCTURED OPEN-ENDED INTERVIEW
5. DRUG DISPENSERS (PHARMACISTS, DRUG SELLERS)	24	PRESENTATION OF ONE ARI CASE SCENARIO

APPENDIX B. GLOSSARY OF ARI-RELATED TERMS OBTAINED DURING INTERVIEWS OF KEY INFORMANTS AND MOTHERS AT HOME

ILLNESS-RELATED TERMINOLOGY AND SYMPTOMS

abimo - refers to congenital illnesses, literally "to be born with it"

afise - intentional infliction of an illness by someone, e.g., witchcraft

agbo - herbal teas

agilinti - a type of lizard, used to describe a child's wheezing sounds

ai l'agbara - loss of strength, weakness

aile mi daradara - noisy chest, difficulty in breathing

aisan - temporary indispositions, that are "unique" to the person

ajogunba - hereditary, inheritance

ara riro - body pains, body aches

ara gbigbona - hot body, hot body temperature, high temperature

arun - serious "diseases", highly contagious or hereditary

asma - asthma, an infrequent cough

aya a ma gbe soke gbe sodo - up-and-down chest movements

aya ati iha mdun - pains in chest and sides

eebi - vomiting

elewe omo - herbalist

emi lele - fast breathing

emi lile or *fule fule* - difficult breathing, breathlessness

epo pupa pelu iyo - a mixture of palm oil and salt

epo pupa pelu sugar - a mixture of palm oil and sugar

enu pupa - red mouth

ghogbo ara a ma ro mi - aching body

giri - convulsions

harmattan - hot season when dusty winds blow from north

iba - fever, malaria fever

iba ponju - yellow fever

igbe yiya - stooling

igbona - high temperature - associated with measles

igbona ara - high body temperature

igbona eyin - teething fever

igbona yiyi, yiyi, or eyi - measles

iha - literally "the sides of the chest", or ribs

iha a ma gbe soke gbe sodo - the up-and-down movement of the ribs

iko - cough

iko awubi - a cough with vomiting and discharge from the mouth, pertussis

iko aya - chest cough

iko otutu - pneumonia-like cough related to cold

iko 'fe and *iko egbe* - refers to dry cough (also known as *iko egbe, iko jedo jedo*)

iko jedo jedo - a cough that eats (*je*) the lungs (*edo fuku*)

iko re ko ni se deede - infrequent cough

iko tutu - cold cough, or flu related cough; it has wet or moist cough productive of sputum

inu kikan - tender stomach

jedi jedi - dysentery/diarrhea

ifun - intestines

kokoro - small entities that can cause illness-e.g., small insects, germs

ko ni le huko de le - inability to cough deeply

ko ni le jeun - loss of appetite

o ogun lila - sweating

o nhuko - coughing

o le da ro'je - blooded patches on the red background of eyeballs

ofinkin - catarrh, common cold with runny nose

oju a ma pon - redness of the eyeballs

omo a ma laagun ti o tutu - cold perspiration

onhuko - literally, "he is coughing"

oowo - a boil

osin catarrh - runny nose

osin - sneezing, watery eyes

otutu - cough related to cold

otutu aya - cold chest, a cold in the chest, a serious pneumonia-like ALRI

senukoto makije - an illness during which the mouth becomes roundish, the neck bulges, and there is coughing; it is considered severe and hereditary

sisi aya sile - the exposure of the chest to cold weather

won fun leje - blood transfusion

yiyi - measles

APPENDIX C. THE HOME CARE BOX

PROVISIONAL HOME CARE ADVICE TO MOTHERS [FOR THEIR CHILDREN AGES 2 MOS. TO 5 YRS.]

IF YOUR CHILD HAS "IKO":

SOOTHE THE THROAT AND RELIEVE THE COUGH BY DOING THE FOLLOWING:

KEEP THE CHILD WARM
GIVE OSAN WEWE AND OYIN
OR GIVE A TEASPOON OF EPO PUPA PELU IYO
OR A TEASPOON OF EPO PUPA PELU SUGAR
CLEAR THE CHILD'S NOSTRILS IF THEY ARE BLOCKED

YOU CAN TRY TO PREVENT "IKO" FROM BECOMING:	**BY DOING THESE:**
IKO OTUTU	FEED YOUR CHILD WARM, SOFT FOODS LIKE PAP*
IKO TUTU	
OTUTU AYA	COAX YOUR CHILD TO TAKE FLUIDS (LIKE WATER, MILK, OR JUICES)
IKO OTUTU AYA	KEEP YOUR CHILD WARM WATCH FOR FAST OR DIFFICULT BREATHING

WATCH FOR THIS GROUP OF SIGNS IN YOUR CHILD:

EMI LILE OUN MI FULEFULE IHA A MA GBE SOKE SODO	THIS CHILD MAY HAVE IKO OTUTU AYA!
KO NI LE JEUN ARA GBIGBONA AILAGBARA	DON'T SELF MEDICATE! TAKE THE CHILD TO THE HEALTH CENTER IMMEDIATELY!

* a cereal-based porridge

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